RETHINK EDUCATION
North Carolina Department of Public Instruction

An At-Home Guide for Families

Second Grade Math in North Carolina Public Schools

Content Outline

At the end of the year, my child will know how to…

Operations and Algebraic Thinking:

- fluently add and subtract, within 20, using mental strategies
- represent and solve one- and two-step addition and subtraction word problems within 100
- identify whether a group of objects are even or odd by placing them into equal groups
- use and write repeated addition equations to find the total number of objects arranged in rectangular arrays

Numbers and Operations in Base Ten:

- Apply skip counting patterns within 1,000 (5s, 10s, 100s)
- read and write numbers, within 1,000, using base-ten numerals, number names, and expanded form
- compare two three-digit numbers based on the value of the hundreds, tens, and ones digits, using >, =, and < symbols
- fluently add and subtract, within 1,000, using place value knowledge, properties of operations, and the relationship between addition and subtraction

Measurement and Data:

- estimate and measure the length of an object in standard units using rulers, yardsticks, meter sticks, and measuring tapes
- measure the length of an object using two different units of measurement and describe how the measurements relate to the size of the unit
- represent numbers on a number line and solve problems that require finding the sums and differences of numbers within 100
- tell and write time to the nearest five minutes, using a.m. and p.m
- solve word problems involving quarters, dimes, nickels, and pennies within 99¢ and whole dollar amounts

Geometry:

- organize, represent, and interpret data with up to four categories
- identify, draw, and describe 2-dimensional and 3-dimensional shapes based on their defining attributes
- partition circles and rectangles into halves, thirds, and fourths and learn to explain that equal shares of the same size whole may not have the same shape.

Curious what the specific standards are for Second Grade Math in North Carolina?

Check out the **North Carolina Standard Course of Study** to learn more. Looking for additional explanations about what students should be able to do at the end of this course? Check out **NC DPI's unpacked contents document** aligned to the course standards.

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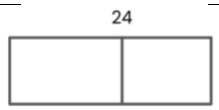
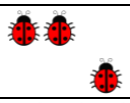
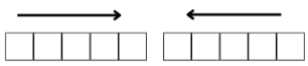
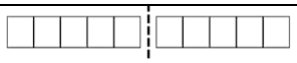
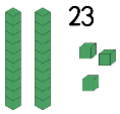
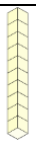
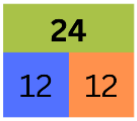
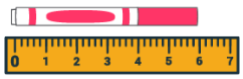
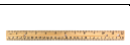
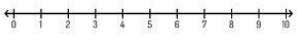
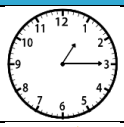
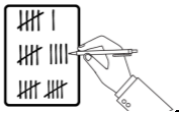
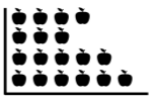
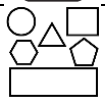
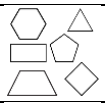
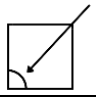
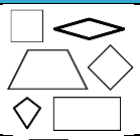
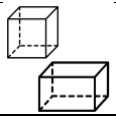
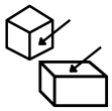
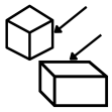
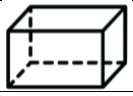
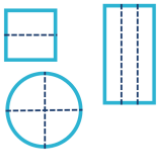
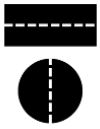
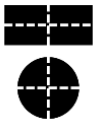
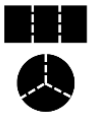
Key Vocabulary

Visual	Term	Definition
11 + 6 15 - 3	expression	a way to represent addition and subtraction with numerals and symbols
11 + 6 = 17 12 = 15 - 3	equation	a way to represent equal values with numerals and symbols
	tape diagram	a model that helps us understand the relationship between numbers
	even number	a number that can be decomposed into two equal groups
	odd number	a number that cannot be decomposed into two equal groups
	array	things are organized in rows and columns
	compose	to put a number together using its parts
	decompose	to break apart numbers into two or more parts
	base-10 blocks	math tool used to understand numbers
	hundred	in place value, ten tens is equal to one hundred
	ten	in place value, ten ones is equal to one ten
	one	in place value, a single unit
	expanded form	a way of writing numbers to show the value of each digit
one hundred forty five	written form	a way of writing numbers in words
	compare	find the difference between two numbers or groups

Visual	Term	Definition
>	greater than	one quantity that is larger than another quantity.
<	less than	one quantity that is smaller than another quantity.
=	equal to	when two numbers have equal value.
17 + 2	sum	a result when we add two or more numbers together
17 - 2	difference	a result of subtracting one number from another
	addends	the numbers we add together to get a sum
2 + 8 = 8 + 2	commutative property	you can change the order of the addends, you will still get the same result
(1 + 2) + 3 = (3 + 1) + 2	associative property	when addends can be grouped in any order to find the sum
	bar model	a model that helps us understand the relationship between numbers and quantities
	Measure	using standard units to determine the size of an object
	Ruler	a tool used to measure smaller objects with the units inches and centimeters
	Yard stick	a tool used to measure larger objects with the units inches and centimeters
	Meter stick	a tool used to measure larger objects with the units centimeters and millimeters
	Estimation	making a reasonable guess based on the information given
	Number line	visual representation that shows a line with numbers equally increasing in value from left to right

Visual	Term	Definition
	Analog clock	a clock with numbers 1 to 12 on its face, with a minute and hour hand that rotate to show the time
	AM	any time that is in the morning, between midnight and midday/ noon.
	PM	any time after midday/noon, but is before midnight
	Value	how much something is worth.
¢	Cents Symbol	a symbol that represents the word cents
$	Dollar sign	a symbol that represents the word dollar
	Data	information about the things or people in a group
	Key	a list of labels for the visual parts of a graph
	Symbol	a picture or character used to represent a quantity or amount.
	Picture graph	a graph that uses symbols and pictures to represent data
	Bar graph	a graph that uses bars to represent data
	Attributes	a characteristic of an object
	2-dimensional shape	a flat shape that has two dimensions: length and width.
	Polygon	a closed plane figure with straight sides
	Angle	two lines that meet at a point, the vertex

Visual	Term	Definition
	Quadrilateral	a four-sided polygon
	3-dimensional shape	shapes with three dimensions (width, length, and height) that take up space
	Face	a flat or curved surface on a 3-dimensional shape
	Edge	the sides of a 3-dimensional shape where two faces meet
	Vertices	where edges meet on a 3-dimensional shape
	Cube	3-dimensional shape with 6 square faces, 8 vertices, and 12 edges
	Rectangular prism	3-dimensional shape with 6 rectangular faces, 8 vertices, and 12 edges
	Partition	division into parts
	Halves	being partitioned into two equal shares
	Fourths/ Quarters	being partitioned into four equal shares
	Thirds	being partitioned into three equal shares

Learning in Action: Grade Level Skills

Examples of Grade Level Skills

Problem: Solve the word problem using an equation and a symbol for the unknown.

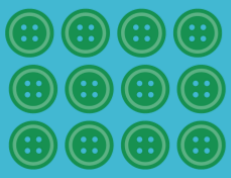
Ben had 13 toy cars. His friend gave him some more toy cars. Now he has 20 toy cars. How many cars did his friend give him?

Solution: 13+ ? = 20
Ben's friend gave him 7 toy cars because 13+7=20

Problem: Is the number of socks below even or odd? Explain your thinking.

Solution: This is an even number of socks because they each make a pair.

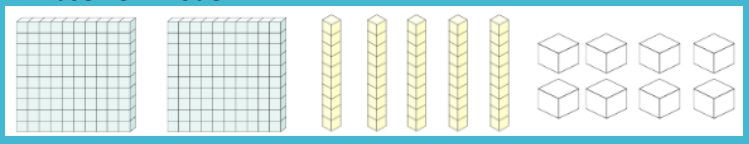
Problem: Write the equation that matches the array below.



Solution: 4+4+4=12. There are 3 rows of 4 buttons.

Problem: Show the number 258 in expanded form, written form, and modeled with base ten blocks.

Solution: Expanded Form: 200+50+8=258
Written Form: Two hundred fifty eight
Base Ten Model:



Problem: Compare the 3-digit numbers below using a <, >, or = to symbol.

316 ___ 361

Solution: 316 < 36. The digit in the hundreds place is the same for both numbers. The 3 represents 300. The digit in the tens place in 316 (represents 10) is less than the digit in tens place in 361 (represents 60).

Problem: What is 10 more, 10 less, 100 more, and 100 less than the number below?

163

Solution: 163+10=173
163-10=153
163+100=263
163-100=63

Problem: Add 43+37+19 using a strategy based on place value (such as a decomposition strategy to add three-digit numbers)

Solution: 43+37+19=99

Example
Decompose each number into tens and ones
Add the tens→ 40+30+10=80
Add the ones→ 3+7+9=19
Add them together→80+19=99

Students could also use place value blocks or a number line as tools to support them when problem solving.

Problem: Solve 238-117 using a strategy based on place value (such as a decomposition strategy to add or subtract numbers within 1,000 fluently)

Solution: 238-117=121

Example
Decompose both numbers into hundreds, tens, and ones
Subtract the hundreds→200-100=100
Subtract the tens→ 30-10=20
Subtract the ones→8-7=1
Compose what is left→100+20+1=121

Students could also use place value blocks or a number line as tools to support them when problem solving.

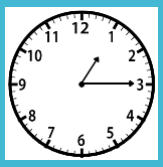
Problem: Would it be more appropriate to use a ruler or a yardstick to measure the length of a pencil? Explain why.

Solution: It is more appropriate to use the inches or centimeters on a ruler to measure smaller items, like a pencil.

Problem: Tim and Sarina were having a jumping contest. Tim jumped 22 inches and Sarina jumped 32 inches. How many more inches did Sarina jump than Tim?

Solution: Sarina jumped 10 inches further than Tim. 32in-22in= ? or 22in + ? =32in

Problem: What time is shown on the clock below?



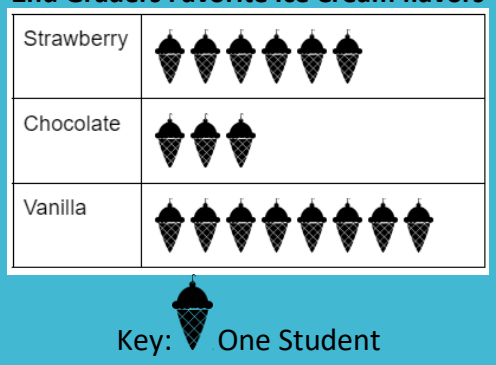
Solution: 1:15. The hour hand is between the 1 and the 2. The minute hand is pointed to the 3, which means when we skip count by 5 three times we know the time is 1:15.

Problem: Avery has 1 quarter, 3 dimes, 2 nickels, and 5 pennies. How much money does he have in all?

Solution: Avery has 70 cents altogether. 25 cents + 30 cents + 10 cents + 5 cents=70 cents

Problem: Using the graph below, how many more students like vanilla ice cream than chocolate ice cream?

2nd Graders Favorite Ice Cream flavors



Solution: 5 more students like vanilla ice cream than chocolate ice cream. 8 students like vanilla ice cream and 3 students like chocolate ice cream. 8-3=5.

Problem: What are the defining attributes of the objects below?

Solution: The objects are all 3-D shapes that have 6 faces, 12 edges, and 8 vertices.

Problem: Is the rectangle below partitioned into fourths? Why or why not?

Solution: Yes, the rectangle is partitioned into fourths because the shape is divided into four equal shares.

Resources

Links and online resources to allow you to support your child's learning.

- Didax Virtual Manipulatives: find a ten frame, shapes, number line and more
- 2nd grade math - IXL : digital practice on all skills
- Math Learning Center: second-grade math practice problems
- PBS Kids Math Games: explore different games
- Fact Monster Flashcards: addition and subtraction flashcards
- Math Games: practice second-grade math skills

At-Home Connections

- Ask your child to:
  - demonstrate how to add and subtract using manipulatives, models, and strategies they are comfortable
  - tell time at different points of the day and whether it is a.m. or p.m. You can also have your child tell you what time it is when the school bus arrives each morning.
  - count change in their piggy bank. Ask students to find multiple ways to make a collection of coins that have a specific value.
  - explain why a number of objects (buttons, socks, toy cars, ect) is even or odd by pairing the items or making two equal groups.
  - measure the length of objects in your home using both centimeters and inches on a ruler.
  - go on a 2-D and 3-D shape hunt around your home or community.
  - draw a number line (with equally spaced numbers) using sidewalk chalk outside. Have your child add and subtract by hopping on the number line to correctly find the answer.
  - show how math is useful in the real world. Help your child relate math skills to real life examples. For example, when you are at the store let your child count out money to pay the bill. If you are measuring for new furniture or curtains, have your child participate in measuring. You will be surprised how much we use math every day!

Challenges to Anticipate

- It can be hard to watch your child struggle with something, but sometimes this is a necessary part of the learning process. Help your child by asking them to explain the problem to you and encourage them to keep trying even if they do not get it at first.
- Encourage your child to use bar models, number lines, tape diagrams, and beginning, middle, end story frames to model word problems. This will help them visualize the word problem and solve it correctly.
- Help your child practice addition and subtraction fluency within 20 by using flashcards or online apps/websites to create confidence in this important but challenging skill.
- Help your child connect partitioning shapes to early fraction knowledge by asking "fair sharing" questions. For example: how could we share this candy bar with 3 friends? By cutting it into 3 equal parts.
- There is a lot of math vocabulary for your child to become familiar with in 2nd grade. Help your child make vocabulary connections by using our math terms in your daily life. A.M. and P.M., greater than and less than, centimeters and inches, even and odd and many other vocabulary words can easily be incorporated into your day. This will give your child opportunities to connect the meaning of math vocabulary in fun ways at home.

Communicating with Your Child's Teacher

Still feeling stuck? Reach out to your child's teacher to discuss what you can do further your child's learning. Some questions that might guide your discussion:

- What resources would you suggest I use to support my child?
- Where do you see my child struggling? What can we do together to help?
- What should my child practice at home?
- What collective message can we send together to help my child learn?

Need Technical Help?

Reach out to your student's home school for technical assistance. Include the type of device (PC, Mac, Chromebook, etc.) and browser (Chrome, Firefox, Safari, etc.).