

INNER BANKS INNOVATION ACADEMY

APPENDIX A1

EVIDENCE OF EDUCATIONAL NEED

A1.1 Survey data from western Beaufort County and surrounding areas

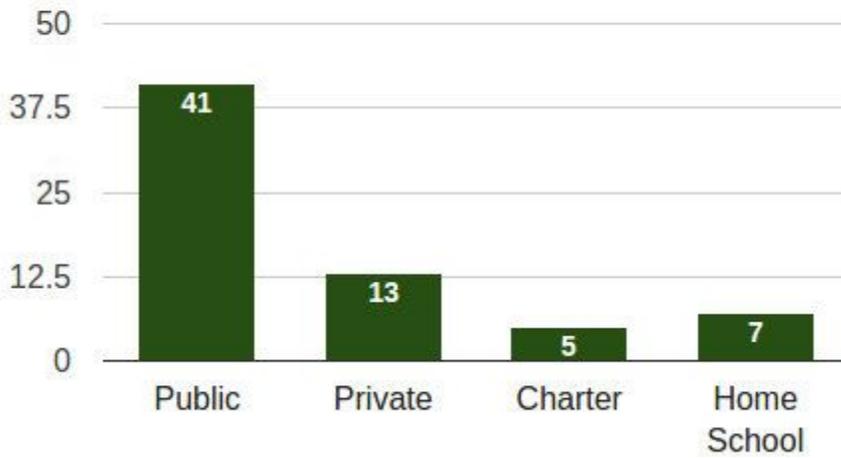
A1.2 Flyer for Chocowinity meeting

A1.3 Map and table with school data

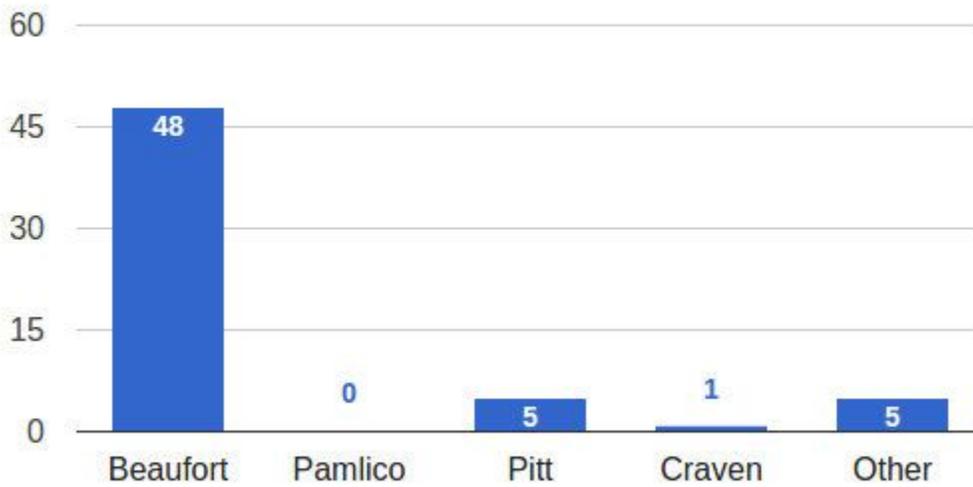
A1.4 Traffic count

A1.1 Survey data from western Beaufort County and surrounding areas

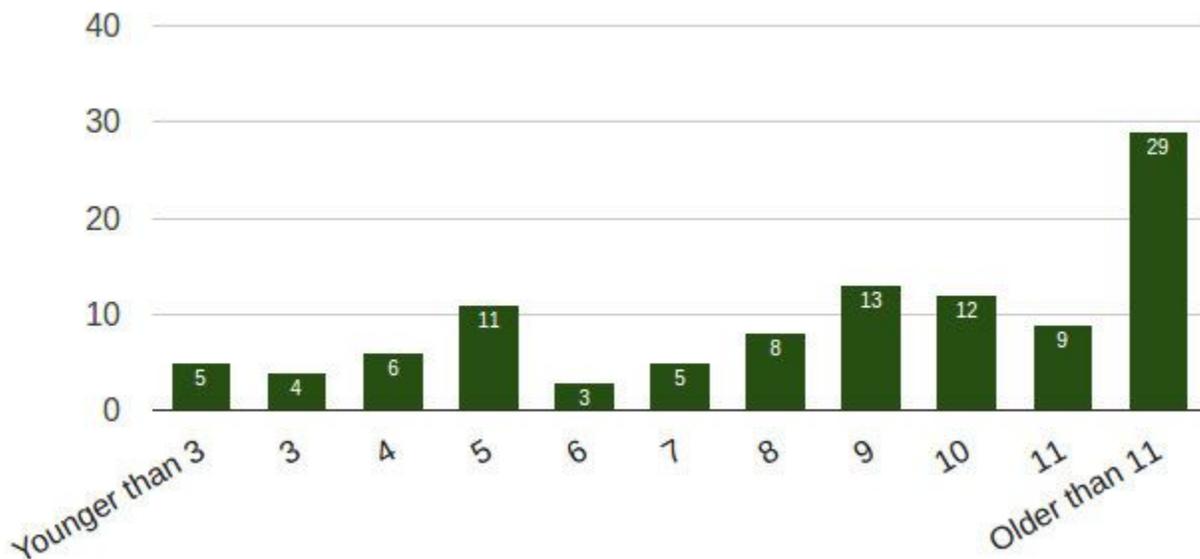
What types of schools are your children attending now?



What county do you live in?



of Children by Age on Aug 31, 2016



What kind of programs for your children would you like to see in a new tuition-free school based on personalized learning?

Programs that are suitable for kids who are on the autism spectrum or have ADHD issues, but are high functioning. Interactive classes that keep learning fun and interesting, thus keeping the kids focused.

8/23/2016 11:57 AM

Extra help with IEP goals and affordable after school programs and extra help with subjects that students are doing well in.

8/22/2016 1:47 AM

More well rounded fundamental teaching not focused on just EOG material.

8/20/2016 10:13 PM

I'm looking for something that will keep his attention so that he won't become bored with school

8/19/2016 6:07 AM

Technology; college track; writing

8/18/2016 11:27 PM

Athletics would be a deciding factor for me such as football/baseball Scholarship program for Seniors

8/18/2016 8:55 PM

Exercise, music

8/14/2016 7:30 AM

Sign language

8/12/2016 2:04 PM

Steam

8/12/2016 10:15 AM

More hands on learning

8/11/2016 7:02 AM

AG, rigorous curriculum, 21st century learning including access to top of the line technology focusing on college/career readiness skills, science, STEM learning, individualized curriculum based in student needs.

8/10/2016 10:04 PM

Help with children who have trouble learning, foreign language as early as kindergarten, classes for advanced children

8/10/2016 7:49 PM

Automotive and Agriculture

8/10/2016 6:05 PM

Math, English, Writing, Computer Classes

8/10/2016 4:08 PM

Solid language arts, mathematics and history, Sports. Arts. Technology.

8/9/2016 12:15 PM

Better reading programs and interactive learning.

8/9/2016 1:32 AM

Learning disabilities help

8/8/2016 7:38 AM

STEM classes

8/8/2016 12:35 AM

I would like to see a program to help dyslexic students.

8/7/2016 9:48 PM

Core Knowledge program, foreign language, singapore math style curriculum are all wonderful.

8/7/2016 1:00 PM

Guided reading small groups

8/7/2016 12:45 PM

'Old school' electives - basic sewing, cooking, carpentry/woodworking Collaboration with colleges to foster college and career readiness

8/7/2016 8:18 AM

Science, history, math

8/6/2016 11:12 PM

math prep.

8/6/2016 7:53 PM

2nd language

8/6/2016 9:07 AM

Hands on learning

8/5/2016 8:38 PM

Academically gifted options

8/5/2016 7:12 PM

Music and art

8/5/2016 6:43 PM

I would love to see a school that incorporates the arts into the classroom with opportunities to participate in music, art, physical education, drama, & dance! That's what the eastern nc needs!

8/5/2016 5:11 PM

Education that applies to real world work and sports

8/5/2016 3:41 PM

College prep Classical curriculum with technology Emphasis on writing Computer science

8/5/2016 3:37 PM

Montessori, Sudbury Valley type of school, lots of sports teams, band. Have the children very involved in the planning of what classes and activities that's are offered.

8/5/2016 3:32 PM

Do you live in western Beaufort County, NC or a surrounding area?

Come and learn about a proposed new educational option!

Wednesday, June 29, 2016

6:30-7:30pm

Chocowinity Fire Station

512 NC Hwy 33 E

INNER BANKS ACADEMY

- A K-12 PUBLIC CHARTER SCHOOL – No tuition, open to all students; grade range in opening year to be determined by demand.
- A PEACEFUL SCHOOLS PROGRAM – Staff, students & parents learn communication skills, dispute resolution skills & a sense of teamwork.
- A BLENDED LEARNING APPROACH – Allows teachers to mentor & coach each student to master a technology-rich and rigorous basic curriculum:

*Science & Technology; Math & Personal Finance;
Language (Speaking & Listening, Reading & Writing);
Social Studies (Econ, Govt, Geography, World Studies, Ethics);
Music & Art; Health & P.E.*

- EXPERIENTIAL LEARNING -- Small group projects encourage students to collaborate and explore real world applications and life skills.
- CAREER EXPLORATION UNITS – Students are guided to plan a career path and start specialized courses in high school, including earning college credit through dual enrollment opportunities.

Contacts: Wendy Whitehurst (252.375.5200) & Allen Paul (919.810.6392)

ibia2018@gmail.com

<https://www.facebook.com/InnerBanksAcademy/>

This school will not discriminate on the basis of race, creed, color, national origin, gender or disability.

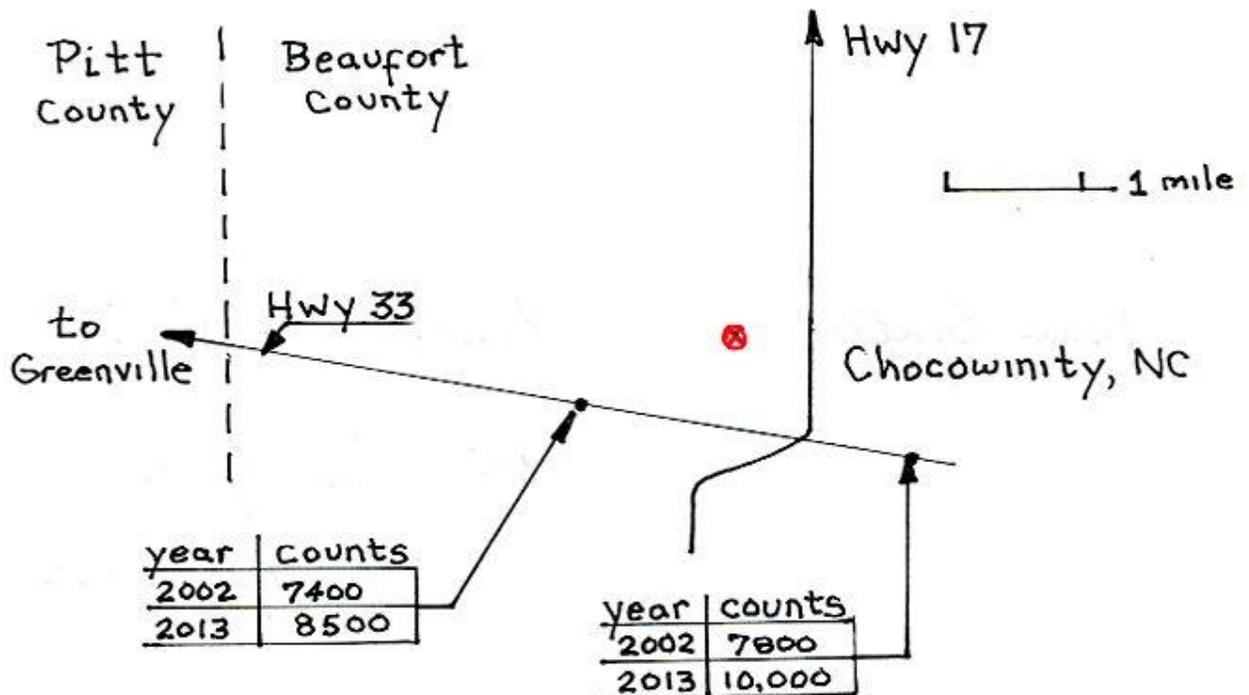
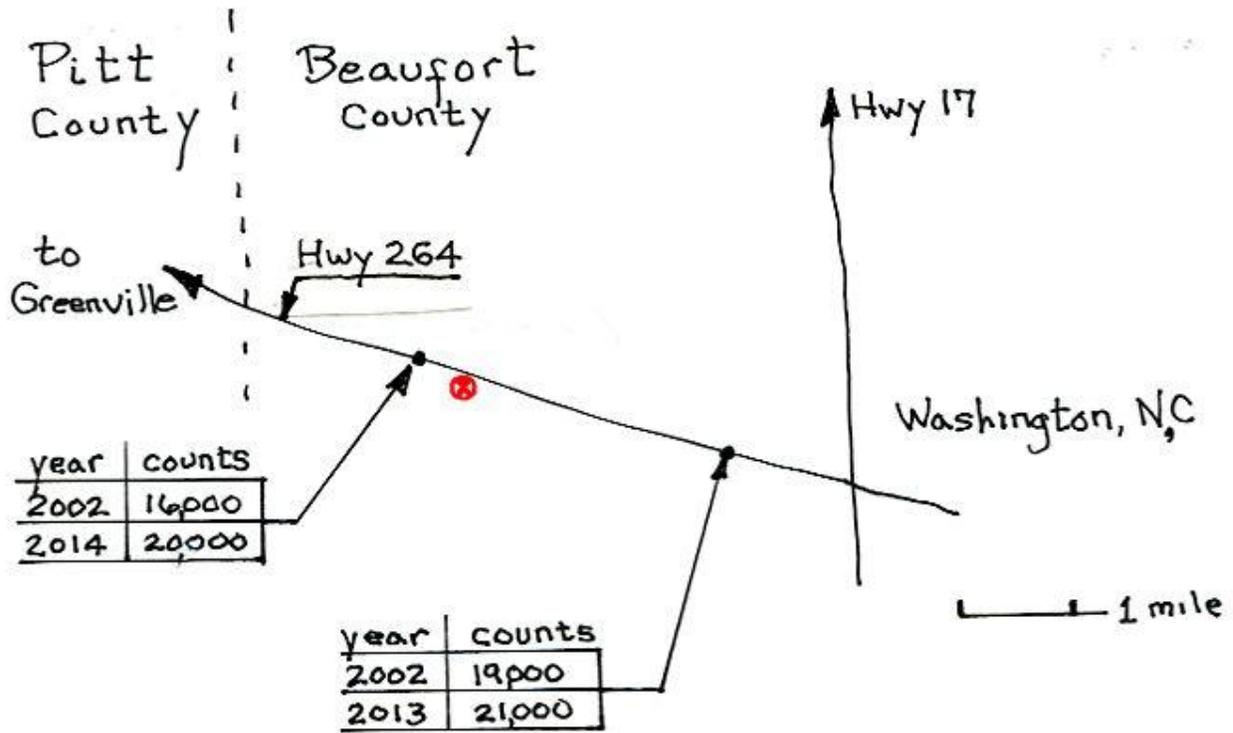
A1.3 2015-16 School Data for Western Beaufort County and Surrounding Area



<i>County Name</i>	<i>School</i>	<i>Grades</i>	<i>2015-16 Enrollment</i>	<i>Grade</i>	<i>Grade Level %</i>	<i>Growth Status</i>	<i>% Econ Disadv</i>
Beaufort	B C Ed Tech Center	6-12	75	I	<5%	NA	100
Beaufort	Beaufort Co Early College High	9-13	228	A	91	Exceeded	44
Beaufort	Chocowinity Middle	5-8	406	D	52	Not met	69
Beaufort	Chocowinity Primary	PK-4	507	B	76	Met	85
Beaufort	John Small Elementary	4-5	564	C	58	Met	85
Beaufort	P S Jones Middle	6-8	809	C	47	Exceeded	78
Beaufort	S W Snowden Elementary	K-8	164	D	38	Met	99
Beaufort	Southside High	9-12	451	D	33	Not met	64
Beaufort	Washington High	9-12	978	D	35	Not met	63
Pitt	Chicod Elementary	K-8	905	B	71	Exceeded	34
Pitt	D H Conley High	9-12	1613	B	63	Met	31
Pitt	G R Whitfield	K-8	493	C	55	Met	57
Pitt	Hope Middle	6-8	717	B	77	Exceeded	30
Pitt	Pactolus Elementary	PK-8	571	D	43	Exceeded	100
Pitt	Stokes Elementary	PK-8	251	C	57	Exceeded	64

Source: NCDPI

A1.4 Traffic count data for possible school sites



INNER BANKS INNOVATION ACADEMY

APPENDIX B

MATH CURRICULUM OUTLINE FOR GRADES 4-12

Fourth Grade – Standards

- 1. Developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends** – Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.
- 2. Developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, multiplication of fractions by whole numbers** – Students develop understanding of fraction equivalence

and operations with fractions. They recognize that two different fractions can be equal (e.g., $15/9 = 5/3$), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

- 3. Understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry** – Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

MATHEMATICAL PRACTICES

- 1. Make sense of problems and persevere in solving them.**
- 2. Reason abstractly and quantitatively.**
- 3. Construct viable arguments and critique the reasoning of others.**
- 4. Model with mathematics.**
- 5. Use appropriate tools strategically.**
- 6. Attend to precision.**
- 7. Look for and make use of structure.**
- 8. Look for and express regularity in repeated reasoning.**

OPERATIONS AND ALGEBRAIC THINKING

Use the four operations with whole numbers to solve problems.

- 4.OA.1** Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
- 4.OA.2** Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. (Note: See Glossary, Table 2.)
- 4.OA.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Gain familiarity with factors and multiples.

- 4.OA.4** Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Generate and analyze patterns.

- 4.OA.5** Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

NUMBER AND OPERATIONS IN BASE TEN

Note: Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.

Generalize place value understanding for multi-digit whole numbers.

- 4.NBT.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.*

- 4.NBT.2** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

- 4.NBT.3** Use place value understanding to round multi-digit whole numbers to any place.

Use place value understanding and properties of operations to perform multi-digit arithmetic.

- 4.NBT.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm.
- 4.NBT.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 4.NBT.6** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

NUMBER AND OPERATIONS – FRACTIONS

Note: Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, & 100.

Extend understanding of fraction equivalence and ordering.

- 4.NF.1** Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
- 4.NF.2** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

- 4.NF.3** Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
- Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
 - Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples:* $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.
 - Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
 - Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
- 4.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
- Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.*
 - Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)*
 - Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

Understand decimal notation for fractions, and compare decimal fractions.

- 4.NF.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (*Note:* Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) *For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.*
- 4.NF.6** Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*
- 4.NF.7** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.

MEASUREMENT AND DATA

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

- 4.MD.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

- 4.MD.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

- 4.MD.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Represent and interpret data.

- 4.MD.4** Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometric measurement: understand concepts of angle and measure angles.

- 4.MD.5** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
- An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $1/360$ of a circle is called a “one-degree angle,” and can be used to measure angles.
 - An angle that turns through n one-degree angles is said to have an angle measure of n degrees.
- 4.MD.6** Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
- 4.MD.7** Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

GEOMETRY

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

- 4.G.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
- 4.G.2** Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
- 4.G.3** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Fifth Grade – Standards

- 1. Developing fluency with addition and subtraction of fractions, developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions)** – Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)
- 2. Extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operation** – Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as

the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

- 3. Developing understanding of volume** – Students recognize volume as an attribute of three-dimensional space. They understand that volume can be quantified by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to solve real world and mathematical problems.

MATHEMATICAL PRACTICES

- 1. Make sense of problems and persevere in solving them.**
- 2. Reason abstractly and quantitatively.**
- 3. Construct viable arguments and critique the reasoning of others.**
- 4. Model with mathematics.**
- 5. Use appropriate tools strategically.**
- 6. Attend to precision.**
- 7. Look for and make use of structure.**
- 8. Look for and express regularity in repeated reasoning.**

OPERATIONS AND ALGEBRAIC THINKING

Write and interpret numerical expressions.

- 5.OA.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.OA.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*

Analyze patterns and relationships.

- 5.OA.3** Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

NUMBER AND OPERATIONS IN BASE TEN

Understand the place value system.

- 5.NBT.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- 5.NBT.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- 5.NBT.3:** Read, write, and compare decimals to thousandths.
 - Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
 - Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

- 5.NBT.4** Use place value understanding to round decimals to any place.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 5.NBT.5** Fluently multiply multi-digit whole numbers using the standard algorithm.
- 5.NBT.6** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 5.NBT.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

NUMBER AND OPERATIONS – FRACTIONS

Use equivalent fractions as a strategy to add and subtract fractions.

- 5.NF.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)*
- 5.NF.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result $2/5 + 1/2 = 3/7$, by observing that $3/7 < 1/2$.*

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.3** Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when*

3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?

- 5.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)
 - Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.NF.5: Interpret multiplication as scaling (resizing), by:

- Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Note: Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.)

- Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.
- Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.
- Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?

MEASUREMENT AND DATA

Convert like measurement units within a given measurement system.

5.MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Represent and interpret data.

5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

- A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
- A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

- Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
- Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
- Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

GEOMETRY

Graph points on the coordinate plane to solve real-world and mathematical problems.

5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Classify two-dimensional figures into categories based on their properties.

5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

5.G.4 Classify two-dimensional figures in a hierarchy based on properties.

Sixth Grade – Standards

- 1. Connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems** – Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.
- 2. Completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers** – Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.
- 3. Writing, interpreting, and using expressions and equations** – Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables

that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between quantities.

- 4. Developing understanding of statistical thinking** – Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.

MATHEMATICAL PRACTICES

- 1. Make sense of problems and persevere in solving them.**
- 2. Reason abstractly and quantitatively.**
- 3. Construct viable arguments and critique the reasoning of others.**
- 4. Model with mathematics.**
- 5. Use appropriate tools strategically.**
- 6. Attend to precision.**
- 7. Look for and make use of structure.**
- 8. Look for and express regularity in repeated reasoning.**

RATIOS AND PROPORTIONAL RELATIONSHIPS

Understand ratio concepts and use ratio reasoning to solve problems.

- 6.RP.1** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*
- 6.RP.2** Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger." (Note: Expectations for unit rates in this grade are limited to non-complex fractions.)*
- 6.RP.3** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
 - Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
 - Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
 - Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
 - Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

THE NUMBER SYSTEM

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

- 6.NS.1** Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show*

the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?

Compute fluently with multi-digit numbers and find common factors and multiples.

- 6.NS.2** Fluently divide multi-digit numbers using the standard algorithm.
- 6.NS.3** Fluently add, subtract, multiply, & divide multi-digit decimals using the standard algorithm for each operation.
- 6.NS.4** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express $36 + 8$ as $4(9 + 2)$.*

Apply and extend previous understandings of numbers to the system of rational numbers.

- 6.NS.5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- 6.NS.6** Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
 - Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, & that 0 is its own opposite.
 - Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that

- when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
- c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- 6.NS.7** Understand ordering and absolute value of rational numbers.
- Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.
 - Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write $-3^\circ C > -7^\circ C$ to express the fact that $-3^\circ C$ is warmer than $-7^\circ C$.
 - Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of -30 dollars, write $|-30| = 30$ to describe the size of the debt in dollars.
 - Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.
- 6.NS.8** Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

EXPRESSIONS AND EQUATIONS

Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.1** Write and evaluate numerical expressions involving whole-number exponents.
- 6.EE.2** Write, read, and evaluate expressions in which letters stand for numbers.
- Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as $5 - y$.
 - Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.
 - Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = \frac{1}{2}$.
- 6.EE.3** Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.
- 6.EE.4** Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.

Reason about and solve one-variable equations and inequalities.

- 6.EE.5** Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- 6.EE.6** Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

- 6.EE.7** Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.
- 6.EE.8** Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Represent and analyze quantitative relationships between dependent and independent variables.

- 6.EE.9** Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

GEOMETRY

Solve real-world and mathematical problems involving area, surface area, and volume.

- 6.G.1** Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- 6.G.2** Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- 6.G.3** Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
- 6.G.4** Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

STATISTICS AND PROBABILITY

Develop understanding of statistical variability.

- 6.SP.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.
- 6.SP.2** Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
- 6.SP.3** Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

Summarize and describe distributions.

- 6.SP.4** Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 6.SP.5** Summarize numerical data sets in relation to their context, such as by:
- Reporting the number of observations.
 - Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
 - Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
 - Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Seventh Grade – Standards

1. Developing understanding of and applying proportional relationships –

Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

2. Developing understanding of operations with rational numbers and working with expressions and linear equations – Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

3. Solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes

to solve problems involving area, surface area, and volume – Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.

4. Drawing inferences about populations based on samples – Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

MATHEMATICAL PRACTICES

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

RATIOS AND PROPORTIONAL RELATIONSHIPS

Analyze proportional relationships and use them to solve real-world and mathematical problems.

- 7.RP.1** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks $1/2$ mile in each $1/4$ hour, compute the unit rate as the complex fraction $(1/2)/(1/4)$ miles per hour, equivalently 2 miles per hour.*
- 7.RP.2** Recognize and represent proportional relationships between quantities.
- a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
 - b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
 - c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$.*
 - d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.
- 7.RP.3** Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

THE NUMBER SYSTEM

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

- 7.NS.1** Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
- a. Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*

- b. Understand $p + q$ as the number located a distance $|q|$ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
 - c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
 - d. Apply properties of operations as strategies to add and subtract rational numbers.
- 7.NS.2** Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
- a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
 - b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-p/q = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
 - c. Apply properties of operations as strategies to multiply and divide rational numbers.
 - d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
- 7.NS.3** Solve real-world and mathematical problems involving the four operations with rational numbers. (NOTE: Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)

EXPRESSIONS AND EQUATIONS

Use properties of operations to generate equivalent expressions.

- 7.EE.1** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

7.EE.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”*

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*

7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

- Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*
- Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.*

GEOMETRY

Draw, construct, and describe geometrical figures and describe the relationships between them.

- 7.G.1** Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
- 7.G.2** Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
- 7.G.3** Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

- 7.G.4** Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
- 7.G.5** Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
- 7.G.6** Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

STATISTICS AND PROBABILITY

Use random sampling to draw inferences about a population.

7.SP.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

7.SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*

Draw informal comparative inferences about two populations.

7.SP.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*

7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*

Investigate chance processes and develop, use, and evaluate probability models.

7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*

7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

- Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*
- Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*

7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

- Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
- Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.
- Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

Eighth Grade – Standards

- 1. Formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations** – Students use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize equations for proportions ($y/x = m$ or $y = mx$) as special linear equations ($y = mx + b$), understanding that the constant of proportionality (m) is the slope, and the graphs are lines through the origin. They understand that the slope (m) of a line is a constant rate of change, so that if the input or x -coordinate changes by an amount A , the output or y -coordinate changes by the amount $m \cdot A$. Students also use a linear equation to describe the association between two quantities in bivariate data (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and y -intercept) in terms of the situation. Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.
- 2. Grasping the concept of a function and using functions to describe quantitative relationships** – Students grasp the concept of a function as a rule that assigns to each input exactly one output. They understand that functions describe situations where one quantity determines another.

They can translate among representations and partial representations of functions (noting that tabular and graphical representations may be partial representations), and they describe how aspects of the function are reflected in the different representations.

- 3. Analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem** – Students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems. Students show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem holds, for example, by decomposing a square in two different ways. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons. Students complete their work on volume by solving problems involving cones, cylinders, and spheres.

MATHEMATICAL PRACTICES

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

THE NUMBER SYSTEM

Know that there are numbers that are not rational, and approximate them by rational numbers.

- 8.NS.1** Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.
- 8.NS.2** Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

EXPRESSIONS AND EQUATIONS

Work with radicals and integer exponents.

- 8.EE.1** Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.*
- 8.EE.2** Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
- 8.EE.3** Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9 , and determine that the world population is more than 20 times larger.*
- 8.EE.4** Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Understand the connections between proportional relationships, lines, and linear equations.

- 8.EE.5** Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*
- 8.EE.6** Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

Analyze and solve linear equations and pairs of simultaneous linear equations.

- 8.EE.7** Solve linear equations in one variable.
- a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
 - b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
- 8.EE.8** Analyze and solve pairs of simultaneous linear equations.
- a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
 - b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.*
 - c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

FUNCTIONS

Define, evaluate, and compare functions.

- 8.F.1** Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Note: Function notation is not required in Grade 8.)
- 8.F.2** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*
- 8.F.3** Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*

Use functions to model relationships between quantities.

- 8.F.4** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
- 8.F.5** Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

GEOMETRY

Understand congruence and similarity using physical models, transparencies, or geometry software.

- 8.G.1** Verify experimentally the properties of rotations, reflections, and translations:
- Lines are taken to lines, and line segments to line segments of the same length.
 - Angles are taken to angles of the same measure.
 - Parallel lines are taken to parallel lines.
- 8.G.2** Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
- 8.G.3** Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
- 8.G.4** Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
- 8.G.5** Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*

Understand and apply the Pythagorean Theorem.

- 8.G.6** Explain a proof of the Pythagorean Theorem and its converse.
- 8.G.7** Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
- 8.G.8** Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

- 8.G.9** Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

STATISTICS AND PROBABILITY

Investigate patterns of association in bivariate data.

- 8.SP.1** Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
- 8.SP.2** Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
- 8.SP.3** Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
- 8.SP.4** Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

North Carolina Math 1

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Number and Quantity

The Real Number System

Extend the properties of exponents to rational exponents.

NC.M1.N-RN.2 Rewrite algebraic expressions with integer exponents using the properties of exponents.

Algebra

Seeing Structure in Expressions

Interpret the structure of expressions.

NC.M1.A-SSE.1 Interpret expressions that represent a quantity in terms of its context.

- NC.M1.A-SSE.1a a. Identify and interpret parts of a linear, exponential, or quadratic expression, including terms, factors, coefficients, and exponents.
- NC.M1.A-SSE.1b b. Interpret a linear, exponential, or quadratic expression made of multiple parts as a combination of entities to give meaning to an expression.

Seeing Structure in Expressions

Write expressions in equivalent forms to solve problems.

NC.M1.A-SSE.3 Write an equivalent form of a quadratic expression $-ax^2 + bx + c$, where a is an integer, by factoring to reveal the solutions of the equation or the zeros of the function the expression defines.

North Carolina Math 1

Arithmetic with Polynomial Expressions

Perform arithmetic operations on polynomials.

NC.M1.A-APR.1 Build an understanding that operations with polynomials are comparable to operations with integers by adding and subtracting quadratic expressions and by adding, subtracting, and multiplying linear expressions.

Arithmetic with Polynomial Expressions

Understand the relationship between zeros and factors of polynomials.

NC.M1.A-APR.3 Understand the relationships among the factors of a quadratic expression, the solutions of a quadratic equation, and the zeros of a quadratic function.

Creating Equations

Create equations that describe numbers or relationships.

NC.M1.A-CED.1 Create equations and inequalities in one variable that represent linear, exponential, and quadratic relationships and use them to solve problems.

NC.M1.A-CED.2 Create and graph equations in two variables to represent linear, exponential, and quadratic relationships between quantities.

NC.M1.A-CED.3 Create systems of linear equations and inequalities to model situations in context.

NC.M1.A-CED.4 Solve for a quantity of interest in formulas used in science and mathematics using the same reasoning as in solving equations.

Reasoning with Equations and Inequalities

Understand solving equations as a process of reasoning and explain the reasoning.

NC.M1.A-REI.1 Justify a chosen solution method and each step of the solving process for linear and quadratic equations using mathematical reasoning.

North Carolina Math 1

Reasoning with Equations and Inequalities

Solve equations and inequalities in one variable.

NC.M1.A-REI.3 Solve linear equations and inequalities in one variable.

NC.M1.A-REI.4 Solve for the real solutions of quadratic equations in one variable by taking square roots and factoring.

Reasoning with Equations and Inequalities

Solve systems of equations.

NC.M1.A-REI.5 Explain why replacing one equation in a system of linear equations by the sum of that equation and a multiple of the other produces a system with the same solutions.

NC.M1.A-REI.6 Use tables, graphs, or algebraic methods (substitution and elimination) to find approximate or exact solutions to systems of linear equations and interpret solutions in terms of a context.

Reasoning with Equations and Inequalities

Represent and solve equations and inequalities graphically

NC.M1.A-REI.10 Understand that the graph of a two variable equation represents the set of all solutions to the equation.

NC.M1.A-REI.11 Build an understanding of why the x -coordinates of the points where the graphs of two linear, exponential, and/or quadratic equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ and approximate solutions using graphing technology or successive approximations with a table of values.

NC.M1.A-REI.12 Represent the solutions of a linear inequality or a system of linear inequalities graphically as a region of the plane.

North Carolina Math 1

Functions

Interpreting Functions

Understand the concept of a function and use function notation.

- NC.M1.F-IF.1 Build an understanding that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range by recognizing that:
- if f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x .
 - the graph of f is the graph of the equation $y = f(x)$.
- NC.M1.F-IF.2 Use function notation to evaluate linear, quadratic, and exponential functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
- NC.M1.F-IF.3 Recognize that recursively and explicitly defined sequences are functions whose domain is a subset of the integers, the terms of an arithmetic sequence are a subset of the range of a linear function, and the terms of a geometric sequence are a subset of the range of an exponential function.

Interpreting Functions

Interpret functions that arise in applications in terms of the context.

- NC.M1.F-IF.4 Interpret key features of graphs, tables, and verbal descriptions in context to describe functions that arise in applications relating two quantities, including: intercepts; intervals where the function is increasing, decreasing, positive, or negative; and maximums and minimums.
- NC.M1.F-IF.5 Interpret a function in terms of the context by relating its domain and range to its graph and, where applicable, to the quantitative relationship it describes.
- NC.M1.F-IF.6 Calculate and interpret the average rate of change over a specified interval for a function presented numerically, graphically, and/or symbolically.

North Carolina Math 1

Interpreting Functions

Analyze functions using different representations.

- NC.M1.F-IF.7 Analyze linear, exponential, and quadratic functions by generating different representations, by hand in simple cases and using technology for more complicated cases, to show key features, including: domain and range; rate of change; intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; and end behavior.
- NC.M1.F-IF.8 Use equivalent expressions to reveal and explain different properties of a function.
- NC.M1.F-IF.8a a. Rewrite a quadratic function to reveal and explain different key features of the function
NC.M1.F-IF.8b b. Interpret and explain growth and decay rates for an exponential function.
- NC.M1.F-IF.9 Compare key features of two functions (linear, quadratic, or exponential) each with a different representation (symbolically, graphically, numerically in tables, or by verbal descriptions).

Building Functions

Build a function that models a relationship between two quantities.

- NC.M1.F-BF.1 Write a function that describes a relationship between two quantities.
- NC.M1.F-BF.1a a. Build linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two ordered pairs (include reading these from a table).
- NC.M1.F-BF.1b b. Build a function that models a relationship between two quantities by combining linear, exponential, or quadratic functions with addition and subtraction or two linear functions with multiplication.
- NC.M1.F-BF.2 Translate between explicit and recursive forms of arithmetic and geometric sequences and use both to model situations.

Linear, Quadratic, and Exponential Models

Construct and compare linear and exponential models and solve problems.

- NC.M1.F-LE.1 Identify situations that can be modeled with linear and exponential functions, and justify the most appropriate model for a situation based on the rate of change over equal intervals.
- NC.M1.F-LE.3 Compare the end behavior of linear, exponential, and quadratic functions using graphs and tables to show that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.

North Carolina Math 1

Linear, Quadratic, and Exponential Models

Interpret expressions for functions in terms of the situation they model.

NC.M1.F-LE.5 Interpret the parameters a and b in a linear function $f(x) = ax + b$ or an exponential function $g(x) = ab^x$ in terms of a context.

Geometry

Expressing Geometric Properties with Equations

Use coordinates to prove simple geometric theorems algebraically.

- NC.M1.G-GPE.4 Use coordinates to solve geometric problems involving polygons algebraically
- Use coordinates to compute perimeters of polygons and areas of triangles and rectangles.
 - Use coordinates to verify algebraically that a given set of points produces a particular type of triangle or quadrilateral.
- NC.M1.G-GPE.5 Use coordinates to prove the slope criteria for parallel and perpendicular lines and use them to solve problems.
- Determine if two lines are parallel, perpendicular, or neither.
 - Find the equation of a line parallel or perpendicular to a given line that passes through a given point.
- NC.M1.G-GPE.6 Use coordinates to find the midpoint or endpoint of a line segment.

Statistics and Probability

Interpreting Categorical and Quantitative Data

Summarize, represent, and interpret data on a single count or measurement variable.

- NC.M1.S-ID.1 Use technology to represent data with plots on the real number line (histograms, and box plots).
- NC.M1.S-ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Interpret differences in shape, center, and spread in the context of the data sets.
- NC.M1.S-ID.3 Examine the effects of extreme data points (outliers) on shape, center, and/or spread.

North Carolina Math 1

Interpreting Categorical and Quantitative Data

Summarize, represent, and interpret data on two categorical and quantitative variables.

- NC.M1.S-ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
- NC.M1.S-ID.6a a. Fit a least squares regression line to linear data using technology. Use the fitted function to solve problems.
- NC.M1.S-ID.6b b. Assess the fit of a linear function by analyzing residuals.
- NC.M1.S-ID.6c c. Fit a function to exponential data using technology. Use the fitted function to solve problems.

Interpreting Categorical and Quantitative Data

Interpret linear models.

- NC.M1.S-ID.7 Interpret in context the rate of change and the intercept of a linear model. Use the linear model to interpolate and extrapolate predicted values. Assess the validity of a predicted value.
- NC.M1.S-ID.8 Analyze patterns and describe relationships between two variables in context. Using technology, determine the correlation coefficient of bivariate data and interpret it as a measure of the strength and direction of a linear relationship. Use a scatter plot, correlation coefficient, and a residual plot to determine the appropriateness of using a linear function to model a relationship between two variables.
- NC.M1.S-ID.9 Distinguish between association and causation.

North Carolina Math 2

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Number and Quantity

The Real Number System

Extend the properties of exponents to rational exponents.

- NC.M2.N-RN.1 Explain how expressions with rational exponents can be rewritten as radical expressions.
- NC.M2.N-RN.2 Rewrite expressions with radicals and rational exponents into equivalent expressions using the properties of exponents.

The Real Number System

Use properties of rational and irrational numbers.

- NC.M2.N-RN.3 Use the properties of rational and irrational numbers to explain why:
- the sum or product of two rational numbers is rational;
 - the sum of a rational number and an irrational number is irrational;
 - the product of a nonzero rational number and an irrational number is irrational.

The Complex Number System

Defining complex numbers.

- NC.M2.N-CN.1 Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ where a and b are real numbers.

North Carolina Math 2

Algebra

Seeing Structure in Expressions

Interpret the structure of expressions.

- NC.M2.A-SSE.1 Interpret expressions that represent a quantity in terms of its context.
- NC.M2.A-SSE.1a a. Identify and interpret parts of a quadratic, square root, inverse variation, or right triangle trigonometric expression, including terms, factors, coefficients, radicands, and exponents.
NC.M2.A-SSE.1b b. Interpret quadratic and square root expressions made of multiple parts as a combination of single entities to give meaning in terms of a context.
- NC.M2.A-SSE.3 Write an equivalent form of a quadratic expression by completing the square, where a is an integer of a quadratic expression, $ax^2 + bx + c$, to reveal the maximum or minimum value of the function the expression defines.

Arithmetic with Polynomial and Rational Expressions

Perform arithmetic operations on polynomials

- NC.M2.A-APR.1 Extend the understanding that operations with polynomials are comparable to operations with integers by adding, subtracting, and multiplying polynomials.

Creating Equations

Create equations that describe numbers or relationships.

- NC.M2.A-CED.1 Create equations and inequalities in one variable that represent quadratic, square root, inverse variation, and right triangle trigonometric relationships and use them to solve problems.
- NC.M2.A-CED.2 Create and graph equations in two variables to represent quadratic, square root and inverse variation relationships between quantities.
- NC.M2.A-CED.3 Create systems of linear, quadratic, square root, and inverse variation equations to model situations in context.

North Carolina Math 2

Reasoning with Equations and Inequalities

Understand solving equations as a process of reasoning and explain the reasoning.

- NC.M2.A-REI.1 Justify a chosen solution method and each step of the solving process for quadratic, square root and inverse variation equations using mathematical reasoning.
- NC.M2.A-REI.2 Solve and interpret one variable inverse variation and square root equations arising from a context, and explain how extraneous solutions may be produced.

Reasoning with Equations and Inequalities

Solve equations and inequalities in one variable.

- NC.M2.A-REI.4 Solve for all solutions of quadratic equations in one variable.
- NC.M2.A-REI.4a a. Understand that the quadratic formula is the generalization of solving $ax^2 + bx + c$ by using the process of completing the square.
- NC.M2.A-REI.4b b. Explain when quadratic equations will have non-real solutions and express complex solutions as $a \pm bi$ for real numbers a and b .

Reasoning with Equations and Inequalities

Solve systems of equations.

- NC.M2.A-REI.7 Use tables, graphs, and algebraic methods to approximate or find exact solutions of systems of linear and quadratic equations, and interpret the solutions in terms of a context.

Reasoning with Equations and Inequalities

Represent and solve equations and inequalities graphically.

- NC.M2.A-REI.11 Extend the understanding that the x -coordinates of the points where the graphs of two square root and/or inverse variation equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ and approximate solutions using graphing technology or successive approximations with a table of values.

North Carolina Math 2

Functions

Interpreting Functions

Understand the concept of a function and use function notation.

NC.M2.F-IF.1 Extend the concept of a function to include geometric transformations in the plane by recognizing that:

- the domain and range of a transformation function f are sets of points in the plane;
- the image of a transformation is a function of its pre-image.

NC.M2.F-IF.2 Extend the use of function notation to express the image of a geometric figure in the plane resulting from a translation, rotation by multiples of 90 degrees about the origin, reflection across an axis, or dilation as a function of its pre-image.

Interpreting Functions

Interpret functions that arise in applications in terms of the context.

NC.M2.F-IF.4 Interpret key features of graphs, tables, and verbal descriptions in context to describe functions that arise in applications relating two quantities, including: domain and range, rate of change, symmetries, and end behavior.

Interpreting Functions

Analyze functions using different representations.

NC.M2.F-IF.7 Analyze quadratic, square root, and inverse variation functions by generating different representations, by hand in simple cases and using technology for more complicated cases, to show key features, including: domain and range; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; maximums and minimums; symmetries; and end behavior.

NC.M2.F-IF.8 Use equivalent expressions to reveal and explain different properties of a function by developing and using the process of completing the square to identify the zeros, extreme values, and symmetry in graphs and tables representing quadratic functions, and interpret these in terms of a context.

NC.M2.F-IF.9 Compare key features of two functions (linear, quadratic, square root, or inverse variation functions) each with a different representation (symbolically, graphically, numerically in tables, or by verbal descriptions).

North Carolina Math 2

Building Functions

Build a function that models a relationship between two quantities.

NC.M2.F-BF.1 Write a function that describes a relationship between two quantities by building quadratic functions with real solution(s) and inverse variation functions given a graph, a description of a relationship, or ordered pairs (include reading these from a table).

Building Functions

Build new functions from existing functions.

NC.M2.F-BF.3 Understand the effects of the graphical and tabular representations of a linear, quadratic, square root, and inverse variation function f with $k \cdot f(x)$, $f(x) + k$, $f(x + k)$ for specific values of k (both positive and negative).

Geometry

Congruence

Experiment with transformations in the plane.

NC.M2.G-CO.2 Experiment with transformations in the plane.

- Represent transformations in the plane.
- Compare rigid motions that preserve distance and angle measure (translations, reflections, rotations) to transformations that do not preserve both distance and angle measure (e.g. stretches, dilations).
- Understand that rigid motions produce congruent figures while dilations produce similar figures.

NC.M2.G-CO.3 Given a triangle, quadrilateral, or regular polygon, describe any reflection or rotation symmetry i.e., actions that carry the figure onto itself. Identify center and angle(s) of rotation symmetry. Identify line(s) of reflection symmetry.

NC.M2.G-CO.4 Verify experimentally properties of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

NC.M2.G-CO.5 Given a geometric figure and a rigid motion, find the image of the figure. Given a geometric figure and its image, specify a rigid motion or sequence of rigid motions that will transform the pre-image to its image.

North Carolina Math 2

Congruence

Understand congruence in terms of rigid motions.

- NC.M2.G-CO.6 Determine whether two figures are congruent by specifying a rigid motion or sequence of rigid motions that will transform one figure onto the other.
- NC.M2.G-CO.7 Use the properties of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
- NC.M2.G-CO.8 Use congruence in terms of rigid motion.
Justify the ASA, SAS, and SSS criteria for triangle congruence. Use criteria for triangle congruence (ASA, SAS, SSS, HL) to determine whether two triangles are congruent.

Congruence

Prove geometric theorems.

- NC.M2.G-CO.9 Prove theorems about lines and angles and use them to prove relationships in geometric figures including:
- Vertical angles are congruent.
 - When a transversal crosses parallel lines, alternate interior angles are congruent.
 - When a transversal crosses parallel lines, corresponding angles are congruent.
 - Points are on a perpendicular bisector of a line segment if and only if they are equidistant from the endpoints of the segment.
 - Use congruent triangles to justify why the bisector of an angle is equidistant from the sides of the angle.
- NC.M2.G-CO.10 Prove theorems about triangles and use them to prove relationships in geometric figures including:
- The sum of the measures of the interior angles of a triangle is 180° .
 - An exterior angle of a triangle is equal to the sum of its remote interior angles.
 - The base angles of an isosceles triangle are congruent.
 - The segment joining the midpoints of two sides of a triangle is parallel to the third side and half the length.

North Carolina Math 2

Similarity, Right Triangles, and Trigonometry

Understand similarity in terms of similarity transformations.

- NC.M2.G-SRT.1 Verify experimentally the properties of dilations with given center and scale factor:
- NC.M2.G-SRT.1a a. When a line segment passes through the center of dilation, the line segment and its image lie on the same line. When a line segment does not pass through the center of dilation, the line segment and its image are parallel.
- NC.M2.G-SRT.1b b. The length of the image of a line segment is equal to the length of the line segment multiplied by the scale factor.
- NC.M2.G-SRT.1c c. The distance between the center of a dilation and any point on the image is equal to the scale factor multiplied by the distance between the dilation center and the corresponding point on the pre-image.
- NC.M2.G-SRT.1d d. Dilations preserve angle measure.
- NC.M2.G-SRT.2 Understand similarity in terms of transformations.
- a. Determine whether two figures are similar by specifying a sequence of transformations that will transform one figure into the other.
- b. Use the properties of dilations to show that two triangles are similar when all corresponding pairs of sides are proportional and all corresponding pairs of angles are congruent.
- NC.M2.G-SRT.3 Use transformations (rigid motions and dilations) to justify the AA criterion for triangle similarity.

Similarity, Right Triangles, and Trigonometry

Prove theorems involving similarity.

- NC.M2.G-SRT.4 Use similarity to solve problems and to prove theorems about triangles. Use theorems about triangles to prove relationships in geometric figures.
- A line parallel to one side of a triangle divides the other two sides proportionally and its converse.
 - The Pythagorean Theorem

Similarity, Right Triangles, and Trigonometry

Define trigonometric ratios and solve problems involving right triangles.

- NC.M2.G-SRT.6 Verify experimentally that the side ratios in similar right triangles are properties of the angle measures in the triangle, due to the preservation of angle measure in similarity. Use this discovery to develop definitions of the trigonometric ratios for acute angles.
- NC.M2.G-SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve problems involving right triangles in terms of a context.

North Carolina Math 2

NC.M2.G-SRT.12 Develop properties of special right triangles (45-45-90 and 30-60-90) and use them to solve problems.

Statistics and Probability

Making Inference and Justifying Conclusions

Understand and evaluate random processes underlying statistical experiments.

NC.M2.S-IC.2 Use simulation to determine whether the experimental probability generated by sample data is consistent with the theoretical probability based on known information about the population.

Conditional Probability and the Rules for Probability

Understand independence and conditional probability and use them to interpret data.

NC.M2.S-CP.1 Describe events as subsets of the outcomes in a sample space using characteristics of the outcomes or as unions, intersections and complements of other events.

NC.M2.S-CP.3 Develop and understand independence and conditional probability.

NC.M2.S-CP.3a a. Use a 2-way table to develop understanding of the conditional probability of A given B (written $P(A|B)$) as the likelihood that A will occur given that B has occurred. That is, $P(A|B)$ is the fraction of event B's outcomes that also belong to event A.

NC.M2.S-CP.3b b. Understand that event A is independent from event B if the probability of event A does not change in response to the occurrence of event B. That is $P(A|B)=P(A)$.

NC.M2.S-CP.4 Represent data on two categorical variables by constructing a two-way frequency table of data. Interpret the two-way table as a sample space to calculate conditional, joint and marginal probabilities. Use the table to decide if events are independent.

NC.M2.S-CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.

Conditional Probability and the Rules for Probability

Use the rules of probability to compute probabilities of compound events in a uniform probability model.

NC.M2.S-CP.6 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in context.

NC.M2.S-CP.7

Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in context.

NC.M2.S-CP.8

Apply the general Multiplication Rule $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$, and interpret the answer in context. Include the case where A and B are independent: $P(A \text{ and } B) = P(A) P(B)$.

NC Math 3 Draft Standards

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Number and Quantity

The Complex Number System

Use complex numbers in polynomial identities and equations.

NC.M3.N-CN.9 Use the Fundamental Theorem of Algebra to determine the number and potential types of solutions for polynomial functions.

Algebra

Seeing Structure in Expressions

Interpret the structure of expressions.

NC.M3.A-SSE.1 Interpret expressions that represent a quantity in terms of its context.

NC.M3.A-SSE.1a a. Identify and interpret parts of a piecewise, absolute value, polynomial, exponential and rational expressions including terms, factors, coefficients, and exponents.

NC.M3.A-SSE.1b b. Interpret expressions composed of multiple parts by viewing one or more of their parts as a single entity to give meaning in terms of a context.

NC.M3.A-SSE.2 Use the structure of an expression to identify ways to write equivalent expressions.

NC Math 3 Draft Standards

Seeing Structure in Expressions

Write expressions in equivalent forms to solve problems.

NC.M3.A-SSE.3c Write an equivalent form of an exponential expression by using the properties of exponents to transform expressions to reveal rates based on different intervals of the domain.

Arithmetic with Polynomial and Rational Expressions

Understand the relationship between zeros and factors of polynomials.

NC.M3.A-APR.2 Understand and apply the Remainder Theorem.

NC.M3.A-APR.3 Understand the relationship among factors of a polynomial expression, the solutions of a polynomial equation and the zeros of a polynomial function.

Arithmetic with Polynomial and Rational Expressions

Rewrite rational expressions.

NC.M3.A-APR.6 Rewrite simple rational expressions in different forms; write $\frac{a(x)}{b(x)}$ in the form $q(x) + \frac{r(x)}{b(x)}$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$.

NC.M3.A-APR.7 Understand the similarities between arithmetic with rational expressions and arithmetic with rational numbers.

- a. Add and subtract two rational expressions, $a(x)$ and $b(x)$, where the denominators of both $a(x)$ and $b(x)$ are linear expressions.
- b. Multiply and divide two rational expressions.

Creating Equations

Create equations that describe numbers or relationships.

NC.M3.A-CED.1 Create equations and inequalities in one variable that represent absolute value, polynomial, exponential, and rational relationships and use them to solve problems algebraically and graphically.

NC.M3.A-CED.2 Create and graph equations in two variables to represent absolute value, polynomial, exponential and rational relationships between quantities.

NC Math 3 Draft Standards

NC.M3.A-CED.3 Create systems of equations and/or inequalities to model situations in context.

Reasoning with Equations and Inequalities

Understand solving equations as a process of reasoning and explain the reasoning.

NC.M3.A-REI.1 Justify a solution method for equations and explain each step of the solving process using mathematical reasoning.

NC.M3.A-REI.2 Solve and interpret one variable rational equations arising from a context, and explain how extraneous solutions may be produced.

Reasoning with Equations and Inequalities

Represent and solve equations and inequalities graphically.

NC.M3.A-REI.11 Extend an understanding that the x -coordinates of the points where the graphs of two equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ and approximate solutions using a graphing technology or successive approximations with a table of values.

Functions

Interpreting Functions

Understand the concept of a function and use function notation.

NC.M3.F-IF.1 Extend the concept of a function by recognizing that trigonometric ratios are functions of angle measure.

NC.M3.F-IF.2 Use function notation to evaluate piecewise defined functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

Interpreting Functions

Interpret functions that arise in applications in terms of the context.

NC.M3.F-IF.4 Interpret key features of graphs, tables, and verbal descriptions in context to describe functions that arise in applications relating two quantities to include periodicity and discontinuities.

NC Math 3 Draft Standards

Interpreting Functions

Analyze functions using different representations.

- NC.M3.F-IF.7 Analyze piecewise, absolute value, polynomials, exponential, rational, and trigonometric functions (sine and cosine) using different representations to show key features of the graph, by hand in simple cases and using technology for more complicated cases, including: domain and range; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; relative maximums and minimums; symmetries; end behavior; period; and discontinuities.
- NC.M3.F-IF.9 Compare key features of two functions using different representations by comparing properties of two different functions, each with a different representation (symbolically, graphically, numerically in tables, or by verbal descriptions).

Building Functions

Build a function that models a relationship between two quantities.

- NC.M3.F-BF.1 Write a function that describes a relationship between two quantities.
- NC.M3.F-BF.1a a. Build polynomial and exponential functions with real solution(s) given a graph, a description of a relationship, or ordered pairs (include reading these from a table).
- NC.M3.F-BF.1b b. Build a new function, in terms of a context, by combining standard function types using arithmetic operations.

Building Functions

Build new functions from existing functions.

- NC.M3.F-BF.3 Extend an understanding of the effects on the graphical and tabular representations of a function when replacing $f(x)$ with $k \cdot f(x)$, $f(x) + k$, $f(x + k)$ to include $f(k \cdot x)$ for specific values of k (both positive and negative).
- NC.M3.F-BF.4 Find an inverse function.
- NC.M3.F-BF.4a a. Understand the inverse relationship between exponential and logarithmic, quadratic and square root, and linear to linear functions and use this relationship to solve problems using tables, graphs, and equations.
- NC.M3.F-BF.4b b. Determine if an inverse function exists by analyzing tables, graphs, and equations.
- NC.M3.F-BF.4c c. If an inverse function exists for a linear, quadratic and/or exponential function, f , represent the inverse function, f^{-1} , with a table, graph, or equation and use it to solve problems in terms of a context

NC Math 3 Draft Standards

Linear, Quadratic, and Exponential Models

Construct and compare linear and exponential models and solve problems.

NC.M3.F-LE.3 Compare the end behavior of functions using their rates of change over intervals of the same length to show that a quantity increasing exponentially eventually exceeds a quantity increasing as a polynomial function.

NC.M3.F-LE.4 Use logarithms to express the solution to $ab^{ct} = d$ where a , c , and d are numbers and evaluate the logarithm using technology.

Trigonometric Functions

Extend the domain of trigonometric functions using the unit circle.

NC.M3.F-TF.1 Understand radian measure of an angle as:

- The ratio of the length of an arc on a circle subtended by the angle to its radius.
- A dimensionless measure of length defined by the quotient of arc length and radius that is a real number.
- The domain for trigonometric functions.

NC.M3.F-TF.2 Build an understanding of trigonometric functions by using tables, graphs and technology to represent the cosine and sine functions.

- a. Interpret the sine function as the relationship between the radian measure of an angle formed by the horizontal axis and a terminal ray on the unit circle and its y coordinate.
- b. Interpret the cosine function as the relationship between the radian measure of an angle formed by the horizontal axis and a terminal ray on the unit circle and its x coordinate.

Trigonometric Functions

Model periodic phenomena with trigonometric functions.

NC.M3.F-TF.5 Use technology to investigate the parameters, a , b , and h of a sine function, $f(x) = a \cdot \sin(b \cdot x) + h$, to represent periodic phenomena and interpret key features in terms of a context.

NC Math 3 Draft Standards

Geometry

Congruence

Prove geometric theorems.

- NC.M3.G-CO.10 Verify experimentally properties of the centers of triangles (centroid, incenter, and circumcenter).
- NC.M3.G-CO.11 Prove theorems about parallelograms.
- Opposite sides of a parallelogram are congruent.
 - Opposite angles of a parallelogram are congruent.
 - Diagonals of a parallelogram bisect each other.
 - If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.
- NC.M3.G-CO.14 Apply properties, definitions, and theorems of two-dimensional figures to prove geometric theorems and solve problems.

Circles

Understand and apply theorems about circles.

- NC.M3.G-C.2 Understand and apply theorems about circles.
- Understand and apply theorems about relationships with angles and circles, including central, inscribed and circumscribed angles.
 - Understand and apply theorems about relationships with line segments and circles including, radii, diameter, secants, tangents and chords.
- NC.M3.G-C.5 Using similarity, demonstrate that the length of an arc, s , for a given central angle is proportional to the radius, r , of the circle. Define radian measure of the central angle as the ratio of the length of the arc to the radius of the circle, s/r . Find arc lengths and areas of sectors of circles.

Expressing Geometric Properties with Equations

Translate between the geometric description and the equation for a conic section.

- NC.M3.G-GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

NC Math 3 Draft Standards

Geometric Measurement & Dimension

Explain volume formulas and use them to solve problems.

NC.M3.G-GMD.3 Use the volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems.

Geometric Measurement & Dimension

Visualize relationships between two-dimensional and three-dimensional objects.

NC.M3.G-GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

Modeling with Geometry

Apply geometric concepts in modeling situations.

- NC.M3.G-MG.1 Apply geometric concepts in modeling situations
- Use geometric and algebraic concepts to solve problems in modeling situations:
 - Use geometric shapes, their measures, and their properties, to model real-life objects.
 - Use geometric formulas and algebraic functions to model relationships.
 - Apply concepts of density based on area and volume.
 - Apply geometric concepts to solve design and optimization problems.

Statistics and Probability

Making Inference and Justifying Conclusions

Understand and evaluate random processes underlying statistical experiments.

NC.M3.S-IC1 Understand the process of making inferences about a population based on a random sample from that population.

Making Inference and Justifying Conclusions

Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

NC.M3.S-IC.3 Recognize the purposes of and differences between sample surveys, experiments, and observational studies and understand how randomization should be used in each.

NC Math 3 Draft Standards

- NC.M3.S-IC.4 Use simulation to understand how samples can be used to estimate a population mean or proportion and how to determine a margin of error for the estimate.
- NC.M3.S-IC.5 Use simulation to determine whether observed differences between samples from two distinct populations indicate that the two populations are actually different in terms of a parameter of interest.
- NC.M3.S-IC.6 Evaluate articles and websites that report data by identifying the source of the data, the design of the study, and the way the data are graphically displayed.

Discrete Mathematics

Indicators

Discrete Mathematics introduces students to the mathematics of networks, social choice, and decision making. The course extends students' application of matrix arithmetic and probability. Applications and modeling are central to this course of study. Appropriate technology, from manipulatives to calculators and application software, should be used regularly for instruction and assessment.

Prerequisites

- Describe phenomena as functions graphically, algebraically and verbally; identify independent and dependent quantities, domain, and range, input/output, and mapping.
- Translate among graphic, algebraic, numeric, tabular, and verbal representations of relations.
- Define and use linear and exponential functions to model and solve problems.
- Operate with matrices to model and solve problems.
- Define complex numbers and perform basic operations with them.

Strands: Number and Operations, Geometry & Measurement, Data Analysis and Probability, Algebra

COMPETENCY GOAL 1: The learner will use matrices and graphs to model relationships and solve problems.

Objectives

1.01 Use matrices to model and solve problems.

- a) Display and interpret data.
- b) Write and evaluate matrix expressions to solve problems.

1.02 Use graph theory to model relationships and solve problems.

COMPETENCY GOAL 2: The learner will analyze data and apply probability concepts to solve problems.

Objectives

2.01 Describe data to solve problems.

- a) Apply and compare methods of data collection.
 - b) Apply statistical principles and methods in sample surveys.
 - c) Determine measures of central tendency and spread.
-

- d) Recognize, define, and use the normal distribution curve.
- e) Interpret graphical displays of data.
- f) Compare distributions of data.

2.02 Use theoretical and experimental probability to model and solve problems.

- a) Use addition and multiplication principles.
- b) Calculate and apply permutations and combinations.
- c) Create and use simulations for probability models.
- d) Find expected values and determine fairness.
- e) Identify and use discrete random variables to solve problems.
- f) Apply the Binomial Theorem.

2.03 Model and solve problems involving fair outcomes:

- a) Apportionment.
- b) Election Theory.
- c) Voting Power.
- d) Fair Division.

COMPETENCY GOAL 3: The learner will describe and use recursively-defined relationships to solve problems.

Objective

3.01 Use recursion to model and solve problems.

- a. Find the sum of a finite sequence.
- b. Find the sum of an infinite sequence.
- c. Determine whether a given series converges or diverges.
- d. Write explicit definitions using iterative processes, including finite differences and arithmetic and geometric formulas.
- e. Verify an explicit definition with inductive proof.

Advanced Functions and Modeling Objectives

Advanced Functions and Modeling provides students an in-depth study of modeling and applying functions. Home, work, recreation, consumer issues, public policy, and scientific investigations are just a few of the areas from which applications should originate. Appropriate technology, from manipulatives to calculators and application software, should be used regularly for instruction and assessment.

Prerequisites

- Describe phenomena as functions graphically, algebraically and verbally; identify independent and dependent quantities, domain, and range, and input/output.
- Translate among graphic, algebraic, numeric, tabular, and verbal representations of relations.
- Define and use linear, quadratic, cubic, and exponential functions to model and solve problems.
- Use systems of two or more equations or inequalities to solve problems.
- Use the trigonometric ratios to model and solve problems.
- Use logic and deductive reasoning to draw conclusions and solve problems.

Strands: Data Analysis & Probability, Algebra

COMPETENCY GOAL 1: The learner will analyze data and apply probability concepts to solve problems.

Objectives

1.01 – Create and use calculator-generated models of linear, polynomial, exponential, trigonometric, power, and logarithmic functions of bivariate data to solve problems.

- a) Interpret the constants, coefficients, and bases in the context of the data.
- b) Check models for goodness-of-fit; use the most appropriate model to draw conclusions and make predictions.

1.02 – Summarize and analyze univariate data to solve problems.

- a) Apply and compare methods of data collection.
- b) Apply statistical principles and methods in sample surveys.
- c) Determine measures of central tendency and spread.
- d) Recognize, define, and use the normal distribution curve.
- e) Interpret graphical displays of univariate data.
- f) Compare distributions of univariate data.

1.03 – Use theoretical and experimental probability to model and solve problems.

- a) Use addition and multiplication principles.
- b) Calculate and apply permutations and combinations.
- c) Create and use simulations for probability models.
- d) Find expected values and determine fairness.
- e) Identify and use discrete random variables to solve problems.
- f) Apply the Binomial Theorem.

COMPETENCY GOAL 2: The learner will use functions to solve problems.

Objectives

2.01 – Use logarithmic (common, natural) functions to model and solve problems; justify results.

- a) Solve using tables, graphs, and algebraic properties.
- b) Interpret the constants, coefficients, and bases in the context of the problem.

2.02 – Use piecewise-defined functions to model and solve problems; justify results.

- a) Solve using tables, graphs, and algebraic properties.
- b) Interpret the constants, coefficients, and bases in the context of the problem.

2.03 – Use power functions to model and solve problems; justify results.

- a) Solve using tables, graphs, and algebraic properties.
- b) Interpret the constants, coefficients, and bases in the context of the problem.

2.04 – Use trigonometric (sine, cosine) functions to model and solve problems; justify results.

- a) Solve using tables, graphs, and algebraic properties.
- b) Create and identify transformations with respect to period, amplitude, and vertical and horizontal shifts.
- c) Develop and use the law of sines and the law of cosines.

2.05 – Use recursively-defined functions to model and solve problems.

- a) Find the sum of a finite sequence.
- b) Find the sum of an infinite sequence.
- c) Determine whether a given series converges or diverges.
- d) Translate between recursive and explicit representations.

Pre-Calculus Objectives

Pre-Calculus provides students an honors-level study of trigonometry, advanced functions, analytic geometry, and data analysis in preparation for calculus. Applications and modeling should be included throughout the course of study. Appropriate technology, from manipulatives to calculators and application software, should be used regularly for instruction and assessment.

Prerequisites

- Describe phenomena as functions graphically, algebraically and verbally; identify independent and dependent quantities, domain, and range, input/output, mapping.
- Translate among graphic, algebraic, numeric, tabular, and verbal representations of relations.
- Define and use linear, quadratic, cubic, exponential, rational, absolute value, and radical functions to model and solve problems.
- Use systems of two or more equations or inequalities to solve problems.
- Use the trigonometric ratios to model and solve problems.
- Use logic and deductive reasoning to draw conclusions and solve problems.

Strands: Number & Operations, Geometry & Measurement, Data Analysis & Probability, Algebra

COMPETENCY GOAL 1: The learner will describe geometric figures in the coordinate plane algebraically.

Objectives

- 1.01 Transform relations in two dimensions; describe the results algebraically and geometrically.**
- 1.02 Use the quadratic relations (parabola, circle, ellipse, hyperbola) to model and solve problems; justify results.**
- a) Solve using tables, graphs, and algebraic properties.
 - b) Interpret the constants and coefficients in the context of the problem.
- 1.03 Operate with vectors in two dimensions to model and solve problems.**

COMPETENCY GOAL 2: The learner will use relations and functions to solve problems.

Objectives

- 2.01 Use functions (polynomial, power, rational, exponential, logarithmic, logistic, piecewise-define, and greatest integer) to model and solve problems; justify results.**
- a) Solve using graphs and algebraic properties.
 - b) Interpret the constants, coefficients, and bases in the context of the problem.
- 2.02 Use trigonometric and inverse trigonometric functions to model and solve problems; justify results.**
- a) Solve using graphs and algebraic properties.
 - b) Create and identify transformations with respect to period, amplitude, and vertical and horizontal shifts.
 - c) Develop and use the law of sines and the law of cosines.
- 2.03 For sets of data, create and use calculator-generated models of linear, polynomial, exponential, trigonometric, power, logistic, and logarithmic functions.**
- a) Interpret the constants, coefficients, and bases in the context of the data.
 - b) Check models for goodness-of-fit; use the most appropriate model to draw conclusions or make predictions.
- 2.04 Use the composition and inverse of functions to model and solve problems.**
- 2.05 Use polar equations to model and solve problems.**
- a) Solve using graphs and algebraic properties.
 - b) Interpret the constants and coefficients in the context of the problem.
- 2.06 Use parametric equations to model and solve problems.**
- 2.07 Use recursively-defined functions to model and solve problems.**
- a) Find the sum of a finite sequence.
 - b) Find the sum of an infinite sequence.
 - c) Determine whether a given series converges or diverges.
 - d) Translate between recursive and explicit representations.
- 2.08 Explore the limit of a function graphically, numerically, and algebraically.**

INNER BANKS INNOVATION ACADEMY

APPENDIX B2

9-12 CORE CONTENT ELECTIVES

B2.1 NC high school graduation requirements

B2.2 High school course offerings

High School Graduation Requirements

Every high school student must meet state course and credit requirements in addition to any local requirements in order to graduate from high school. To view the state course and credit requirements, look below for the section that matches when a student entered ninth grade for the first time.

Refer to State Board of Education policy <http://sbepolicy.dpi.state.nc.us> for a list of AP/IB, Dual enrollment and other courses that may satisfy certain requirements per State Board of Education Policy.

School counselors are available to answer any questions you may have about what is needed to reach the goal of high school graduation.

For Ninth Graders Entering in 2012-13 and Later Two Courses of Study Leading to One Diploma

CONTENT AREA	FUTURE-READY CORE Course of Study Requirements	FUTURE-READY OCCUPATIONAL Course of Study Requirements
English	4 Credits I, II, III, IV or a designated combination of 4 courses	4 Credits English I*, II*, III*, IV*
Mathematics	4 Credits Math I, II, III 4th Math Course to be aligned with the student's post high school plans <i>A student, in some circumstances, may have an alternative math course sequence as outlined under State Board of Education policy or due to the transition in standards. Please see your school counselor for more details.</i>	3 Credits Introduction to Mathematics Math I* Financial Management
Science	3 Credits A physical science course, Biology, Earth/Environmental Science	2 Credits Applied Science Biology*
Social Studies	4 Credits American History: The Founding Principles, Civics and Economics, World History, American History I: American History II OR AP US History**, IB History of the Americas**, additional social studies course**	2 Credits American History I* American History II*
World Languages	Not required for high school graduation. A two-credit minimum is required for admission to a university in the UNC system.	Not required
Health and Physical Education	1 Credit Health/Physical Education	1 Credit Health/Physical Education

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CONTENT AREA	FUTURE-READY CORE Course of Study Requirements	FUTURE-READY OCCUPATIONAL Course of Study Requirements
Electives or other requirements***	6 Credits required 2 elective credits of any combination from either: <ul style="list-style-type: none"> – Career and Technical Education (CTE) – Arts Education – World Languages 4 elective credits strongly recommended (four course concentration) from one of the following: <ul style="list-style-type: none"> – Career and Technical Education (CTE)**** – JROTC – Arts Education (e.g. dance, music, theater arts, visual arts) – Any other subject area (e.g. social studies, science, mathematics, English) 	6 Credits Occupational Preparation I, II, III, IV***** Elective credits Additional requirements: <ul style="list-style-type: none"> – Completion of IEP Objectives – Career Portfolio
Career/Technical		4 Credits Career/Technical Education electives
Arts Education (Dance, Music, Theatre Arts, Visual Arts)		
Total	22 Credits plus any local requirements	22 Credits plus any local requirements

* OCS Pathway courses aligned with North Carolina Standard Course of Study in English I, II, III, IV; Math I and American History I, II, and Biology.

** A student who takes AP US History or IB History of the Americas instead of taking American History I and American History II must also take an additional elective social studies course in order to meet the four credits requirement.

*** Examples of electives include Arts Education, JROTC and other courses that are of interest to the student.

**** For additional information on CTE courses that meet requirements for selected Courses of Study, refer to the CTE Clusters chart located at: <http://www.ncpublicschools.org/docs/cte/standards/careerclusters2012.pdf>.

***** For students entering 9th grade in 2013-14 or earlier, completion of 300 hours of school-based training, 240 hours of community-based training, and 360 hours of paid employment. For students entering 9th grade in 2014-15 or later, completion of 150 hours of school-based training, 225 hours of community-based training, and 225 hours of paid employment.

**For Ninth Graders Entering in
2011-12
Two Courses of Study Leading to One Diploma**

CONTENT AREA	FUTURE-READY CORE Course of Study Requirements	FUTURE-READY OCCUPATIONAL Course of Study Requirements
English	<p>4 Credits I, II, III, IV</p> <p><i>Effective with the 10th Grade class of 2011-12 English I, II, III, IV or a designated combination of 4 courses</i></p>	<p>4 Credits English I*, II*, III, IV</p>
Mathematics	<p>4 Credits (Algebra I, Geometry, Algebra II) OR (Integrated Math I, II, III) 4th Math Course to be aligned with the student's post high school plans</p> <p><i>A student, in rare instances, may be able to take an alternative math course sequence as outlined under State Board of Education policy. Please see your school counselor for more details.</i></p>	<p>3 Credits Introduction to Mathematics Algebra I* or Math I Financial Management</p>
Science	<p>3 Credits A physical science course, Biology, Environmental Science</p>	<p>2 Credits Applied Science Biology*</p>
Social Studies	<p>3 Credits Civics and Economics, US History, World History</p>	<p>2 Credits American History I American History II</p>
World Languages	Not required for high school graduation. A two-credit minimum is required for admission to a university in the UNC system.	Not required
Health and Physical Education	<p>1 Credit Health/Physical Education</p>	<p>1 Credit Health/Physical Education</p>

Continued From Previous Page		
CONTENT AREA	FUTURE-READY CORE Course of Study Requirements	FUTURE-READY OCCUPATIONAL Course of Study Requirements
Electives or other requirements**	6 Credits required 2 elective credits of any combination from either: <ul style="list-style-type: none"> – Career and Technical Education (CTE) – Arts Education – World Languages 4 elective credits strongly recommended (four course concentration) from one of the following: <ul style="list-style-type: none"> – Career and Technical Education (CTE)*** – JROTC – Arts Education (e.g. dance, music, theater arts, visual arts) – Any other subject area (e.g. social studies, science, mathematics, English) 	6 Credits Occupational Preparation: Preparation I, II, III, IV**** Elective credits Additional requirements: <ul style="list-style-type: none"> – Completion of IEP Objectives – Career Portfolio
Career/Technical		4 Credits Career/Technical Education electives
Arts Education (Dance, Music, Theatre Arts, Visual Arts)		Recommended: at least one credit in an arts discipline and/or requirement by local decision
Total	21 Credits plus any local requirements	22 Credits plus any local requirements

* OCS Pathway courses aligned with Future Ready Core courses in English I, English II, Algebra I/Integrated Math I, and Biology.

** Examples of electives include Arts Education, JROTC and other courses that are of interest to the student.

*** For additional information on CTE courses that meet requirements for selected Courses of Study, refer to the CTE Clusters chart located at: <http://www.ncpublicschools.org/docs/cte/publications/career/clusters.pdf>.

**** Completion of 300 hours of school-based training, 240 hours of community-based training, and 360 hours of paid employment.

Courses from FuelEducation (getfueled.com)

High School Courses

Electives

<u>Course Title</u> ▲	<u>Grade Level</u>	<u>Type</u>
3D Art I: Modeling*	High School	Elective
3D Art II: Animation*	High School	Elective
Accounting	High School	Elective
Achieving Your Career and College Goals*	High School	Elective
Archaeology*	High School	Elective
Art in World Cultures*	High School	Elective
Astronomy*	High School	Elective
Audio Engineering*	High School	Elective
Biotechnology*	High School	Elective
C++ Programming*	High School	Elective
Careers in Criminal Justice*	High School	Elective
Computer Fundamentals	High School	Elective
Computer Literacy*	High School	Elective
Computer Science*	High School	Elective
Cosmetology*	High School	Elective
Criminology*	High School	Elective
Digital Arts I*	High School	Elective
Digital Arts II*	High School	Elective

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
<u>Digital Photography*</u>	High School	Elective
<u>Early Childhood Education*</u>	High School	Elective
<u>Engineering Design/CAD*</u>	High School	Elective
<u>Fashion and Interior Design*</u>	High School	Elective
<u>Fine Art</u>	High School	Elective
<u>Game Design*</u>	High School	Elective
<u>Gothic Literature*</u>	High School	Elective
<u>Great Minds in Science*</u>	High School	Elective
<u>Green Design and Technology*</u>	High School	Elective
<u>Health Science I*</u>	High School	Elective
<u>Health Science II*</u>	High School	Elective
<u>Health* (E)</u>	High School	Credit Recovery
<u>History of the Holocaust*</u>	High School	Elective
<u>Hospitality & Tourism*</u>	High School	Elective
<u>Image Design and Editing*</u>	High School	Elective
<u>International Business*</u>	High School	Elective
<u>Introduction to Agriscience*</u>	High School	Elective
<u>Introduction to Culinary Arts*</u>	High School	Elective
<u>Introduction to Entrepreneurship I*</u>	High School	Elective
<u>Introduction to Entrepreneurship II*</u>	High School	Elective
<u>Introduction to Manufacturing*</u>	High School	Elective

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
<u>Introduction to Marketing I*</u>	High School	Elective
<u>Introduction to Marketing II*</u>	High School	Elective
<u>Introduction to Social Media*</u>	High School	Elective
<u>Law & Order/Legal Studies*</u>	High School	Elective
<u>Life Skills*</u>	High School	Elective
<u>Music Appreciation*</u>	High School	Elective
<u>Mythology and Folklore*</u>	High School	Elective
<u>Nutrition and Wellness*</u>	High School	Elective
<u>Peer Counseling*</u>	High School	Elective
<u>Philosophy*</u>	High School	Elective
<u>Physical Education</u>	High School	Elective
<u>Programming I: VB.NET*</u>	High School	Elective
<u>Programming II: Java*</u>	High School	Elective
<u>Reaching Your Academic Potential*</u>	High School	Elective
<u>Real World Parenting*</u>	High School	Elective
<u>Service Learning*</u>	High School	Elective
<u>Skills for Health*</u>	High School	Elective
<u>Social Problems I*</u>	High School	Elective
<u>Social Problems II*</u>	High School	Elective
<u>Sociology I*</u>	High School	Elective
<u>Sociology II*</u>	High School	Elective

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
Sports and Entertainment Marketing*	High School	Elective
Veterinary Science*	High School	Elective
Web Design*	High School	Elective
World Religions*	High School	Elective

Math

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
Algebra I (Comprehensive)	High School	Comprehensive
Algebra I (Core)	High School	Core
Algebra I (Credit Recovery)	High School	Credit Recovery
Algebra I (Honors)	High School	Honors
Algebra II	High School	Credit Recovery
Algebra II (Comprehensive)	High School	Comprehensive
Algebra II (Core)	High School	Core
Algebra II (Honors)	High School	Honors
AP Calculus AB	High School	AP
AP Calculus BC	High School	AP
AP Statistics	High School	AP
Calculus	High School	Standard
Consumer Math	High School	Standard
Continuing Algebra	High School	Standard
Developmental Algebra	High School	Standard

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
Geometry (Comprehensive)	High School	Comprehensive
Geometry (Core)	High School	Core
Geometry (E)	High School	Credit Recovery
Geometry (Honors)	High School	Honors
Integrated Math	High School	Elective
Integrated Mathematics I	High School	Standard
Integrated Mathematics II	High School	Standard
Integrated Mathematics III	High School	Standard
Math Foundations I	High School	Core
Math Foundations II	High School	Core
Personal Finance*	High School	Elective
Practical Math	High School	Core
Pre-Algebra (Comprehensive)	High School	Comprehensive
Pre-Algebra (Core)	High School	Core
Pre-Calculus/Trigonometry (Comprehensive)	High School	Comprehensive
Probability and Statistics*	High School	Comprehensive

History and Social Sciences

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
American Government* (E)	High School	Credit Recovery
American History (E)	High School	Credit Recovery
Anthropology*	High School	Elective

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
<u>AP Macroeconomics*</u>	High School	AP
<u>AP Microeconomics*</u>	High School	AP
<u>AP Psychology*</u>	High School	AP
<u>AP U.S. Government and Politics*</u>	High School	AP
<u>AP World History</u>	High School	AP
<u>Civics*</u>	High School	Standard
<u>Contemporary World Issues</u>	High School	Elective
<u>Economics*</u>	High School	Standard
<u>Economics* (Credit Recovery)</u>	High School	Credit Recovery
<u>Family and Consumer Science*</u>	High School	Elective
<u>Geography</u>	High School	Standard
<u>Geography (Credit Recovery)</u>	High School	Credit Recovery
<u>Modern U.S. History (Comprehensive)</u>	High School	Comprehensive
<u>Modern U.S. History (Core)</u>	High School	Core
<u>Modern U.S. History (Honors)</u>	High School	Honors
<u>Modern World Studies (Comprehensive)</u>	High School	Comprehensive
<u>Modern World Studies (Core)</u>	High School	Core
<u>Modern World Studies (Honors)</u>	High School	Honors
<u>Psychology*</u>	High School	Elective
<u>U.S. and Global Economics* (Comprehensive)</u>	High School	Comprehensive
<u>U.S. and Global Economics* (Core)</u>	High School	Core

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
U.S. Government and Politics (Core)	High School	Core
U.S. Government and Politics* (Comprehensive)	High School	Comprehensive
U.S. History (Comprehensive)	High School	Comprehensive
U.S. History (Core)	High School	Core
U.S. History (Honors)	High School	Honors
World History (Comprehensive)	High School	Comprehensive
World History (Core)	High School	Core
World History (Credit Recovery)	High School	Credit Recovery
World History (Honors)	High School	Honors

Science

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
AP Biology	High School	AP
AP Environmental Science	High School	AP
Biology (Comprehensive)	High School	Comprehensive
Biology (Core)	High School	Core
Biology (Credit Recovery)	High School	Credit Recovery
Biology (Honors)	High School	Honors
Chemistry (Comprehensive)	High School	Comprehensive
Chemistry (Core)	High School	Core
Chemistry (Credit Recovery)	High School	Credit Recovery
Chemistry (Honors)	High School	Honors

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
Earth Science (Comprehensive)	High School	Comprehensive
Earth Science (Core)	High School	Core
Earth Science (Credit Recovery)	High School	Credit Recovery
Earth Science (Honors)	High School	Honors
Environmental Science	High School	Elective
Forensic Science*	High School	Elective
Physical Science	High School	Standard
Physical Science (Credit Recovery)	High School	Credit Recovery
Physics (Comprehensive)	High School	Comprehensive
Physics (Honors)	High School	Honors

Language Arts

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
American Literature (Comprehensive)	High School	Comprehensive
American Literature (Core)	High School	Core
American Literature (Honors)	High School	Honors
AP English Language and Composition	High School	AP
AP English Literature and Composition	High School	AP
British and World Literature (Comprehensive)	High School	Comprehensive
British and World Literature (Core)	High School	Core
British and World Literature (Honors)	High School	Honors
Creative Writing	High School	Elective

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
English Foundations I	High School	Prescriptive & Remediation
English Foundations II	High School	Prescriptive & Remediation
English I (E)	High School	Credit Recovery
English II (E)	High School	Credit Recovery
English III (E)	High School	Credit Recovery
English IV (E)	High School	Credit Recovery
Grammar and Composition	High School	Standard
Journalism*	High School	Elective
Literary Analysis and Composition I (Comprehensive)	High School	Comprehensive
Literary Analysis and Composition I (Core)	High School	Core
Literary Analysis and Composition I (Honors)	High School	Honors
Literary Analysis and Composition II (Comprehensive)	High School	Comprehensive
Literary Analysis and Composition II (Core)	High School	Core
Literary Analysis and Composition II (Core)	High School	Core
Literary Analysis and Composition II (Honors)	High School	Honors
Public Speaking*	High School	Elective

World Languages

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
AP French Language and Culture	High School	AP

<u>Course Title</u> ▲	Grade Level	<u>Type</u>
AP Spanish Language and Culture	High School	AP
French I	High School	Standard
French II	High School	Standard
French III	High School	Comprehensive
French IV	High School	Standard
German I	High School	Standard
German II	High School	Standard
German III	High School	Standard
German IV	High School	Standard
Japanese I	High School	Standard
Japanese II	High School	Standard
Latin I	High School	Standard
Latin II	High School	Standard
Mandarin (Chinese) I	High School	Standard
Mandarin (Chinese) II	High School	Standard
Spanish I	High School	Standard
Spanish I	High School	Credit Recovery
Spanish II	High School	Standard
Spanish III	High School	Standard
Spanish IV	High School	Standard

Advanced Placement®

Advanced Placement® courses are a great way for motivated high school students to get ahead and receive college credit while still in high school. We offer a comprehensive and broad scope of online AP® courses. All of Fuel Education's AP® courses have been authorized by the College Board.

CTE

Career Readiness Pathways™ Courses

Fuel Education's Career Readiness Pathways offers an innovative, affordable approach to true college and career readiness—from exploration to certification. Today offering four Career Clusters® with three pathways each:

- Business Management and Administration
- Manufacturing
- Health Science
- Information Technology

From Exploration to Certification: Fuel Education's Career Readiness Pathways is a comprehensive, online and blended learning program that offers Career exploration courses for a variety of high-demand Career Clusters®

- Business Management and Administration
- Manufacturing
- Health Science
- Information Technology

There is a progression of high-quality, rigorous courses in every career pathway we offer. You have the opportunity to earn industry-recognized certifications, such as:

- Certified Nursing Assistant (CNA)
- Certified Pharmacy Technician (CPhT)
- Microsoft® Office
- National Occupational Competency Testing Institute (NOCTI)
- Many others

In addition to Fuel Education's Career Readiness Pathways program, we offer a host of CTE exploratory electives for other pathway interests.

Biotechnology	Health Science I
Peer Counseling	Health Science II
Criminology	History of the Holocaust
Law and Order/Legal Studies	Introduction to Agriscience
Great Minds in Science	Introduction to Culinary Arts
Hospitality and Tourism	Introduction to Manufacturing
International Business	Introduction to Social Media
Veterinary Science	Mythology and Folklore
Archaeology	Philosophy
Art in World Cultures	Real World Parenting
Astronomy	Social Problems I
Careers in Criminal Justice	Social Problems II
Cosmetology	Sociology I
Early Childhood Education	Sociology II
Fashion and Interior Design	Sports and Entertainment Marketing
Gothic Literature	World Religions

INNER BANKS INNOVATION ACADEMY

APPENDIX C

INSTRUCTIONAL CALENDAR

Inner Banks Innovation Academy Academic Calendar 2018-19

September 2018						
Su	Mo	Tu	We	Th	Fr	Sa
	W	W	W	W	W	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

October 2018						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November 2018						
Su	Mo	Tu	We	Th	Fr	Sa
				1	ER	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	H	H	24
25	26	27	28	29	30	

December 2018						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	H	H	V	V	V	29
30	V					

January 2019						
Su	Mo	Tu	We	Th	Fr	Sa
		H	V	3	4	5
6	7	8	9	10	11	12
13	14	15	ER	17	18	19
20	H	22	23	24	25	26
27	28	29	30	31		

February 2019						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	W	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

March 2019						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	ER	21	22	23
24	25	26	27	28	29	30
31						

April 2019						
Su	Mo	Tu	We	Th	Fr	Sa
	V	V	V	V	H	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May 2019						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	W	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	H	28	29	30	ER	

June 2019						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	W	W	W	20	21	22
23	24	25	26	27	28	29
30						

July 2019						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August 2019						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

- First and Last Days of School
- Early Release for Students/Teacher Workday
- Report Cards Issued
- H Holiday
- V Vacation Day
- W Teacher Work Days/No School

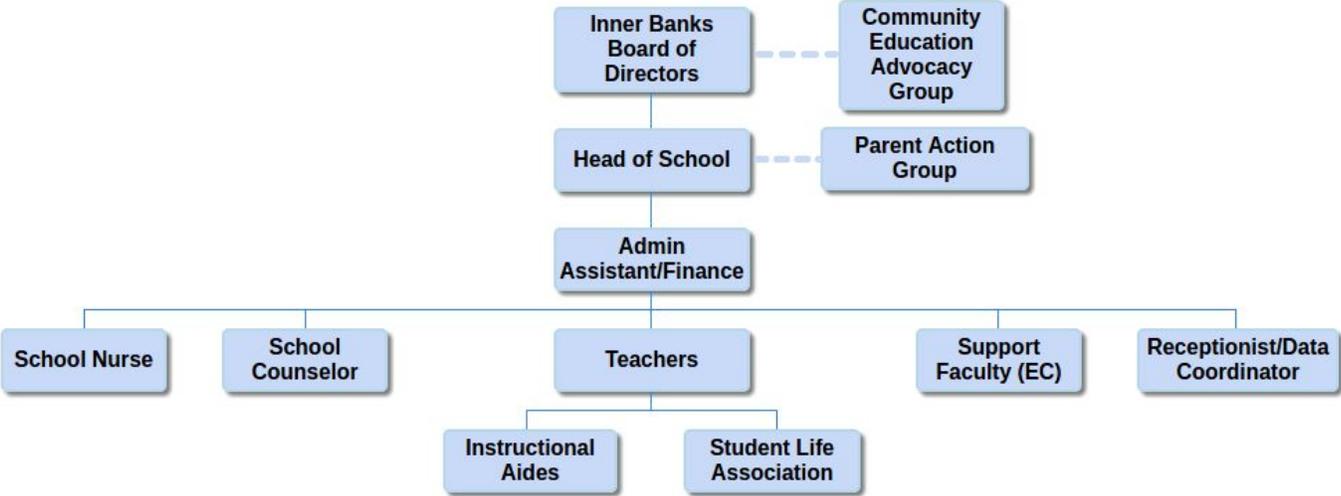
INNER BANKS INNOVATION ACADEMY

APPENDIX E

ORGANIZATIONAL CHART

Inner Banks Innovation Academy

Organizational Chart



INNER BANKS INNOVATION ACADEMY

APPENDIX G

PROPOSED BY-LAWS OF THE NON-PROFIT ORGANIZATION

H.1 Bylaws

H.2 Code of Ethics & Conflict of Interest Policy

H.3 Anti-Nepotism Policy

BYLAWS
OF
INNER BANKS INNOVATION ACADEMY, INC.

ARTICLE -- 1-- NAME, OFFICES AND PURPOSES

Section 1. Name. The name of the corporation shall be Inner Banks Innovation Academy, Inc., hereinafter referred to as “Inner Banks Academy” or as the “corporation.”

Section 2. Principal Office. The principal office of the corporation shall be located at the location specified in the corporation’s articles of incorporation.

Section 3. Other Offices. The corporation may have offices at such other places within the State of North Carolina as the Board of Directors may from time to time determine.

Section 4. Purposes. The purposes of the corporation are as follows:

(a) Primarily to establish and operate one or more public charter schools in the State of North Carolina to promote the creation of a peaceful school culture that is conducive to collaborative education and character development, empowering every student to succeed in building an excellent foundation for college, career, civic participation, and lifelong learning.

(b) To operate exclusively for charitable, educational, and scientific purposes within the meaning of Sections 501(c)(3) and 170(c)(2) of the Internal Revenue Code of 1986 or the corresponding provisions of any future United States Internal Revenue laws (the “Code”); and

(c) To engage in any other lawful activity for which corporations may be organized under Chapter 55A of the General Statutes of North Carolina (“NCGS”) that is incidental to, connected with, or in the advancement of the foregoing purposes so long as the corporation does not engage in any activity or activities not in furtherance of one or more tax-exempt purposes as contemplated in section 501(c)(3) of the Code.

Section 5. Dissolution. Upon the dissolution of the corporation, the Board of Directors shall, after paying or making provision for the payment of all of the liabilities of the corporation, dispose of all of the assets of the corporation (if any) as follows:

(a) Assets held by the corporation upon condition requiring return, transfer, or conveyance, which condition occurs by reason of the dissolution, shall be returned, transferred, or conveyed in accordance with such requirements; and

(b) All other assets shall be transferred or conveyed to such organization or organizations organized and operated exclusively for charitable, educational,

scientific, or literary purposes as shall at the time qualify as an exempt organization or organizations under Section 501(c)(3) of the Code, as the Board of Directors determines, or to federal, state, or local governments to be used exclusively for public purposes. Any such assets not so disposed of shall be disposed of by the Superior Court of the county in which the principal office of the corporation is then located, exclusively for such purposes or to such organizations, such as the court shall determine, that are organized and operated exclusively for such purposes, or to such governments for such purposes.

ARTICLE -- 2-- BOARD OF DIRECTORS

Section 1. General Powers. The affairs of the corporation shall be managed by the Board of Directors in accordance with the provisions of applicable law, the articles of incorporation, and these Bylaws.

Section 2. Number, Term and Qualification. The number of Directors of the corporation shall not be less than one (1) nor more than fifteen (15), though a range of between seven and eleven unrelated Directors is preferred, and the Board will work to maintain a number within this preferred range whenever possible. The Directors at any annual meeting may by resolution fix the number of Directors to be elected at the meeting; but, in the absence of such resolution, the number of Directors elected at the meeting plus the number of Directors continuing in office shall constitute the number of Directors of the corporation until the next annual meeting unless the number is changed by action of the Directors.

Initial Development Period. In order to provide continuity during the opening of the school and during the other initial phases of development, each initial Directors shall serve a period of three (3) years and until his/her successor shall be elected and shall qualify or until death, resignation, retirement, removal, disqualification, or his/her successor shall have been appointed and seated on the Board. An appointment during the Initial Development Period shall not be counted for purposes of calculating term limits below.

Post-Development Period. At the conclusion of this initial period (the “Post-Development Period”), half of all new and renewing Directors shall be offered terms of one year and the other half shall be offered terms of two years, each until his/her successor shall be elected and shall qualify or until death, resignation, retirement, removal, disqualification, or his/her successor shall have been appointed and seated on the Board. This flexibility aims to allow for successful recruitment of qualified directors and to create staggered terms.

Ongoing Periods. After the appointment of Directors during the Post-Development Period and on an ongoing basis, each new or renewing Director shall serve a two-year term and until his/her successor shall be elected and shall qualify or until death, resignation, retirement, removal, disqualification, or his/her successor shall have been appointed and seated on the Board.

Renewal/Reappointment. Each Director shall have the opportunity to serve up to three consecutive terms, with renewal upon approval of the Board of Directors by a quorum majority vote. Each Director can serve a maximum of three (3) Post-Development terms (not counting a term held during the Initial Development Period) and may hold a Director position during this time or until death, resignation, retirement, removal, disqualification, or his/her successor shall have been appointed and seated on the Board. In the event of the death, resignation, retirement, removal or disqualification of a Director during the elected term of office, the Director's successor shall be elected to serve only until the expiration of the term of the predecessor, and such a successor term shall not count toward the limit of three consecutive terms.

Section 3. Election of Directors. Directors shall be elected at any annual or special meeting of the Board of Directors by a vote of a majority of the Directors in office immediately before the meeting begins. The election of Directors shall be a part of the order of business of each annual meeting of the Board of Directors. New Directors may be required to review the Bylaws and strategic planning documents as well as sign the Code of Ethics, the Conflict of Interest Disclosure Form, and other documents central to the mission of the corporation before starting their terms as Directors.

Section 4. Removal. Directors may be removed from office at any time with or without cause by the Directors by the vote that would be required to elect the Director to the Board of Directors. If a Director is removed, a new Director may be elected to fill the vacancy at the same meeting.

Section 5. Resignation. A Director may resign at any time by communicating such resignation to the Board of Directors, its presiding officer, or to the corporation. The resignation is effective when communicated unless the notice specifies a later effective date or subsequent event upon which it will become effective.

Section 6. Vacancies. A vacancy occurring in the Board of Directors may be filled by a majority of the remaining Directors at any regular meeting or special meeting of the Board.

Section 7. Compensation. Persons serving as Directors or members of a committee shall not receive any salary or compensation for their services as Directors or committee members; provided, however, that nothing contained herein shall be construed as precluding any Director or committee member from receiving compensation in a reasonable amount for personal services rendered (other than services rendered as a Director or committee member) that are reasonable and necessary in carrying out the corporation's purposes as the Board of Directors may from time to time determine. A Director or committee member shall be entitled to reimbursement for reasonable expenses incurred by him or her in carrying out his or her duties as a Director, provided that no such reimbursement shall be paid to the extent it would constitute an excess benefit transaction under Section 4958 of the Code. For clarity an excess benefit transaction is a transaction that provides an excessive economic benefit to an insider of the corporation, such as when the value of the benefit provided by the organization exceeds the value of what the insider provides the organization in return.

Section 8. Board Expectations. The Board of Directors shall be an active governing body, working to ensure the financial, operational, and reputational health of the corporation. At heart, the Board of Directors should exercise 3 fiduciary duties:

The Duty of Care: Directors should act with the care that an ordinarily prudent person would use under similar circumstances—strive to be informed and involved, and actively participate in discussions and meetings.

The Duty of Loyalty: Directors should put the interests of the organization over their own interests or the interests of family members and other businesses or organizations that they might be involved in.

The Duty of Obedience: Directors should be faithful to Inner Banks Academy’s mission and abide by the Bylaws and other governing documents.

These duties can be achieved by being familiar with and following the Bylaws and strategic planning documents as well as signing the Code of Ethics, the Conflict of Interest Disclosure Form, and other documents central to the mission of the corporation.

ARTICLE -- 3-- MEETINGS OF DIRECTORS

Section 1. Annual Meeting. The annual meeting of the Board of Directors shall be held in the month of June of each year, for the purpose of electing Directors and officers of the corporation and the transaction of such other business as may be properly brought before the meeting. If the annual meeting is not held as designated by these Bylaws, a substitute annual meeting may be called by or at the request of the Board of Directors, and such meeting shall be designated and treated for all purposes as the annual meeting.

Section 2. Annual Meeting Agenda and Report. The annual meeting agenda shall be provided with reasonable time for review ahead of the annual meeting. Agenda items will include the performance of the Board, the performance of the school and corporation, the election of officers and Directors of the Board, including the renewal of terms if necessary, a preliminary year-end performance report, review of service plans for the upcoming fiscal year (July 1 – June 30), the review and signing of an updated conflict of interest disclosure form, and a financial report (See ARTICLE -- 10Section 2 “Annual Financial Report”) stating the general financial health of the corporation, and shall include time for public comment and invitations for stakeholder input. Where appropriate, the information provided by such reports should guide the strategic planning processes of the corporation. Transactions of any other business properly brought before the Board of Directors may also be conducted.

Section 3. Regular Meetings. The Board of Directors shall meet at least ten (10) times per year, including the annual meeting. The agenda for regular meetings may include an opportunity for public comment and, where appropriate, an invitation to hear from key stakeholders.

Section 4. Special, Emergency, and Closed Meetings.

(a) Special Meetings. Special meetings of the Board of Directors, which are meetings not listed on the regular schedule, may be called by or at the request of the Chair of the Board, the President, or any two Directors. Only business consistent with the noticed purpose of the meeting may be conducted at a special meeting.

(b) Emergency Meetings. The corporation may also call emergency meetings if there are generally unexpected circumstances that require immediate consideration by the corporation, though at such an emergency meeting the corporation may consider only the business connected with the emergency circumstances, as is required by NCGS §143-318.12(b)(3).

(c) Closed Meetings. The reasons and requirements for Closed Meetings are as set forth at ARTICLE -- 9Section 3(d) and ARTICLE -- 9Section 3(e) below.

Section 5. Notice of Meetings.

(a) Notice of Meetings – Generally. The Secretary or other person or persons calling a meeting for which notice is required shall give notice by personal delivery, mail, or electronic means such as email as required (see sections below). Notices posted to the publicly-accessible website of the corporation shall constitute public notice on the corporation’s “bulletin board” for purposes of compliance with open meetings laws.

(b) Regular Meetings. The corporation must give notice of any regular meeting at least seven days before the meeting. Unless otherwise indicated in the notice, any and all business may be transacted at a meeting of the Board of Directors. Furthermore, if there is a schedule of regular meetings, it should be posted to the corporation’s website, as NC Open Meetings laws require that, “[i]f a public body has a Web site and has established a schedule of regular meetings, the public body shall post the schedule of regular meetings to the Web site.”

(c) Special Meetings. According to NCGS § 143-318.12(b)(2), the corporation must give notice of a special meeting setting out the purpose of the meeting at least forty-eight hours before the meeting and must post the notice on its principal bulletin board, website, or, if it has no bulletin board or website, at the door of its usual meeting room. Furthermore, the corporation must deliver notice to any person who requests notice in writing. The corporation may require persons requesting notice to renew their requests quarterly.

(d) Emergency Meetings. The corporation must give notice to the public of any emergency meeting immediately after notice has been given to the Board of Directors and must provide the purpose of the meeting.

(e) Waiver of Notice by Directors. Attendance by a Director at a meeting shall constitute a waiver of notice, except where a Director attends for the express purpose of objecting to the transaction of any business because the meeting is not lawfully called. Notice of a meeting need not be given to any Director who submits a signed waiver of notice whether before or after the meeting.

Section 6. Email. For clarity and the avoidance of confusion and noncompliance, Directors cannot vote via email.

Section 7. Quorum. A majority of the Directors in office immediately before a meeting begins shall constitute a quorum for the transaction of business at a meeting of the Board of Directors.

Section 8. Adjournment of Meetings. A majority of the Directors present, whether or not a quorum is present, may adjourn any meeting to another time and place. Notice of any adjournment of a meeting of the Board to another time or place shall be given to the Directors who were not present at the time of the adjournment and, unless such time and place are announced at the meeting, to the other Directors, and to the public as needed to comply with Open Meetings laws.

Section 9. Place of Meetings. Meetings of the Board of Directors may be held at the principal office of the corporation or at such other place within the State of North Carolina as shall be designated in the notice of the meeting.

Section 10. Meeting Agendas. Any agenda for a Board of Directors meeting should be distributed to Directors in advance of the meeting, with reasonable time for discussion of each agenda item allocated during the meeting.

Section 11. Manner of Acting. Except as otherwise provided by law or in the Bylaws, the act of the majority of the Directors present at a meeting at which a quorum is present shall be the act of the Board of Directors.

Section 12. Presumption of Assent. A Director of the corporation who is present at a meeting of the Board of Directors at which action on any corporate matter is taken shall be presumed to have assented to the action taken unless he or she objects at the beginning of the meeting, or promptly upon his arrival, to holding it, suggests to table such action or refrain from or transacting business at the meeting, or his or her dissent or abstention from the action is otherwise entered into the minutes of the meeting, or unless he or she either files a written dissent to such action with the person acting as the secretary of the meeting before the adjournment thereof or forwards his written dissent by registered mail to the secretary of the corporation immediately after the adjournment of the meeting. The right to dissent is not available to a Director who voted in favor of such action. Also, when formal voting takes place, votes will be categorized as “No,” “Abstain,” or “Yes.”

Section 13.Meeting by Conference Telephone. Any one or more Directors or members of a committee may participate in a meeting of the Board or committee by means of a conference telephone or similar communications device that allows all Directors participating in the meeting to simultaneously hear each other during the meeting, and such participation in a meeting shall be deemed presence in person at such meeting. If a meeting is held by this method, then, according to NCGS. §143-318.13(a), (1) the corporation must provide a location and means for members of the public to listen to the meeting, and (2) the meeting notice should indicate where the public may listen. It should be noted that according to statute the corporation may charge up to twenty-five dollars to each listener to help pay for the cost of providing the location and listening equipment.

Section 14. Participation of Head of School and School Faculty. In order to gather the information needed to make governance decisions and pursue the mission of the school effectively, it is expected that the Board of Directors will regularly invite the Head of School and faculty members to present reports on academic progress at meetings of the Board of Directors or its committees. For clarity, the Head of School and Faculty will not have a vote on official board matters and their presence shall not be counted toward constitution of a quorum.

Section 15. Compliance with Open Meetings Laws. The Board of Directors and the Corporation are subject to North Carolina’s Open Meetings laws, as codified at NCGS § 143-318.9 *et seq.*, as amended. The general rule is that all official meetings of public bodies must be open to the public. For specific information regarding this obligation, refer to the “Legal Compliance” section below.

Section 16. Meeting Regulation. All meetings of the corporation including annual, special, committee, and other shall be governed by Robert’s Rules of Order.

ARTICLE -- 4-- COMMITTEES

Section 1. Executive Committee. The Board of Directors, by resolution adopted by a majority of the number of Directors then in office, may designate two or more Directors to constitute an Executive Committee, which shall have and may exercise the authority of the Board in the management of the business and affairs of corporation during intervals between meetings. Vacancies in the membership of the Executive Committee shall be filled by a majority of the whole Board of Directors at a regular meeting or at a special meeting called for that purpose. The Executive Committee shall keep minutes of its proceedings and shall report to the Board of Directors on action taken. Minutes of meetings of the Executive Committee shall be prepared and kept with the records of the corporation.

Section 2. Standing Committees. Standing committees having two or more members shall operate as set forth below. Additional Standing Committees may be designated by a resolution adopted by a majority of the number of Directors then in office. For all Standing Committees, the President shall appoint a Committee Chairperson and all members. The Committee Chairperson shall preside at the committee meetings and oversee reporting to the Board of Directors. Vacancies in the membership of such committees shall be filled by appointment made in the same manner as original appointments.

- Strategic Planning Committee: Long-range strategic planning is central to the success of the corporation. The Strategic Planning Committee is tasked with overseeing the corporation's progress toward its goals in light of the mission and with orchestrating the annual strategic planning processes described in the "Program Evaluation and Strategic Planning" section below. Furthermore, the Strategic Planning Committee shall establish and oversee evaluation processes for the Board and the Head of School. Finally, this committee shall oversee grant writing and fundraising processes, in consultation with the Finance Committee.
- Human Resources Committee: While it is the duty of the entire Board of Directors to deal with personnel issues and to recruit and develop the best possible personnel for the corporation, the Human Resources Committee shall take primary charge of (1) searches for new or additional members of the Board of Directors, as well as orientation, development, and ongoing training for the Board of Directors, which shall include education in the areas of fiduciary duties, financial statements, and management best practices; (2) establishing criteria for the recruitment and hiring of the Head of School, and (3) establishing—in consultation with the Head of School—appropriate criteria (such as salary ranges, key experiential requirements, processes for criminal background checks in keeping with NC public charter school and Beaufort County guidelines, etc.) to guide the hiring and compensating of key staff. See also 0 for additional guidance.

The Human Resources Committee shall seek resources to assist the Board of Directors in creating a healthy learning environment, seeking the assistance of organizations such as the Peaceful Schools Program, for example, when appropriate. It is expected that the Chair of the Human Resources Committee will be made aware of all grievances, disciplinary, and personnel issues and that, in turn, the Human Resources Committee will ensure that the Board of Directors is informed of all information relevant to the Board's ongoing oversight of personnel issues, such as employee manuals, grievance policies, disciplinary procedures, or other personnel-related procedures.

Furthermore, while every member of the Board of Directors will work to ensure that the school is a community asset that is valued by the community and responsive to its needs, the Human Resources Committee shall have the primary responsibility of ensuring that the organization continues to be perceived as an asset to its community and that it provides avenues for

community input, by which it may seek input and advice from stakeholders, including but not limited to the Head of School or other school administrators, teachers, parents, neighbors of the school, community organization leaders, or other community stakeholders.

- Academic Excellence Committee: The Academic Excellence Committee shall provide primary oversight of the school's educational programs and work to ensure that the school offers the best opportunity of academic success to all students.

While the Head of School, key staff, and faculty will work daily to deliver and improve curriculum and instruction, The Academic Excellence Committee shall ensure that (1) programs of instruction align with the goals of the Charter Plan and that (2) systems and personnel are in place to measure progress toward academic goals. Furthermore, the Academic Excellence Committee shall work with available faculty and staff to oversee the implementation of the blended learning model of instruction. The Chair of the Academic Excellence Committee shall periodically present to the full Board of Directors an analysis of progress toward academic goals.

- Finance Committee: The Finance Committee, which shall be chaired whenever possible by the Treasurer and shall have the Assistant Treasurer, if so appointed, as a member, shall oversee the budget, fundraising, and expenditures of the school. In working with school staff to oversee the organization's budgetary and financial planning processes, the Finance Committee shall ensure compliance with the provisions of the "Financial Oversight" section below, especially the annual audit and Form 990 submission processes, as well as with all other financial policies and procedures promulgated by the Board of Directors.
- Operations Committee: The Operations Committee shall work with available staff to oversee administrative and operational functions of the school. These administrative and operational functions shall include the following: (1) technology, to ensure the organization can meet its administrative functions efficiently and its teachers can maximize the effectiveness of their instruction; (2) facilities, to ensure that the organization's grounds, building, and equipment provide a safe environment conducive to teaching and learning; (3) food, to ensure that nutritional needs are met to allow students optimal opportunities to learn and grow; and (4) transportation, to ensure safe transit to and from school and school-sponsored activities. With each of these administrative and operational concerns, the Chair of the Operations Committee shall work closely with the Chair of the Finance Committee and available staff to assist with budgetary aspects of these functions, as well as with the Human Resources Committee to ensure that appropriate personnel are in place to carry out these operations.

Section 3. Special Committees. The Board may also create such special committees having two or more members as may be deemed desirable. For all Special Committees, the President shall appoint a Committee Chairperson and all members. The Committee Chairperson shall preside at the committee meetings and oversee reporting to the Board of Directors. Vacancies in the membership of such committees shall be filled by appointment made in the same manner as original appointments. Special committees shall have only the powers specifically delegated to them by the Board.

Section 4. Committee Authority. No committees of the Board (including the Executive Committee) shall be authorized to take the following actions:

- (a) Authorize distributions to or for the benefit of the Directors or officers;
- (b) Approve dissolution, merger or the sale, pledge, or transfer of all or substantially all of the corporation's assets;
- (c) Elect, appoint or remove Directors, or fill vacancies on the Board of Directors or on any of its committees, or
- (d) Adopt, amend, or repeal the Articles of Incorporation or Bylaws.

Section 5. Action on Behalf of the Corporation. Any meeting of a committee authorized to take action on behalf of the corporation is subject to North Carolina's Open Meetings laws, as codified at NCGS § 143-318.9 et seq., as amended, and all notice, meetings, and records of such committee proceedings shall be conducted in compliance with these requirements.

ARTICLE -- 5-- OFFICERS

Section 1. Titles. The officers of the corporation shall be a President, a Treasurer, and a Secretary. The Board of Directors may also elect a Chair of the Board of Directors, an Executive Vice President, one or more additional Vice Presidents, one or more Assistant Secretaries, and one or more Assistant Treasurers, and such other officers as it shall deem necessary. Except as otherwise provided in these Bylaws, the additional officers shall have the authority and perform the duties as from time to time may be prescribed by the Board of Directors. Any two or more offices may be held by the same individual, but no officer may act in more than one capacity where action of two or more officers is required.

Section 2. Election and Term. The officers of the corporation shall be elected by the Board of Directors at the annual meeting. Each officer shall hold office until the next annual meeting and until a successor is elected and qualified (unless the Board of Directors, at the annual meeting determines that there is to be no such immediate successor), or until his/her death, resignation, or removal.

Section 3. Removal. Any officer or agent elected or appointed by the Board of Directors may be removed at any time by the Board with or without cause. Such removal without cause shall be without prejudice to such person's contract rights, if any, but the appointment of

any person as an officer, agent, or employee of the corporation shall not of itself create contract rights.

Section 4. Resignation. An officer or agent may resign at any time by communicating such resignation to the corporation. A resignation is effective when it is communicated unless it specifies in writing a later effective date.

Section 5. Vacancies. Vacancies among the officers may be filled and new offices may be created and filled by the Board of Directors.

Section 6. Chair of the Board of Directors. The Chair of the Board of Directors, if such officer is elected, shall preside at meetings of the Board of Directors and shall have such other authority and perform such other duties as the Board of Directors shall designate.

Section 7. President. The President shall be the chief executive officer of the corporation and, subject to the control of the Board of Directors, shall supervise and control the management of the corporation in accordance with these Bylaws. In default of a Chair of the Board, the President shall preside at meetings of the Board of Directors. The President shall sign, with any other proper officer, instruments which may be lawfully executed on behalf of the corporation, except where required or permitted by law to be otherwise signed and executed, and except where the signing and execution shall be delegated by the Board of Directors to some other officer or agent. In general, the President shall perform all duties incident to the office of President and such other duties as may be assigned by the Board of Directors from time to time.

Section 8. Vice Presidents. The Vice Presidents, if so appointed, shall exercise the powers of the President during that officer's absence or inability to act. Any action taken by a Vice President in the performance of the duties of the President shall be presumptive evidence of the absence or inability to act of the President at the time the action was taken. The Vice Presidents shall have such other powers and perform such other duties as may be assigned by the Board of Directors.

Section 9. Treasurer. The Treasurer shall have custody of all funds and securities belonging to the corporation and shall receive, deposit or disburse the same under the direction of the Board of Directors; provided, that the Board may appoint a custodian or depository for any such funds or securities, and the Board may designate those persons upon whose signature or authority such funds may be disbursed or transferred. The Treasurer shall in general perform the duties incident to the office and such other duties as may be assigned from time to time by the President or the Board of Directors.

Section 10. Assistant Treasurers. Each Assistant Treasurer, if so appointed, shall have such powers and perform such duties as may be assigned by the Board of Directors, and the Assistant Treasurers shall exercise the powers of the Treasurer during that officer's absence or inability to act.

Section 11. Secretary. The Secretary shall keep accurate records of the acts and proceedings of all meetings of the Board of Directors and shall give all notices required by law and these Bylaws. The Secretary shall have general charge of the corporate books and records. The Secretary shall sign such instruments as may require the signature of the Secretary and in general shall perform all the duties incident to the office of Secretary and such other duties as may be assigned from time to time by the President or by the Board of Directors.

Section 12. Assistant Secretaries. Each Assistant Secretary, if so appointed, shall have such powers and perform such duties as may be assigned by the Board of Directors, and the Assistant Secretaries shall exercise the powers of the Secretary during that officer's absence or inability to act.

Section 13. Agents and Employees. The Board of Directors may appoint agents and employees who shall have such authority and perform such duties as may be prescribed by the Board. The Board may remove any agent or employee at any time with or without cause. Removal without cause shall be without prejudice to such person's contract rights, if any, and the appointment of such person shall not itself create contract rights.

Head of School and School Personnel. The Board of Directors shall appoint a Head of School of the corporation. The Head of School shall report to the authority of the Board of Directors and shall receive compensation as the Board of Directors may determine. When hiring other key staff, the Board of Directors may establish appropriate hiring criteria (such as salary ranges, key experiential requirements, processes for criminal background checks in keeping with NC public charter school and Beaufort County guidelines, etc.) to guide the Head of School in identifying and recruiting candidates. In such cases, the Head of School shall then identify faculty and staff candidates and make recommendations to the Board of Directors for approval prior to hiring of the key staff. Then, on an ongoing basis, the Head of School shall oversee such key personnel, prescribe their duties, set their salaries within the limits established by the Board of Directors, conduct annual performance reviews of key school personnel, and carry out other such duties as the Board of Directors may assign in the interest of the oversight and success of the school.

When hiring other than key staff, it is expected that the Head of School will identify candidates, make hiring decisions, prescribe their duties, set their salaries within reasonable limits, conduct annual performance reviews of school personnel, and carry out other such duties as are necessary to the oversight and success of the school.

ARTICLE -- 6-- RECORDKEEPING

Section 1. Corporate Recordkeeping. Recordkeeping is a vital part of running an effective nonprofit organization, from both an operational and a legal standpoint. The Secretary of the corporation is charged with overall responsibility for recordkeeping and management, but all Directors are responsible for ensuring appropriate recordkeeping. The Board should ensure that records are adequate, current, and appropriately accessible.

Section 2. Meeting Minutes. The Board of Directors should ensure that minutes are drafted and approved following each meeting. Such minutes shall be posted on the corporation's publicly accessible website as well as saved at the office location in accordance with the legal requirements set forth below, especially those set forth under the guidelines of North Carolina's Open Meetings laws. The Secretary should ensure that all formal actions taken by the Board of Directors or its committees or any Board resolutions are preserved in writing.

Section 3. Legal Requirements.

(a) Chapter 55A of the NCGS requires nonprofit organizations to keep as permanent records minutes of all meetings of the Board of Directors. Moreover, records must be kept of all actions taken by committees of the Board of Directors that have been authorized by the Board to act on behalf of the organization. These records should be sufficiently detailed to clearly reflect the specific action taken at any meeting.

(b) A nonprofit organization must maintain copies of the following records at its principal office: (i) its Articles of Incorporation and all amendments thereto; (ii) Bylaws and all amendments thereto; (iii) resolutions adopted by the Board relating to the rights of the organization's Directors and Officers; (iv) all written communications directed to the general Board of Directors within the past three years; (v) important financial statements for the past three years; and (vi) a list of the names and addresses of its current Directors and Officers. Directors have the general right to inspect and copy these records.

(c) NC Open Meetings laws require that the corporation keep full and accurate minutes of all official meetings, including closed sessions, and make these minutes publicly available for inspection and copying, except for the minutes of closed sessions when public inspection would frustrate the purpose of the closed session. The NC Office of Charter Schools encourages the Board of Directors to post its approved meeting minutes on the school's website. Meeting minutes should be maintained in an accessible and consistent place, as they are public records and fall under the Public Records Law. For further direction, see ARTICLE -- 9Section 3 below.

(d) North Carolina requires nonprofit organizations to maintain appropriate accounting records. These records should include IRS Form 990 and the organization's financial audit. In addition, the Treasurer or another financial officer should prepare regular (at least monthly or quarterly) financial statements for the Board's review, which should be included in the organization's accounting records. Financial records should be sufficiently detailed and itemized to reflect all of the organization's financial obligations, including any specific restrictions on the use of grant funds.

(e) State and federal law require an audit for any exempt organization that receives federal (or state) funds of \$500,000 or more. In addition, North Carolina law has specific reporting and certification requirements for organizations that receive state funds less than \$500,000.

(f) A tax-exempt nonprofit organization must annually file IRS Form 990 or 990-EZ (the Return of Organization Exempt From Income Tax form). Form 990 is an informational form that provides information to the IRS about the purpose and goals of the organization; its major donors; the compensation of Directors, Officers, and key employees; and the number of hours worked by each of such persons. It also provides information regarding the organization's activities, governance, internal policies, foundation status, and any political or lobbying activity. Form 990 and all related forms must be filed by the 15th day of the fifth (5th) month following the end of the organization's fiscal year. The corporation should be diligent in completing and maintaining its Form 990 filings, since the Form 990 may be subject to public scrutiny. Under Federal law, the nonprofit must provide copies of its three (3) most recent Form 990s to anyone who requests them, whether in person, by mail, fax, or e-mail.

(g) Federal law also requires that nonprofit organizations retain both the Form 1023 and Letter of Exemption issued by the IRS, and that such forms are available for public inspection.

(h) Although state law is silent on the issue of how long to retain financial records, IRS Audit Standards require saving all financial records for seven (7) years.

Section 4. Ongoing Financial Oversight and Recordkeeping. The Board of Directors should develop, review, and approve an annual budget for the organization, and financial reports should include a comparison of budgeted and actual revenues and expenses. Any evaluation of an organization's overall financial health relies on financial statements and reports that are complete, accurate, and produced in accordance with standard accounting principles.

ARTICLE -- 7 – PROGRAM EVALUATION AND STRATEGIC PLANNING

Section 1. Mission. Inner Banks Academy is a mission-driven organization, and all efforts of its Board of Directors and the personnel of the school they govern shall be intended to further this mission. At all times the corporation shall have a clearly stated mission that is consistent with its tax-exempt purposes, approved by the Board of Directors, and responsive to the community and constituents it serves. All of the corporation's programs and operations shall support that mission, and the Board of Directors and all who work for or on behalf of Inner Banks Academy shall be expected to understand the mission and remain committed to its fulfillment.

Section 2. Strategic Planning. To ensure the successful pursuit of the corporation's mission, the Board of Directors, led by the Strategic Planning Committee, shall oversee an annual strategic planning process. While the specific processes may be determined at the time given the specific context in which the strategic planning occurs, the process should involve at least the following on an annual basis:

- Gathering information about performance to date, which may involve data from a wide range of constituents and stakeholders, including but not limited to administration, teachers, other staff, students, parents, and other involved community members;
- Reviewing the current vision, mission, goals, objectives, and action steps in light of this information; and
- Making appropriate changes to the corporation's goals and action steps as well as revisions to key policies that serve as tools of the strategic plan.

ARTICLE -- 8-- INDEMNIFICATION OF DIRECTORS AND OFFICERS

Section 1. General Policy. The corporation may indemnify to the maximum extent permitted by NCGS §§ 55A and 115C of the General Statutes of North Carolina any one or more of the Directors, Officers, employees, or agents and former Directors, Officers, employees, or agents of the corporation, and persons who serve or have served at the request of the corporation as directors, Officers, partners, trustees, employees or agents of another foreign or domestic corporation, partnership, joint venture, trust or other enterprise, against judgments, penalties, settlements and other liabilities incurred by them in connection with any pending, threatened or completed action, suit or proceeding, whether civil, criminal, investigative or administrative (a “proceeding”) and against reasonable costs and expenses (including attorneys’ fees) in connection with any proceeding, where such liabilities and litigation expenses were incurred incident to the good faith performance of their duties. In no case, however, shall the corporation indemnify, reimburse, or insure any person for any taxes imposed on such individual under chapter 42 of the Code. Further, if at any time the corporation is deemed to be a private foundation within the meaning of section 509 of the Code then, during such time, no payment shall be made under this Article if such payment would constitute an act of self-dealing or a taxable expenditure, as defined in § 4941(d) or § 4945(d), respectively, of the Code. Moreover, the corporation shall not indemnify, reimburse or insure any person in any instance where such indemnification, reimbursement or insurance is inconsistent with § 4958 of the Code or any other provision of the Code applicable to corporations described in § 501(c)(3) of the Code. If any part of this Article shall be found in any action, suit or proceeding to be invalid or ineffective, the validity and the effectiveness of the remaining parts shall not be affected.

Section 2. Use of Corporate Funds. The corporation may advance expenses in connection with any proceeding to any such person in accordance with applicable law. The use of funds of the corporation for indemnification or for purchase and maintenance of insurance for the benefit of the persons designated in Section 1 of this Article shall be deemed a proper expense of the corporation.

ARTICLE -- 9 -- LEGAL COMPLIANCE

Section 1. General Obligation. The Board of Directors shall seek clarification of, and comply with all applicable federal, North Carolina, and local laws and regulations as well as all fiduciary duties applicable to them as directors of a nonprofit, tax-exempt organization.

Section 2. Limitations of a tax-exempt organization. As an organization that has been or will be granted federal income tax exemption as a 501(c)(3) organization, Inner Banks Academy must be both organized and operated exclusively for one or more tax-exempt purposes. To meet the requirements of the operational test on an ongoing basis, (1) Inner Banks Academy must engage primarily in activities that accomplish one or more of its exempt purposes, (2) Inner Banks Academy's net earnings cannot inure in whole or in part to the benefit of private shareholders or individuals, which includes the duty to avoid any excess benefit transactions under Section 4958 of the Code (For clarity an excess benefit transaction is a transaction that provides an excessive economic benefit to an insider of the corporation, such as when the value of the benefit provided by the organization exceeds the value of what the insider provides the organization in return. These excess benefit transactions often involve compensation but can also involve the transfer or property of contracts for services with organizations owned by the insider), and (3) Inner Banks Academy cannot be an action organization, meaning the organization cannot devote a substantial part of its activities to attempting to influence legislation or participate in political campaigns.

It is the responsibility of the Board of Directors to ensure that the corporation continues to meet the organizational test to protect its tax-exempt status. Members of the Board of Directors will be helped in these efforts by taking seriously the pledges of the Code of Ethics and by following scrupulously the applicable procedures set forth in these Bylaws and the Conflict of Interest Policy. Compliance may also occasionally require the guidance of outside counsel.

To assist the Board of Directors, the corporation may offer occasional training on issues of private benefit, private inurement, excess benefit transactions, the duty of loyalty, and political campaign and lobbying activities. Furthermore, the individual members of the Board of Directors are encouraged to familiarize themselves with the following compliance guide promulgated by the IRS: <http://www.irs.gov/pub/irs-pdf/p4221pc.pdf>.

Section 3. Compliance with Open Meetings Laws.

(a) Compliance generally. The Board of Directors and the Corporation are subject to North Carolina's Open Meetings laws, as codified at NCGS § 143-318.9 *et seq.*, as amended, and all notice, meetings, and records of the Board of Directors or its committees shall be conducted in compliance with these requirements, as stated elsewhere in these Bylaws. The general rule is that all "Official Meetings" of public bodies must be open to the public unless one of the limited exceptions applies; as NC Open Meetings laws state, "each official meeting of a public body shall be open to the public, and any person is entitled to attend such a meeting."

(b) Definition of "Official Meeting." NCGS §143-318.10 (d) states the following definition of an "Official Meeting":

“ ‘Official meeting’ means a meeting, assembly, or gathering together at any time or place or the simultaneous communication by conference telephone or other electronic means of a majority of the members of a corporation for the purpose of conducting hearings, participating in deliberations, or voting upon or otherwise transacting the public business within the jurisdiction, real or apparent, of the corporation. However, a social meeting or other informal assembly or gathering together of the members of a corporation does not constitute an official meeting unless called or held to evade the spirit and purposes of this Article.”

(c) Resources to Assist with Compliance. To assist with interpretation of this rule, the main text of that law is here:

http://ncga.state.nc.us/EnactedLegislation/Statutes/HTML/ByArticle/Chapter_143/Article_33C.html.

Furthermore, if the Board of Directors seeks guidance regarding implementation of these rules, it should reach out to NCDPI. At the time of approval of these Bylaws, that contact person is Robin.kendall@dpi.nc.gov. If a sensitive subject requires a closed session, it is suggested that the corporation seek counsel on conducting such a session appropriately.

(d) Closed sessions. If the corporation needs to hold a closed or “executive” session, it may do so only by identifying the specific statutory exemption that allows for the closed session. NCGS §143-318.11(a) allows the corporation to hold a closed session for only the following nine exemptions or purposes:

- to prevent the disclosure of information that is privileged or confidential under state or federal law;
- to prevent the premature disclosure of an honorary degree, scholarship, prize, or similar award;
- to consult with an attorney employed or retained by the corporation in order to preserve the attorney- client privilege between the attorney and the corporation;
- to discuss matters relating to the location or expansion of industries or other businesses in the area served by the corporation, including agreement on a tentative list of economic development incentives that may be offered by the corporation in negotiations;
- to establish, or to instruct the corporation's staff or negotiating agents concerning the position to be taken by or on behalf of the corporation in negotiating (i) the price and other material terms of a contract or proposed contract for the acquisition of real property by purchase, option, exchange, or lease; or (ii) the amount of compensation and other material terms of an employment contract or proposed employment contract;

- to consider the qualifications, competence, performance, character, fitness, conditions of appointment, or conditions of initial employment of an individual public officer or employee or prospective public officer or employee, or to hear or investigate a complaint, charge, or grievance by or against an individual public officer or employee;
- to plan, conduct, or hear reports concerning investigations of alleged criminal misconduct;
- to formulate plans by a local board of education relating to emergency response to incidents of school violence; and
- to discuss and take action regarding plans to protect public safety as it relates to existing or potential terrorist activity and to receive briefings by staff members, legal counsel, or law enforcement or emergency service officials concerning actions taken or to be taken to respond to such activity.

(e) Procedures for Closed Sessions. Where one of the above statutory exceptions applies, the corporation may but is not required to close the applicable portion of a meeting. According to NCGS §143-318.10(e), to close a session, the corporation must identify and document the exemption being relied upon to close the session and then hold a vote in an open meeting to determine whether a closed session should be held and vote during an open meeting to hold a closed session. Subsequently, the minutes of closed session must provide a general account of the closed session with enough information that the public not in attendance could gain a reasonable understanding of what took place, though the corporation may withhold the minutes in a situation where public review would frustrate the purpose of the closed session unless and until the reason for holding the closed session is no longer valid.

Section 4. Public Comment at Meetings. All media and public have the right to attend official meetings (NCGS § 143-318.10(a)), and the Board is required to provide for a period of public comment per month at regular meetings (see NCGS § 115C-51, which states further that the Board “is not required to provide a public comment period under this section if no regular meeting is held during the month”). This does not mean that they necessarily have the right to make comment, and this state law further allows the Board to make rules to govern the public comment period (NCGS § 115C-51), and the state law protects against situations where the commenter interrupts or disturbs the official meeting (NCGS § 143-318.17). The corporation shall interpret these rules in light of its goal of open and clear communication with its stakeholders.

ARTICLE -- 10 – FINANCIAL OVERSIGHT

Section 1. General Duty of Oversight. Among its most important duties, the Board of Directors is responsible for monitoring and controlling the finances of the corporation. Financial oversight policies and practices must ensure that all monies are spent prudently and consistent with the purposes of the corporation and guard against potential financial abuses. The regulatory requirements and heightened scrutiny to which a 501(c)(3) organization is subject, and the reporting requirements and use restrictions from donors and grants, make these policies even more critical.

Furthermore, financial oversight is part of the fiduciary duties of each individual member of Board of Directors. Specifically, each Director owes a duty of care to the corporation that includes becoming knowledgeable and informed about matters before the Board of Directors, including the corporation's financial management and related activities. To ensure that the Board of Directors is able to carry out this duty, the Treasurer or a member of the Finance Committee shall present the following whenever possible at regular meetings of the Board of Directors:

- the organization's balance sheet, which demonstrates the current net worth of the organization, including assets, liabilities, and equity;
- a current cash flow statement and an income statement, which demonstrate all transactions for the previous period, showing what income has come in and what expenses have occurred;
- a budget versus the actual report, which demonstrates whether the school is meeting financial goals, has enough income to cover expected expenses, etc.

Section 2. Annual Financial Reports. The Board of Directors shall present at the annual meeting a report, verified by the Treasurer or by a majority of the Directors and certified by an independent public or certified public accountant or a firm of such accountants selected by the Board, showing in appropriate detail the following: (1) the assets and liabilities, including the trust funds, of the corporation as of the end of a twelve-month fiscal period terminating not more than six months prior to said meeting; (2) the principal changes in assets and liabilities, including trust funds, during said fiscal period; (3) the revenue or receipts of the corporation, both unrestricted and restricted to particular purposes, during said fiscal period; and (4) the expenses or disbursements of the corporation, for both general and restricted purposes during said fiscal period.

Section 3. Checks, Notes, Contracts. The Board of Directors shall determine who shall be authorized from time to time on the corporation's behalf to sign checks, notes, drafts, acceptances, bills of exchange and other orders or obligations for the payment of money; to enter into contracts; or to execute and deliver other documents and instruments.

Section 4. Compensation and Reimbursement of Agents and Employees.

Officers, agents, and employees may receive compensation in such reasonable amounts as may be fixed by a majority vote of the entire Board of Directors, and may shall reimburse all reasonable expenses of its Officers, agents and employees incurred for corporation business, provided that no such compensation or reimbursement shall constitute an excess benefit transaction under Section 4958 of the Code. For clarity an excess benefit transaction is a transaction that provides an excessive economic benefit to an insider of the corporation, such as when the value of the benefit provided by the organization exceeds the value of what the insider provides the organization in return. These excess benefit transactions often involve compensation but can also involve the transfer or property of contracts for services with organizations owned by the insider. The compensation of agents and employees appointed by the Board shall be fixed by the Board, but this power may be delegated to any officer, agent or employee as to persons under that person's direction or control. The Board may require Officers, agents or employees to give security for the faithful performance of their duties.

Section 5. Conflict of Interest – General Policy.

A Director shall inform the Board of Directors of any direct or indirect conflict of interest which the Director has with regard to any transaction contemplated by the Board of Directors (a "Conflict of Interest"). A Conflict of Interest shall exist in Board actions including, but not be limited to, actions concerning a transaction:

- in which the Director has a material financial interest, or
- in which the Director is presently serving as a director, trustee, officer or general partner of another party.

Pursuant to the provisions of Section 55A-8-31 of the General Statutes of North Carolina, the Director may participate in the discussion but may not vote on the transaction and when a Director does not vote because of a Conflict of Interest, the act of the majority of the Directors voting shall be the act of the Board of Directors if a quorum is present at the meeting. This general conflict of interest provision may be supplemented by conflict of interest policies and procedures approved by the Board of Directors.

Section 6. Competitive Bidding.

The corporation shall require a competitive bidding procedure if the total amount of the contract exceeds a dollar amount set by the Board of Directors (the "Bid Purchase Threshold"). If the amount of the contract exceeds the Bid Purchase Threshold, then where reasonably possible the corporation shall solicit at least *two* bids from organizations offering the services stipulated in the contract on appropriate terms. If only *one* organization offers the services stipulated in the contract on appropriate terms, then prior to contracting the corporation shall determine that the total amount of the contract is fair and in the best interest of the corporation. In all instances, the corporation shall abide by the conflict of interest policies and procedures of the corporation.

Section 7. Loans.

No loans shall be contracted on behalf of the corporation and no evidence of indebtedness shall be issued in its name unless authorized by a resolution of the Board of Directors. Such authority may be general or confined to specific instances.

Section 8. Indebtedness. No indebtedness of the corporation in excess of \$10,000 shall be incurred other than in the normal course of business, except as may be approved by resolution adopted by a majority of the Directors in office. Any and all of such indebtedness may be represented by notes, debentures, bonds, or other securities, either unsecured or secured by, or issued under, a mortgage, trust indenture, or otherwise, and may be issued at such times and upon such terms as the Board of Directors shall determine.

Section 9. Additional Best Financial Practices. In addition to the financial policies and procedures described above, both the Board of Directors—led by the Finance Committee and in consultation with key staff members, accountants, auditors, and other advisors, where appropriate—may from time to time approve and promote certain financial and accounting practices to protect the corporation and to comply with applicable regulations. As best practices for financial oversight, these financial and accounting policies and practices may include policies requiring that:

- bank statements be opened, reviewed and reconciled by a person who does not have check writing authority;
- the authority to sign checks is limited, both by who can sign and amount and that such authority has been revoked for former staff or former members of the Board of Directors;
- the Board of Directors receives some training or retains expert advice in how to read and understand financial statements;
- the corporation develop an annual budget and require close review of regular financial reports comparing actual and budgeted expenses and revenues;
- there be clear guidelines, consistent with all provisions in these Bylaws, for reimbursement of expenses for members of the Board of Directors, Officers of staff, including the types of expenses that will be reimbursed and the documentation required;
- the absolute prohibition of loans to members of the Board of Directors, Officers, or staff; and
- regular review of all financial oversight policies to ensure they are effective and enforced.

Furthermore, the whole Board of Directors, led by the Finance Committee, should develop procedures to ensure that the corporation does all of the following:

- secures appropriate services from auditors and accountants;
- analyzes current financial reports;
- communicates accurate and timely information to appropriate constituents;

- ensures provision of appropriate financial reporting to donors;
- oversees grant administration processes;
- oversees annual audit processes;
- coordinates annual Board of Director review and submission of the Form 990;
- orchestrates budgeting and financial planning processes in light of projected enrollments and other revenue streams;
- implements effective grant, contract, and cash flow processes; and
- works with available staff to ensure that the organization anticipates and meets its financial obligations.

ARTICLE -- 11 -- GENERAL PROVISIONS

Section 1. Non-Discrimination Policy. The corporation seeks diversity in its student body, faculty, staff, and administration. The corporation does not discriminate on the basis of race, color, religion, national or ethnic origin, sex, age, disability, marital status, sexual orientation, or any other category protected by law, in its educational policies, employment practices, or any other school administered procedures and programs.

Section 2. Bond. The Board of Directors may by resolution require any or all Officers, agents or employees of the corporation to give bond to the corporation, with sufficient sureties, conditioned upon the faithful performance of the duties of their offices or positions, and to comply with such other conditions as may from time to time be required by the Board.

Section 3. Fiscal Year. The fiscal year of the corporation shall be the twelve-month period **ending June 30** of each year.

Section 4. Amendments. These Bylaws may be amended or repealed and new Bylaws may be adopted by the affirmative vote of a majority of the entire Board of Directors at any meeting of the Board; provided, that notice of the meeting shall have been given that states that the purpose or one of the purposes of the meeting is to consider a proposed amendment to the Bylaws and includes a copy or summary of the proposed amendment or states the general nature of the amendment. Such notice may be waived as provided in these Bylaws.

THIS IS TO CERTIFY that the above Bylaws of Inner Banks Innovation Academy, Inc. were duly adopted by the Board of Directors by unanimous consent.

This the _____ day of _____, 2016.

Secretary

**RESOLUTIONS of
THE BOARD OF DIRECTORS
of
INNER BANKS INNOVATION ACADEMY, INC.**

The board of directors (the “Board”) of Inner Banks Innovation Academy, Inc. (the “Corporation”), acting pursuant to the authority of the Nonprofit Corporation Act of the General Statutes of North Carolina (the “Act”), does hereby adopt the following resolutions:

CODE OF ETHICS, CONFLICT OF INTEREST POLICY, AND ANTI-NEPOTISM POLICY

WHEREAS, the Board wishes to supplement the provisions of the Corporation’s Bylaws with a board code of ethics, a conflict of interest policy, and an anti-nepotism policy (“Code & Policies”) that guide the ethical pursuit of the Corporation’s mission and provide for the efficient management and resolution of potential conflicts of interests between the Corporation and the directors on its Board, its officers, or its staff;

WHEREAS, a copy of the proposed Code & Policies are attached hereto as Exhibit A; and

WHEREAS, the Board has thoroughly reviewed the Code & Policies and determined that it is in the best interest of the Corporation that they be approved and employed.

NOW, THEREFORE, BE IT RESOLVED, that the Board hereby approves and adopts the Code & Policies as the official code of ethics, conflict of interest policy, and anti-nepotism policy of the Corporation.

GENERAL AUTHORIZATION

FURTHER BE IT RESOLVED, that the officers of the Corporation, and any persons they designate, are authorized in the name of the Corporation to take any actions, including executing any documents and instruments that the officers deem necessary and appropriate to carry out the intent and effectuate the purposes of the foregoing resolutions.

IN WITNESS WHEREOF, the undersigned hereby certifies that such actions were taken at a properly called and constituted meeting of the Board on the ___ day of _____ 2016, effective as of that date.

Secretary

CODE OF ETHICS

The mission of the Inner Banks Innovation Academy, Inc. (“Inner Banks Academy”) is to create a peaceful school culture that is conducive to collaborative education and character development, empowering every student to succeed in building an excellent foundation for college, career, civic participation, and lifelong learning.

- Inner Banks Academy is an educational organization, guided by the noble mission to educate those it serves.
- Inner Banks Academy is a community asset, committed to bettering the communities it serves.
- Inner Banks Academy is a nonprofit organization, dedicated to acting in keeping with the public trust.
- Inner Banks Academy is a tax-exempt organization, bound by its charitable and educational purposes.

Therefore, as a means of carrying out this mission most effectively, Inner Banks Academy has adopted this board code of ethics (“Board Code of Ethics”) in order to establish a foundation of shared values and in order to guide its board members in their conduct whenever they are representing or acting on behalf of Inner Banks Academy.

The Code of Ethics contains broad principles reflecting the types of behavior Inner Banks Academy expects of its board members.

This Code of Ethics is only one part of Inner Banks Academy’s efforts to make ethical conduct the foundation of the organization’s conduct. It does not and cannot replace the thoughtful dedication and good faith efforts of its board members to act in the best interest of the organization, and each board member pledges to know Inner Banks Academy’s mission and work collaboratively to pursue this mission in keeping with the highest orders of integrity, honesty, openness, and trustworthiness.

Board members pledge to do the following:

- Approach the Board of Directors of Inner Banks Academy as an active governing body that works to ensure the financial, operational, and reputational health of the corporation
- Support the mission of Inner Banks Academy and work to accomplish the goals set forth through the strategic planning process.
- Abide by the governing documents and policies of Inner Banks Academy.
- Advocate for the school within the community.
- Participate actively in fundraising and school-related events.

- Work collaboratively with other Directors to fulfill the fiduciary and governance obligations of the board of directors of a public charter school.
- Act in a professional and respectful manner to foster effective and efficient operation of Inner Banks Academy.
- Prepare for meetings of the Board of Directors or committees by reviewing materials in advance.
- Attend meetings of the Board of Directors and its committees regularly, trying not to miss more than two meetings annually, and, if not able to attend a meeting, notify the Secretary and provide any materials that were the Director's responsibility in time for others to review in advance.
- Serve on at least one standing committee of the Inner Banks Academy Board.
- Ask thoughtful questions to help the Board of Directors make the best decisions possible for the students and staff of Inner Banks Academy.
- Maintain the confidentiality of personnel discussions and other closed session topics.
- Evaluate annually both individual and full Board performance. Admit shortcomings, accept responsibility, and act for the future.
- Disclose any real or perceived conflicts and sign the board's Conflict of Interest Statement annually.
- Review, consider carefully, and sign this Board Code of Ethics.

**BOARD CODE OF ETHICS
RECEIPT ACKNOWLEDGMENT
&
PLEDGE FORM**

INNER BANKS INNOVATION ACADEMY, INC.

I HEREBY CERTIFY that I have received, read, and understood all expectations set forth in the Board Code of Ethics and I agree to comply with the letter and the spirit of the Board Code of Ethics at all times in order to protect the reputation and pursue the mission of Inner Banks Innovation Academy, Inc.

Print Board Member Name

Signature

Date: _____

CONFLICT OF INTEREST POLICY

ARTICLE I PURPOSE

The purpose of this Conflict of Interest Policy (the “Policy”) is to safeguard the integrity, reputation, and interests of Inner Banks Academy, as well as of Inner Banks Academy’s Board of Directors, officers, and staff, by fostering proper and unbiased conduct. In addition, the Policy serves to educate Directors, officers, and staff about situations that generate conflicts of interest, to provide means for Directors, officers, and staff to disclose and manage conflicts of interest, and to promote the best interests of constituents and the community. The Policy is intended to supplement, but not replace, any applicable federal, state, and local laws governing conflicts of interest applicable to nonprofit and charitable organizations; the provisions of Inner Banks Academy’s Bylaws pertaining to conflicts of interest; and the general ethic of open and honest communications advocated by Inner Banks Academy.

Situations may arise beyond those specifically listed in this Policy that may still raise the specter of a conflict of interest or a reputational concern for Inner Banks Academy. These situations may include those in which a Director, officer, or employee, or a family member or close relation of a Director, officer, or employee, would obtain some advantage—personal, professional, financial, or otherwise—from Inner Banks Academy. While this Policy aims primarily to guard against the gain of such advantage at the expense of Inner Banks Academy, it is intended to be employed liberally to ensure both actual and perceived fairness to Inner Banks Academy in all such situations.

ARTICLE II GENERAL OVERVIEW & DEFINITIONS

Section 1: In General

Inner Banks Academy’s Directors, officers, and staff are obligated to always act in the best interest of Inner Banks Academy. This obligation requires the Directors, officers, and staff—in the performance of their duties—to seek only the furtherance of Inner Banks Academy’s mission. At all times, Directors, officers, and staff are prohibited from using their position and title and Inner Banks Academy’s name or property for private profit or benefit.

A. The Directors, officers, staff, and agents of Inner Banks Academy should neither solicit nor accept gratuities, favors, or anything of monetary value from contractors/vendors. This does not preclude Inner Banks Academy from engaging in bona-fide fundraising activities.

B. No Director, officer, staff member, or agent of Inner Banks Academy shall participate in the selection, award, or administration of a purchase or contract with a vendor where, to his/her knowledge, any of the following has a financial interest in that purchase or contract:

1. The Director, officer, staff member, or agent;

2. Any member of their immediate family;
3. Their partner;
4. An organization in which the above is a Director, officer, or staff member;
5. A person or organization with which any of the above individuals is negotiating or has any arrangement concerning prospective employment.

Section 2: Board of Directors and Officers

A conflict of interest transaction is one involving Inner Banks Academy in which a Director or officer has a direct or indirect interest. A conflict of interest exists when a matter to be acted upon by the Board of Directors confers a direct and substantial benefit to any Director or officer or business or agency from which any Director or officer derives an income or over which any Director or officer exercises authority. A Director or officer has an indirect interest in a transaction if it involves another entity in which the Director or officer has a material financial interest or in which he/she is a general partner or another entity of which the Director or officer is a director, officer, or trustee.

No Director or officer shall use his/her position as a Director or officer of Inner Banks Academy for his/her own direct or indirect financial gain. Additionally, no Director or officer of Inner Banks Academy may receive any of the earnings of Inner Banks Academy, though a Director or officer may receive reasonable compensation for services rendered.

Inner Banks Academy is dedicated to participation and representation by members of its community on its Board of Directors and recognizes that such individuals or their family members (including their school-aged children) may qualify for services offered by Inner Banks Academy. Participation as a Director or officer does not preclude an individual from receiving services that his or her family may be eligible for and need. The receipt of services or the potential for receiving services may however constitute a conflict of interest from time to time as defined in the Policy. In the event that such a conflict of interest is determined to compromise the individual's ability to represent Inner Banks Academy's best interest regarding a specific issue or action before the Board of Directors, the procedures stated in the Policy shall be applied.

Section 3: Staff

A conflict of interest arises when there is a divergence between an individual's private interests and his/her personal obligations to Inner Banks Academy such that an independent observer might reasonably question whether the individual's professional actions or decisions are determined by considerations of person gain, financial or otherwise. A conflict of interest depends on the situation and not on the character of the individual.

Staff must conduct external business so as to avoid or minimize conflicts of interest and must respond appropriately when conflicts of interest arise. The following are representative, but not all-inclusive, of conflict of interest situations:

- a. Influence on purchases of any kind from the private firms in which the staff member or an immediate family member has a financial interest;

- b. Unauthorized disclosures of students' or systems' information for personal gain;
- c. Giving, offering, or promising anything of value, as a representative or Inner Banks Academy, to any government official to enhance relations with that official or the government;
- d. Transmission to a private firm or other use for personal gain of Inner Banks Academy's supported work, products, results, materials, record, or information that are not made generally available;
- e. Influence upon the negotiation of contracts between Inner Banks Academy and another organization with which the staff member or a member of the staff member's immediate family has consulting or other significant relationship or from which the staff member or a member of the staff member's immediate family member will receive favorable treatment as a result of such influence;
- f. Improper use of Inner Banks Academy's resources for personal financial gain; and
- g. Acceptance of compensation or free services from a vendor, service provider, or contractor of Inner Banks Academy, when the staff member is in a position to determine or influence Inner Banks Academy's purchases from those persons.

ARTICLE III PROCEDURES

Section 1: Directors and Officers

A. Disclosure

In general, any possible conflict of interest shall be disclosed by the interested Director or officer as soon as he/she recognizes the conflict. Disclosure shall be made on the Conflict of Interest Policy Receipt Acknowledgment and Disclosure Form (the "Form"), a sample of which is attached hereto, or at a meeting where the conflict is recognized.

If a Director or officer does not disclose a conflict, prior to voting on matters in which a potential conflict of interest exists for any Director or officer the Board Chair or President may inquire whether any Director or officer wishes to abstain from voting because of a conflict of interest, and any interested Director or officer shall declare that he/she abstains from voting if a conflict of interest exists. If no conflict of interest is disclosed by any Director or officer, but any Director or officer is of the opinion that such a conflict exists, and the challenged Director or officer refuses to abstain from the deliberations or voting as requested, the Board Chair or President shall immediately call for a vote of the Directors to determine whether the challenged Director or officer has a conflict of interest. If a majority of the Directors present vote to require the absenteeism of the challenged Director or officer, that Director or officer shall abstain from voting and be absent during the final discussion and vote.

B. Abstention and Removal

A member of the Board of Directors shall abstain from voting or attempting to influence the vote on any matter before the Board of Directors that places him/her in a conflict of interest. While an interested Director or officer may participate in preliminary discussion regarding the matter in which he/she has a conflict of interest, the Director or officer shall not participate in the final decision regarding the matter under consideration in which he/she has a conflict of interest and shall retire from the room during the vote on the matter in which he/she has a conflict of interest.

C. Form Review

The Board of Directors shall review the Forms submitted by all Directors and officers at least annually in order to keep apprised of possible conflicts of interest.

Section 2: Staff

A. Disclosure

Any possible conflict of interest shall be disclosed by the interested staff member in writing to the Principal of the school or President of the Board. Disclosure shall be made on the Form when it is received by the staff member for staff member's signature or at any point at which the conflict is recognized.

B. Form Review

The Board of Directors shall review the Forms submitted by staff at least annually in order to keep apprised of staff conflicts of interest.

**ARTICLE IV
RECORDS OF PROCEEDINGS**

The official minutes of the Board of Directors shall reflect that the conflict of interest was disclosed and that any interested Director or officer was not present during the final discussion or vote and did not vote on the matter.

**ARTICLE V
REPORTING**

The Form shall be signed at least annually by each Director, officer, and senior staff member, and at the commencement of employment by each non-senior staff member, disclosing all potential conflicts of interest and affirming such person has:

- a. Received a copy of the Policy;
- b. Read and understood the Policy; and
- c. Agreed to comply with the Policy.

Inner Banks Academy shall keep the Form submitted by each Director, officer, and staff member on file as appropriate to allow the Directors to oversee ongoing compliance with this Policy.

**CONFLICT OF INTEREST POLICY
RECEIPT ACKNOWLEDGMENT
&
DISCLOSURE FORM**

INNER BANKS INNOVATION ACADEMY, INC.

Each Director, officer, and senior staff member shall at least annually acknowledge in writing that he/she has received a copy of this Conflict of Interest Policy (the "Policy"), has read and understands this Policy, and agrees to comply with this Policy. Every non-senior staff member shall do so at the commencement of employment.

I HEREBY CERTIFY that I have received, read, and understood the Policy and I agree to comply with the Policy at all times. I understand that the Policy applies to all Directors, officers, and staff of Inner Banks Academy, Inc.

_____ To the best of my knowledge, I do not have any conflicts of interest as defined in the Policy.

_____ I have one or more conflicts of interest, which are as follows (Describe the nature of the conflict(s) in the space provided):

Print Name

Signature

Position

Date: _____

ANTI-NEPOTISM POLICY

The employment of immediate family can cause various problems including but not limited to charges of favoritism, conflicts of interest, family discord and scheduling conflicts that may work to the disadvantage of both Inner Banks Innovation Academy, Inc. (“Inner Banks Academy”) and its employees. It is the goal of Inner Banks Academy to avoid creating or maintaining circumstances in which the appearance or possibility of favoritism, conflicts, or management disruptions exist through adherence to this anti-nepotism policy (the “Anti-Nepotism Policy”)

For the purposes of this Anti-Nepotism Policy, the term “immediate family member” means a spouse, parent, child, brother, sister, grandparent, or grandchild. The term includes the step, half, and in-law relationships. The term also includes domestic partners (a person with whom the employee’s life is interdependent and who shares a common residence) and, a daughter or son of an employee’s domestic partner.

Inner Banks Academy may allow existing personal relationships to be maintained or employ individuals with personal relationships to current employees under the following circumstances:

- No voting members of the Board of Directors shall be an employee of a for-profit organization that provides substantial services to the school for a fee, except in situations where (1) the Director already sits on the Board of Directors, (2) it is determined that no reasonable alternative exists for the provisions of such services, and (3) the conflict of interest policy and bidding procedures are adhered to strictly, including an ultimate determination that the services are provided on fair terms and in the best interest of the organization;
- No employee of Inner Banks Academy shall be an immediate family to any member of the Board of Directors;
- No employee of Inner Banks Academy shall be a voting member of the Board of Directors;
- No employee that is immediate family of the Head of School shall be hired without the Board of Directors evaluating their credentials, establishing a structure to prevent conflicts of interest, and notifying the Department of Public Instruction, with evidence, that this process has occurred;
- They may not create a supervisor/subordinate relationship with an immediate family member;
- They may not vote on any Board action in regards to immediate family member;
- They may not supervise or evaluate a family member;
- The relationship will not create an adverse impact on work productivity or performance;
- The relationship may not create an actual or perceived conflict-of-interest;
- They may not audit or review in any manner the individual’s work.
- They may not be employed if a member of the employee’s immediate family (spouse, children, parents, grandparents, brothers, sisters, step family members, in-law family members) serves on Inner Banks Academy’s Board of Directors or any committee or council that has authority to review or order personnel actions or wage and salary adjustments which could affect his/her job.

No personal employee relationship covered by this Anti-Nepotism Policy will be allowed to be maintained, regardless of the positions involved, if it creates a disruption or potential disruption in the work environment, creates an actual or perceived conflict of interest or is prohibited by any legal or regulatory mandate.

This Anti-Nepotism Policy must be considered when electing, hiring, promoting, or transferring any employee.

Should relationships addressed within this Anti-Nepotism Policy be identified with either candidates for employment or, current employees the matter should be immediately reported to the Head of School and/or Board of Directors and the following policies and procedures will be followed:

- A determination will be made whether the relationship is subject to Inner Banks Academy's Anti-Nepotism Policy based on the conditions described above.
- If the relationship is determined to fall within one or more of the conditions described in this Anti-Nepotism Policy, the Head of School, in consultation with the affected employees and the Board of Directors, will attempt will to resolve the situation through the transfer of one employee to a new position or identifying some other action (e.g., supervisory reassignment) that will correct the conflict or issue identified. If accommodations are not feasible then, with affected employee suggestions, the Head of School, in consultation with Inner Banks Academy's Board of Directors, shall determine which employee must resign in order to resolve the situation.

Inner Banks Academy reserves the right to exercise appropriate managerial judgment to take such actions as may be necessary to achieve this intent of this Anti-Nepotism Policy. Inner Banks Academy reserves the right to vary from the guidelines outlined in this Anti-Nepotism Policy to address unusual circumstances on a case-by-case basis.

It is the responsibility of every employee to identify to Inner Banks Academy's Head of School any potential or existing personal relationship that falls under the definitions provided in this Anti-Nepotism Policy. Employees who fail to disclose personal relationships covered by this Anti-Nepotism Policy will be subject to disciplinary action up to and including the termination of employment.

INNER BANKS INNOVATION ACADEMY

APPENDIX H

ARTICLES OF INCORPORATION



NORTH CAROLINA

Department of the Secretary of State

To all whom these presents shall come, Greetings:

I, Elaine F. Marshall, Secretary of State of the State of North Carolina, do hereby certify the following and hereto attached to be a true copy of

ARTICLES OF INCORPORATION

OF

INNER BANKS INNOVATION ACADEMY, INC.

the original of which was filed in this office on the 8th day of August, 2016.



Scan to verify online.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Raleigh, this 8th day of August, 2016.

Elaine F. Marshall

Secretary of State

State of North Carolina
Department of the Secretary of State

ARTICLES OF INCORPORATION
NONPROFIT CORPORATION

Pursuant to §55A-2-02 of the General Statutes of North Carolina, the undersigned corporation does hereby submit these Articles of Incorporation for the purpose of forming a nonprofit corporation.

1. The name of the nonprofit corporation is: Inner Banks Innovation Academy, Inc.

2. (Check only if applicable.) The corporation is a charitable or religious corporation as defined in NCGS §55A-1-40(4).

3. The name of the initial registered agent is: Mack Paul

4. The street address and county of the initial registered agent's office of the corporation is:

Number and Street: 3705 Shadybrook Dr.

City: Raleigh State: NC Zip Code: 27609 County: Wake

The mailing address *if different from the street address* of the initial registered agent's office is:

Number and Street or PO Box: _____

City: _____ State: NC Zip Code: _____ County: _____

5. The name and address of each incorporator is as follows:

Vivian R. Lamb, 714 Homestead Park Dr., Apex, NC 27502

6. (Check either a or b below.)

a. The corporation will have members.

b. The corporation will not have members.

7. Attached are provisions regarding the distribution of the corporation's assets upon its dissolution.

8. Any other provisions which the corporation elects to include are attached.

9. The street address and county of the principal office of the corporation is:

Principal Office Telephone Number: (919)924-8664

Number and Street: 714 Homestead Park Dr.

City: Apex State: NC Zip Code: 27502 County: Wake

The mailing address *if different from the street address* of the principal office is:

Number and Street or PO Box: _____

City: _____ State: _____ Zip Code: _____ County: _____

10. (Optional): Please provide a business e-mail address:

Privacy Redaction

The Secretary of State's Office will e-mail the business automatically at the address provided at no charge when a document is filed. The e-mail provided will not be viewable on the website. For more information on why this service is being offered, please see the instructions for this document.



11. These articles will be effective upon filing, unless a future time and/or date is specified: _____

This is the 1st day of August, 2016.

Inner Banks Innovation Academy, Inc.

(Incorporator Business Entity Name)

Vivian R. Lamb

Signature of Incorporator

Vivian R. Lamb, Incorporator

Type or print Incorporator's name and title, if any

NOTES:

1. Filing fee is \$60. This document must be filed with the Secretary of State.

Attachments

7. Upon the dissolution of the corporation, the Board of Directors shall, after paying or making provision for the payment of all of the liabilities of the corporation, dispose of all of the assets of the corporation (if any) as follows:

- a. Assets held by the corporation upon condition requiring return, transfer or conveyance, which condition occurs by reason of the dissolution, shall be returned, transferred or conveyed in accordance with such requirements; and
- b. All other assets shall be transferred or conveyed to such organization or organizations organized and operated exclusively for religious, charitable, educational, scientific or literary purposes as shall at the time qualify as an exempt organization or organizations under Section 501(c)(3) of the Code, as the Board of Directors determines, or to federal, state, or local governments to be used exclusively for public purposes. Any such assets not so disposed of shall be disposed of by the Superior Court of the county in which the principal office of the corporation is then located, exclusively for such purposes or to such organizations, such as the court shall determine, which are organized and operated exclusively for such purposes, or to such governments for such purposes.

8A. The purposes for which the corporation is organized are:

- a. Primarily to establish and operate one or more public charter schools in the State of North Carolina to promote the creation and implementation of technology-based educational programs that provide personalized learning and wider access to excellent learning resources;
- b. To operate exclusively for charitable, educational, religious and scientific purposes within the meaning of Sections 501(c)(3) and 170(c)(2) of the Internal Revenue Code of 1986 or the corresponding provisions of any future United States Internal Revenue laws (the "Code"); and
- c. To engage in any other lawful activity for which corporations may be organized under N.C.G.S. Chapter 55A that is incidental to, connected with, or in the advancement of the foregoing purposes so long as the corporation does not engage in any activity or activities not in furtherance of one or more tax exempt purposes as contemplated in section 501(c)(3) of the Code.

8B. No part of the net earnings of the corporation shall be distributable to or inure to the benefit of its officers or Directors or any private person, except that the corporation shall be authorized to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of its exempt purposes. No substantial part of the activities of the corporation shall be the carrying on of propaganda, or otherwise attempting to influence legislation (except to the extent permitted by Section 501(h) of the Code), and the corporation shall not participate in or intervene in (including the publication or distribution of statements) any political campaign on behalf of any candidate for public office. Notwithstanding any other provision hereof, the corporation shall not carry on any other activities not permitted to be carried on (1) by a corporation exempt from federal income tax under Section 501(c)(3) of the Code or (2) by a corporation to which contributions are deductible under Section 170(c)(2) of the Code.

INNER BANKS INNOVATION ACADEMY

APPENDIX L

INSURANCE QUOTES

**INSURANCE PROPOSAL
PREPARED FOR:**

PRESENTED BY:

**Van Popering
Insurance**

*"We Specialize in Charter
Schools!"*

Account Executive: Thomas Van Popering
Address: 8318 Pineville Matthews Road, Suite 272
Charlotte, NC 28226
Phone: (704) 543-1544
E-Mail: Tom@VPInsure.com
Policy Term: 2016-2017

This presentation is designed to give you an overview of the insurance coverages we recommend for your company. It is meant only as a general understanding of your insurance needs and should not be construed as a legal interpretation of the insurance policies that **will** be written for you. Please refer to your specific insurance contracts for details on coverages, conditions, and exclusions.

Named Insured:	Inner Banks Innovation Academy
Company Name:	
Policy Term:	

Number of eligible students:

- 216 → \$2 / Student = \$500

Description of Benefits:

- Full Excess Plan 4
- Accident Medical Expense **\$50,000**
- Including Dental up to \$100 per tooth
- \$0 Deductible
- 52 week Benefit Period

Principal Sum:

- \$10,000 Death
- \$20,000 Dismemberment

DESCRIPTION OF HAZARDS:

This coverage will protect covered property against direct physical loss arising from any cause not specifically excluded. The advantage of this form is that the insurance company must prove that a loss is specifically excluded in order to deny coverage under the policy.

Total Premium = \$500

Named Insured:	Inner Banks Innovation Academy
Company Name:	
Policy Term:	

LIMITS

COVERAGES

\$1,000,000/\$2,000,000 Educator's Legal Liability

\$1,000,000/\$2,000,000 Directors and Officers Liability

Total Premium = \$2,850

Named Insured:	Inner Banks Innovation Academy
Company Name:	
Policy Term:	
Building Number:	
Street Address	

	<u>Limits</u>	<u>Property Description</u>
\$	0	Building
\$	100,000	Business Personal Property

REPLACEMENT COST VALUATION

This loss valuation method pays for the cost to repair or replace damaged items with **like** kind and quality without deduction for depreciation. This is important since you could face a substantial loss if you must replace property at today's prices but receive only the depreciated value of the property that was destroyed. This includes Boiler and Machinery coverage.

SPECIAL CAUSES OF LOSS COVERAGE

This coverage will protect covered property against direct physical loss arising from any cause not specifically excluded. The advantage of this form is that the insurance company must prove that a loss is specifically excluded in order to deny coverage under the policy.

Total Premium = \$895

Named Insured:	Inner Banks Innovation Academy
Company Name:	
Policy Term:	

Occurrence Form

Claims Made Form
Retro:

<u>Limits</u>	<u>Coverage Description</u>
\$ 1,000,000	Each Occurrence - Bodily Injury and Property Damage
\$ 3,000,000	General Aggregate
\$ 3,000,000	Products and Completed Operations Aggregate
\$ 1,000,000	Personal and Advertising Injury
\$ 1,000,000	Damage to Rented Premises (each occurrence)
\$ 10,000	Medical Expense (any one person)
	Abuse and Molestation Liability
	\$1,000,000 / \$3,000,000

COMMERCIAL GENERAL LIABILITY SCHEDULE OF EXPOSURES

(S) GROSS SALES - PER \$1,000/SALES

(A) AREA - PER 1,000/SQ. FT.

(M) ADMISSIONS - PER 1,000/ADM

(P) PAYROLL - PER \$1,000/PAYROLL

(Q) TOTAL COST - PER \$1,000/COST

(U) UNIT - PER UNIT (1) OIBER

<u>Loc</u>	<u>Classification</u>	<u>Class Code</u>	<u>Premium Basis</u>
001	SCHOOLS - PRIVATE	47475	216 (1)
001	SCHOOLS - FACULTY LIABILITY	47469	24 (1)

Total Premium = \$1,125

Named Insured:	Inner Banks Innovation Academy
Company Name:	
Policy Term:	

Limits	<u>Coverage Description</u>
\$ 1,000,000	Combined Single Limit
\$ 5,000	Medical Payments

Includes: Non-Owned Auto Liability
 Hired Auto Liability

Premium = \$0 / per bus (Year 2000 School bus)

Named Insured:	Inner Banks Innovation Academy
Company Name:	
Policy Term:	

Limits

Coverage Description

	As Required	Workers' Compensation
\$	1,000,000	Employer's Liability - Each Accident
\$	1,000,000	Employer's Liability - Disease - Policy Limit
\$	1,000,000	Employer's Liability - Disease - Each Employee

Workers' Compensation Rating Basis

Loc	Code	Classification	Est. Payroll	Rates
all	8868	SCHOOL PROFESSIONAL EMPLOYEES & <i>CLER</i>	\$ 700,000	0.48

****Total Premium = \$3,360**

Named Insured:	Inner Banks Innovation Academy
Company Name:	
Policy Term:	

Limits		<u>Coverage Description</u>
\$	3,000,000	Each Occurrence
\$	3,000,000	Annual Aggregate
\$	0	Self-Insured Retention

UMBRELLA POLICY

This form provides a higher limit of coverage that is excess over scheduled underlying policies. It is used in one of three ways: (1) to provide additional limits of protection over the coverage listed in your underlying schedule, (2) to act as primary coverage if your underlying limits are exhausted, and (3) to provide coverage for some risks, subject to a retention, when your primary coverage does not.

Total Premium = \$2,300

Named Insured:	Inner Banks Innovation Academy
Company Name:	
Policy Term:	

LIMITS

\$250,000

COVERAGES

Fidelity Bond

Total Premium = \$500



1.	Student Accident Policy	\$	500
2.	Directors & Officers/Educators Legal Liability	\$	<u>\$2,850</u>
3.	Property (Including Boiler & Machinery)	\$	895
	-		
4.	General Liability	\$	1,125
5.	Commercial Auto	\$	0
6.	Workers Compensation	\$	3,360
7.	Umbrella	\$	2,300
8.	Fidelity Bond	\$	500
	Annual Total	\$	13,830

INNER BANKS INNOVATION ACADEMY

APPENDIX O

ADDITIONAL APPENDICES

- O1 3 Station Rotation Blended Learning Model
- O2 Scoring Proficiency and Grade Conversion
- O3 Letter from Buzz Cayton
- O4 Photos of possible facilities
- O5 Peaceful Schools schedule
- O6 Financial Services Agreement

Station Rotation

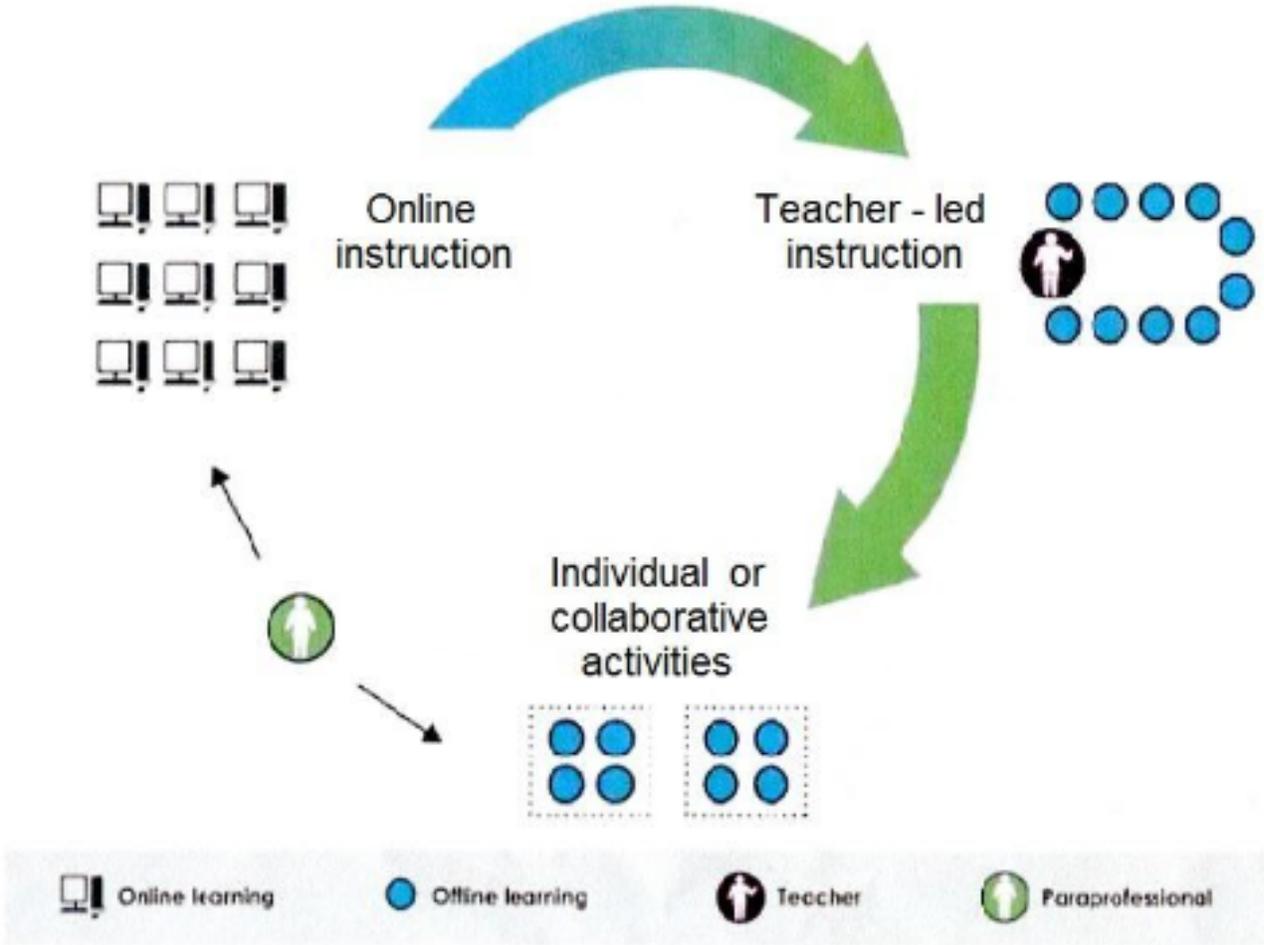


Table 3.9 Complete Scale

Score 4.0	More complex content
Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	Target learning goal
Score 2.5	No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content
Score 2.0	Simpler content
Score 1.5	Partial success at score 2.0 content, but major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content
Score 0.5	With help, partial success at score 2.0 content, but not at score 3.0 content
Score 0.0	Even with help, no success

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Table 6.1 Conversion Scale to Traditional Grade

Average Scale Score Across Multiple Goals	Traditional Grade
3.75-4.00	A+
3.26-3.74	A
3.00-3.25	A-
2.84-2.99	B+
2.67-2.83	B
2.50-2.66	B-
2.34-2.49	C+
2.17-2.33	C
2.00-2.16	C-
1.76-1.99	D+
1.26-1.75	D
1.00-1.25	D-
Below 1.00	F



VENTURE DEVELOPERS INC.
408 RIVER ROAD
WASHINGTON NC 27889

Office 252-946-0332
Mobile 252-943-4538
Email
wcayton@earthlink.net

September 14, 2016

Charter School Advisory Board
Education Building
301 N. Wilmington Street
Raleigh, NC 27601-2825

Dear Board Members:

As a local business owner and developer in Beaufort County; education is key to the continued growth and viability of our rural economy. Having a workforce that is career-ready, 21st century literate and possesses the skills to be active and competitive citizens is key to our area. I believe that having a choice in public education helps to ensure all students are meeting and exceeding high expectations in their learning.

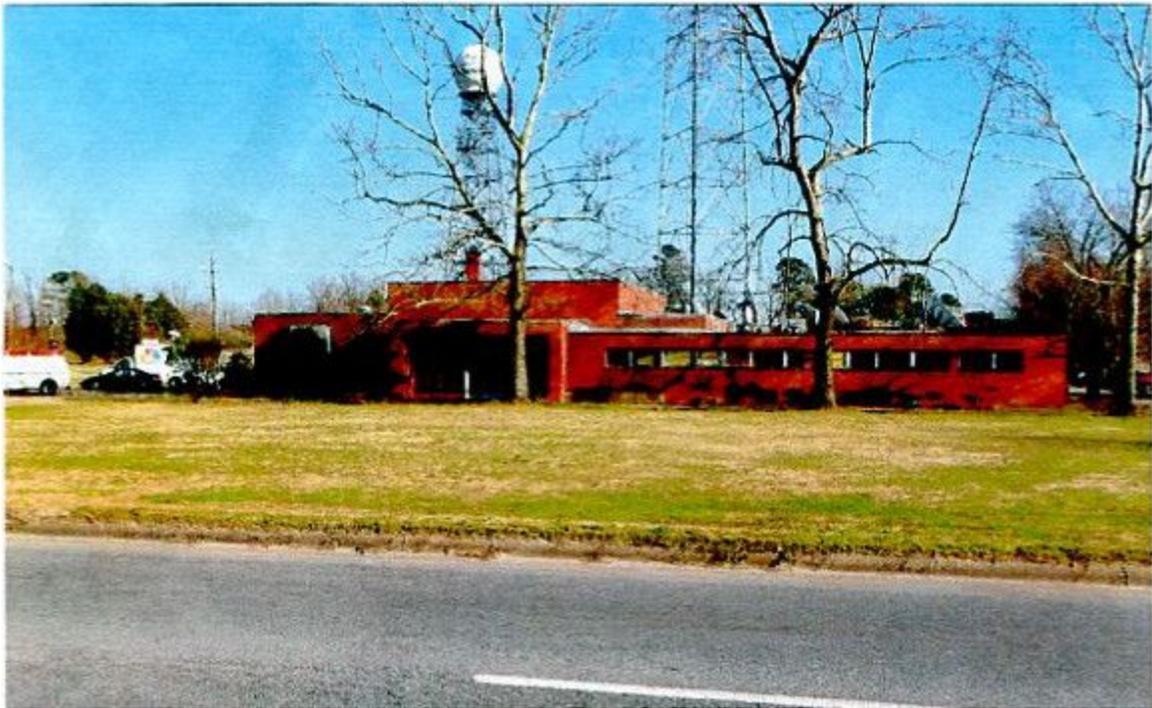
I am in full support of the Inner Banks Innovation Academy as a charter school option for Beaufort County and I have been working with the Board of Directors to provide meeting space and marketing assistance as needed. I also have facility options that could be developed for the school should the school be approved as I fully understand the facility challenges facing today's charter schools.

Please give this school the utmost consideration as it will be a tremendous asset to our community.

Sincerely,

W. L. "Buzz" Cayton

Possible HWY 33 facility



Possible HWY 264 facility





peaceful
schools nc

Working for safe and peaceful schools in North Carolina

Inner Banks Academy

Year One Schedule

15 Workshop and Professional Development hours

10 Consultation hours

8 Special Programming Hours

.....

This schedule is created specifically for Inner Banks Academy as they plan to launch as an official Peaceful School. Schedule and duration may be adjusted based on the specific needs of Inner Banks Academy as their plans unfold.

Staff Development

August Staff Development:

- Two full days with times to work grade level cohorts
- During staff workweek, before school year begins.
- Focus on proactive approaches to begin the school year
 - Proactive classroom management
 - Creating and setting the tone for a whole-school climate
 - Giving students voice in creating classroom agreements
- Discipline models based on Barbara Coloroso: Jellyfish, Backbone, Brick Wall
- Introduce helpful resources such as *Restorative Justice Circles* and *Responsive Classroom: Morning Meetings*
- Facilitate the agreement of discipline process when significant challenges arise in the classroom

Mid-year Staff Development Day:

- Revisit work done in August
- Reflection on the year so far. What's working? What needs attention?
- Specific agenda to be determined based on current needs of staff and students

Proposed consulting schedule

August: prior to school opening consulting with administrative staff, discipline team, and or select teachers for pre-year planning, goal setting, and envisioning the year as a Peaceful School. This is in addition to our all-staff training.

September: Just after school opening to check in on the beginning of the year, any emerging issues, questions, concerns, etc.

November: Reflecting on progress in the year so far, address goals for the years, areas needing attention, and next steps.

February: Plan for end of year focus. Addresses concerns as needed.

April: Reflection on the first year, set goals and plan for next year.

Budget and Fees

15 Workshop and Professional Development hours

10 Consultation hours

Total Hours: 25

Total Cost Estimate: \$5,000*

*Does not include travel expenses.



School Financial Services Agreement

This Financial Services Agreement (“Agreement”) is made and entered into by and between the **Goodall Consulting Corporation** (“Company”), located in Charlotte, North Carolina and **Inner Banks Innovative Academy** (“Client”), for mutual consideration and according to the terms and conditions agreed to herein.

Section I: Basic Services, Assurances, and Duration

Client agrees to engage Company to perform various business, financial, and accounting services from the date of this contract through **June 30, 2019**, in exchange for payment for such services set forth herein and as particularly specified in Addendum A. The parties represent to one another that they are lawfully authorized to operate in the state of North Carolina and to enter into this Agreement.

Section II: Services

Client shall provide Company with a list of staff, board members, officers and/or other individuals who are authorized to request and/or approve specific services, materials, and the release of information. A duly designated representative of Client will authorize the execution of those requests that fall outside the parameters of the services set forth in Addendum A, prior to Company’s execution of those requests.

Company shall conform to a reasonable schedule established by Client for any of the services set forth in Addendum A. In the event Client, Client’s representative and/or any outside contractor for Client is unable to comply with the established schedule, Company shall not be held liable for failure to complete agreed upon services according to the identified schedule.

It is expressly understood that Company is performing the services hereunder as an independent contractor and not the agent, partner or employee of Client and this Agreement shall not be construed to create any type of partnership, joint venture, agency or employment relationship between Company and Client. All liability, payments and agreements (other than this Agreement) are between Client and selected contractors. Company is not responsible for any negligent act or omission by any other contractor as hired by Client.

Section III: Compensation and Method of Payment

ADDENDUM A
SERVICES, LIMITATIONS, AND FEES

1. Services

Company will provide the following services:

- Preparation of financial reports (budget, cash disbursements, etc.) for each month of Client's fiscal year
- Preparation of vendor payments
- Reconciliation of bank accounts from information provided by Client
- Preparation of payroll (including payroll deductions and withholdings) according to Client's payroll processing timeline (semi-monthly)
- Preparation and submission of state and federal payroll taxes and associated reports
- Preparation and transmission of state and federal reporting in accordance with the Uniform Education Reporting System, including LINQ software
- Meet with Client's staff, management, and Board as necessary at reasonable intervals and provide consulting relating to accounting and financial matters
- Preparation of semi-annual Sales Tax refunds and Fuel Tax refunds
- This contract specifically excludes those services for the student accounting/PowerSchool reporting and we agree to assist in the training of your staff to affect this requirement. If you want a quote to add the student accounting services we will gladly provide that for you.
- This contract excludes preparation of federal forms 990 or 990EZ. Be aware that these forms are due by November 15 following each of your June 30 year ends, even if you have not opened your school.
- Provide financial, budget and other reports and data to Client, based on information that Client provides to Company, and requiring a reasonable number of hours, that will enable Client's independent auditor to plan and conduct annual audit as a means of expressing an opinion on Client's financial statements. Timeline: May/June: send in compliance policies and procedures, July: June bank reconciliation reports, August: (first week) Trial Balance, Aug/Sept: access to LINQ or copies of electronic files for testing/comparisons.

2. Limitations and Restrictions

Client acknowledge that material departures from generally accepted accounting principles ("GAAP") or other comprehensive basis of accounting ("OCBOA") may be necessary due to North Carolina school financial reporting requirements and the effects of those departures, if any, on the financial statements may not necessarily be disclosed. Disclosures required by GAAP or OCBOA may be omitted due to the nature of North Carolina public charter school accounting requirements required by the North Carolina Uniform Education Reporting System ("UERS") or and/by standards, policies, rules or guidelines established by the North Carolina State Board of Education ("SBE") or North Carolina Department of Public Instruction ("DPI"), the United States Department of Education ("DOE") and/or any other legislative or regulatory authorities.

Company's services do not include the duty or obligation to disclose fraud or illegal acts by Client's directors, agents, employees or contractors. If Company becomes aware of or suspects such acts, Company may inform one or more of Client's authorized representatives.

Company's services shall depend upon data and information provided by Client. Company is not responsible to verify or audit such data and information or any of Client's financial statements, nor will Company express or provide an opinion or assurances regarding such data and information. Any data or information accompanying any reports or other financial information provided by Company will be presented for supplementary informational or analytical purposes, typically based on information provided by Client.

Client agrees to limit use of financial statements, reports, data and other information provided by Company only to necessary members Client's administrative staff, board members, or other employees or agents, except as otherwise legally required or necessitated by substantial business necessity.

Client is a tax-exempt North Carolina private corporation and is also considered a public charter school with unique reporting requirements, including adherence to its charter contract with the State Board of Education. Because of the public nature of the Client, including its mandatory use of the LINQ accounting reporting, Client allows the Company to divulge its business relationship with Client to the public.

Other special limitations or modifications are as follows (indicate "N/A" if not applicable):

3. Fees and Expenses

In exchange for the provision of the services listed above, Company will charge and Client shall pay:

A monthly fee of \$1,750 due each month beginning July 1, 2018 and ending June 1, 2019.

Fees are due upon receipt of invoices.* There will be an additional charge of 1.5 percent of any amount overdue by 30 days or more. Additionally, Company will bill Client for out-of-pocket

INNER BANKS INNOVATION ACADEMY

APPENDIX P

CHARTER SCHOOL REQUIRED SIGNATURE CERTIFICATION

❖ If contracting with a CMO/EMO, that the selected management company has reviewed with the full Board of Directors, listed within the application, all the items required and the associated management contract and operations.

- Name of the Contact for Selected EMO/CMO: N/A Inner Banks is not contracting with a CMO/EMO
- Date of Review: _____
- Signature of Board Members Present (Add Signature Lines as Needed):

- _____
- _____
- _____
- _____
- _____
- _____
- _____

❖ If contracting with a financial management service provider, that the selected financial service provider has reviewed with the full Board of Directors listed within the application all the financial processes and services provided.

- Name of the Contact: Marianne Levigne
- Name of the Selected Financial Service Provider: LBA Haynes-Strand
- Date of Review: 9/1/2016 Eddie Goddal Consulting
- Signature of Board Members Present (Add Signature Lines as Needed):

- [Signature]

❖ If the proposed Board of Directors, listed within the application, is contracting with a service provider to operate PowerSchool that the service provider has reviewed all of the financial processes and services provided.

- Name of the Contact: N/A Inner Banks is not contracting with a
- Name of the Selected PowerSchool Service Provider: service provider to
- Date of Review: _____ operate PowerSchool.
- Signature of Board Members Present (Add Signature Lines as Needed):

- _____
- _____
- _____
- _____
- _____
- _____
- _____

Certification

I, Wendy Whithurst, as Board Chair, certify that each Board Member has reviewed and participated in the selection of the individuals and vendors attached to this document as evidenced by the full Board of Director signatures outlined above. The information I am providing to the North Carolina State Board of Education as Inner Banks Innovation Academy Charter School is true and correct in every respect.

Wendy Whithurst
Signature

09.01.16

Date