GRADE
1

Building Conceptual Understanding and Fluency Through Games

FOR THE NORTH CAROLINA STANDARD COURSE OF STUDY IN MATHEMATICS

North Carolina Department of
PUBLIC INSTRUCTION

K-12 MATHEMATICS

Building Conceptual Understanding and Fluency Through Games

Developing fluency requires a balance and connection between conceptual understanding and computational proficiency. Computational methods that are over-practiced without understanding are forgotten or remembered incorrectly. Conceptual understanding without fluency can inhibit the problem solving process. – NCTM, *Principles and Standards for School Mathematics*, pg. 35

WHY PLAY GAMES?

People of all ages love to play games. They are fun and motivating. Games provide students with opportunities to explore fundamental number concepts, such as the counting sequence, one-to-one correspondence, and computation strategies. Engaging mathematical games can also encourage students to explore number combinations, place value, patterns, and other important mathematical concepts. Further, they provide opportunities for students to deepen their mathematical understanding and reasoning. Teachers should provide repeated opportunities for students to play games, and let the mathematical ideas emerge as they notice new patterns, relationships, and strategies. Games are an important tool for learning. Here are some advantages for integrating games into elementary mathematics classrooms:

- Playing games encourages strategic mathematical thinking as students find different strategies for solving problems and it deepens their understanding of numbers.
- Games, when played repeatedly, support students' development of computational fluency.
- Games provide opportunities for practice, often without the need for teachers to provide the problems. Teachers can then observe or assess students, or work with individual or small groups of students.
- Games have the potential to develop familiarity with the number system and with "benchmark numbers" – such as 10s, 100s, and 1000s and provide engaging opportunities to practice computation, building a deeper understanding of operations.
- Games provide a school to home connection. Parents can learn about their children's mathematical thinking by playing games with them at home.

BUILDING FLUENCY

Developing computational fluency is an expectation of the North Carolina Standard Course of Study . Games provide opportunity for meaningful practice. The research about how students develop fact mastery indicates that drill techniques and timed tests do not have the power that mathematical games and other experiences have. Appropriate mathematical activities are essential building blocks to develop mathematically proficient students who demonstrate computational fluency (Van de Walle & Lovin, *Teaching Student-Centered Mathematics Grades K-3,* pg. 94). Remember, computational fluency includes efficiency, accuracy, and flexibility with strategies (Russell, 2000).

The kinds of experiences teachers provide to their students clearly play a major role in determining the extent and quality of students' learning. Students' understanding can be built by actively engaging in tasks and experiences designed to deepen and connect their knowledge. Procedural fluency and conceptual understanding can be developed through problem solving, reasoning, and argumentation (NCTM, P*rinciples and Standards for School Mathematics,* pg. 21). Meaningful practice is necessary to develop fluency with basic number combinations and strategies with multi-digit numbers. Practice should be purposeful and should focus on developing thinking strategies and a knowledge of number relationships rather than drill isolated facts (NCTM, *Principles and Standards for School Mathematics,* pg. 87). Do *not* subject any student to computation drills unless the student has developed an efficient strategy for the facts included in the drill (Van de Walle & Lovin, *Teaching Student-Centered Mathematics Grades K-3,* pg. 117). Drill can strengthen strategies with which students feel comfortable – ones they "own" – and will help to make these strategies increasingly automatic. Therefore, drill of strategies will allow students to use them with increased efficiency, even to the point of recalling the fact without being conscious of using a strategy. Drill without an efficient strategy present offers no assistance (Van de Walle & Lovin, *Teaching Student-Centered Mathematics Grades K-3,* pg. 117).

CAUTIONS

Sometimes teachers use games solely to practice number facts. These games usually do not engage children for long because they are based on students' recall or memorization of facts. Some students are quick to memorize, while others need a few moments to use a related fact to compute. When students are placed in situations in which recall speed determines success, they may infer that being "smart" in mathematics means getting the correct answer quickly instead of valuing the process of thinking. Consequently, students may feel incompetent when they use number patterns or related facts to arrive at a solution and may begin to dislike mathematics because they are not fast enough.

For students to become fluent in arithmetic computation, they must have efficient and accurate methods that are supported by an understanding of numbers and operations. "Standard" algorithms for arithmetic computation are one means of achieving this fluency.

– NCTM, *Principles and Standards for School Mathematics,* pg. 35

Overemphasizing fast fact recall at the expense of problem solving and conceptual experiences gives students a distorted idea of the nature of mathematics and of their ability to do mathematics.

– Seeley, *Faster Isn't Smarter: Messages about Math, Teaching, and Learning in the 21st Century,* pg. 95

Computational fluency refers to having efficient and accurate methods for computing. Students exhibit computational fluency when they demonstrate flexibility in the computational methods they choose, understand and can explain these methods, and produce accurate answers efficiently.

– NCTM, *Principles and Standards for School Mathematics,* pg. 152

Fluency refers to having efficient, accurate, and generalizable methods (algorithms) for computing that are based on well-understood properties and number relationships.

– NCTM, *Principles and Standards for School Mathematics,* pg. 144

INTRODUCE A GAME

A good way to introduce a game to the class is for the teacher to play the game against the class. After briefly explaining the rules, ask students to make the class's next move. Teachers may also want to model their strategy by talking aloud for students to hear his/her thinking. "I placed my game marker on 6 because that would give me the largest number."

Games are fun and can create a context for developing students' mathematical reasoning. Through playing and analyzing games, students also develop their computational fluency by examining more efficient strategies and discussing relationships among numbers. Teachers can create opportunities for students to explore mathematical ideas by planning questions that prompt students to reflect about their reasoning and make predictions. Remember to always vary or modify the game to meet the needs of your leaners. Encourage the use of the Standards for Mathematical Practice.

HOLDING STUDENTS ACCOUNTABLE

While playing games, have students record mathematical equations or representations of the mathematical tasks. This provides data for students and teachers to revisit to examine their mathematical understanding.

After playing a game, have students reflect on the game by asking them to discuss questions orally or write about them in a mathematics notebook or journal:

1. What skill did you review and practice?
2. What strategies did you use while playing the game?
3. If you were to play the game a second time, what different strategies would you use to be more successful?
4. How could you tweak or modify the game to make it more challenging?

A Special Thank-You

The development of the NC Department of Public Instruction Document, *Building Conceptual Understanding and Fluency Through Games* was a collaborative effort with a diverse group of dynamic teachers, coaches, administrators, and NCDPI staff. We are very appreciative of all of the time, support, ideas, and suggestions made in an effort to provide North Carolina with quality support materials for elementary level students and teachers. The North Carolina Department of Public Instruction appreciates any suggestions and feedback, which will help improve upon this resource. Please send all correspondence to **Denise Schulz** (denise.schulz@dpi.nc.gov)

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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.

OPERATIONS AND ALGEBRAIC THINKING

Represent and solve problems.

NC.1.OA.1 Represent and solve addition and subtraction word problems, within 20, with unknowns, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem, when solving:
- Add to/Take from-Change Unknown
- Put Together/Take Apart-Addend Unknown
- Compare-Difference Unknown

NC.1.OA.2 Represent and solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, by using objects, drawings, and equations with a symbol for the unknown number.

Understand and apply properties of operations.

NC.1.OA.3 Apply the commutative and associative properties as strategies for solving addition problems.

NC.1.OA.4 Solve an unknown-addend problem, within 20, by using addition strategies and/or changing it to a subtraction problem.

Add and subtract within 20.

NC.1.OA.5 Demonstrate fluency with addition and subtraction within 10.

NC.1.OA.6 Add and subtract, within 20, using strategies such as:
- Counting on
- Making ten
- Decomposing a number leading to a ten
- Using the relationship between addition and subtraction
- Using a number line
- Creating equivalent but simpler or known sums

Analyze addition and subtraction equations within 20.

NC.1.OA.7 Apply understanding of the equal sign to determine if equations involving addition and subtraction are true.

NC.1.OA.8 Determine the unknown whole number in an addition or subtraction equation involving three whole numbers.

NUMBER AND OPERATIONS IN BASE TEN

Extend and recognize patterns in the counting sequence.

NC.1.NBT.1 Count to 150, starting at any number less than 150.

NC.1.NBT.7 Read and write numerals, and represent a number of objects with a written numeral, to 100.

Understand place value.

NC.1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones.
- Unitize by making a ten from a collection of ten ones.
- Model the numbers from 11 to 19 as composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
- Demonstrate that the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens, with 0 ones.

NC.1.NBT.3 Compare two two-digit numbers based on the value of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Use place value understanding and properties of operations.

NC.1.NBT.4 Using concrete models or drawings, strategies based on place value, properties of operations, and explaining the reasoning used, add, within 100, in the following situations:
- A two-digit number and a one-digit number
- A two-digit number and a multiple of 10

NC.1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

NC.1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90, explaining the reasoning, using:
- Concrete models and drawings
- Number lines
- Strategies based on place value
- Properties of operations
- The relationship between addition and subtraction

MEASUREMENT AND DATA

Measure lengths.

NC.1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

NC.1.MD.2 Measure lengths with non-standard units.
- Express the length of an object as a whole number of non-standard length units.
- Measure by laying multiple copies of a shorter object (the length unit) end to end (iterating) with no gaps or overlaps.

Build understanding of time and money.

NC.1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.

NC.1.MD.5 Identify quarters, dimes, and nickels and relate their values to pennies.

Represent and interpret data.

NC.1.MD.4 Organize, represent, and interpret data with up to three categories.
- Ask and answer questions about the total number of data points.
- Ask and answer questions about how many in each category.
- Ask and answer questions about how many more or less are in one category than in another.

GEOMETRY

Reason with shapes and their attributes.

NC.1.G.1 Distinguish between defining and non-defining attributes and create shapes with defining attributes by:

- Building and drawing triangles, rectangles, squares, trapezoids, hexagons, circles.
- Building cubes, rectangular prisms, cones, spheres, and cylinders.

NC.1.G.2 Create composite shapes by:

- Making a two-dimensional composite shape using rectangles, squares, trapezoids, triangles, and halfcircles naming the components of the new shape.
- Making a three-dimensional composite shape using cubes, rectangular prisms, cones, and cylinders, naming the components of the new shape.

NC.1.G.3 Partition circles and rectangles into two and four equal shares.

- Describe the shares as halves and fourths, as half of and fourth of.
- Describe the whole as two of, or four of the shares.
- Explain that decomposing into more equal shares creates smaller shares.

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Measurement and Data

Geometry

Waddle, Waddle, Splat!

Building Fluency:adding and subtracting within 20

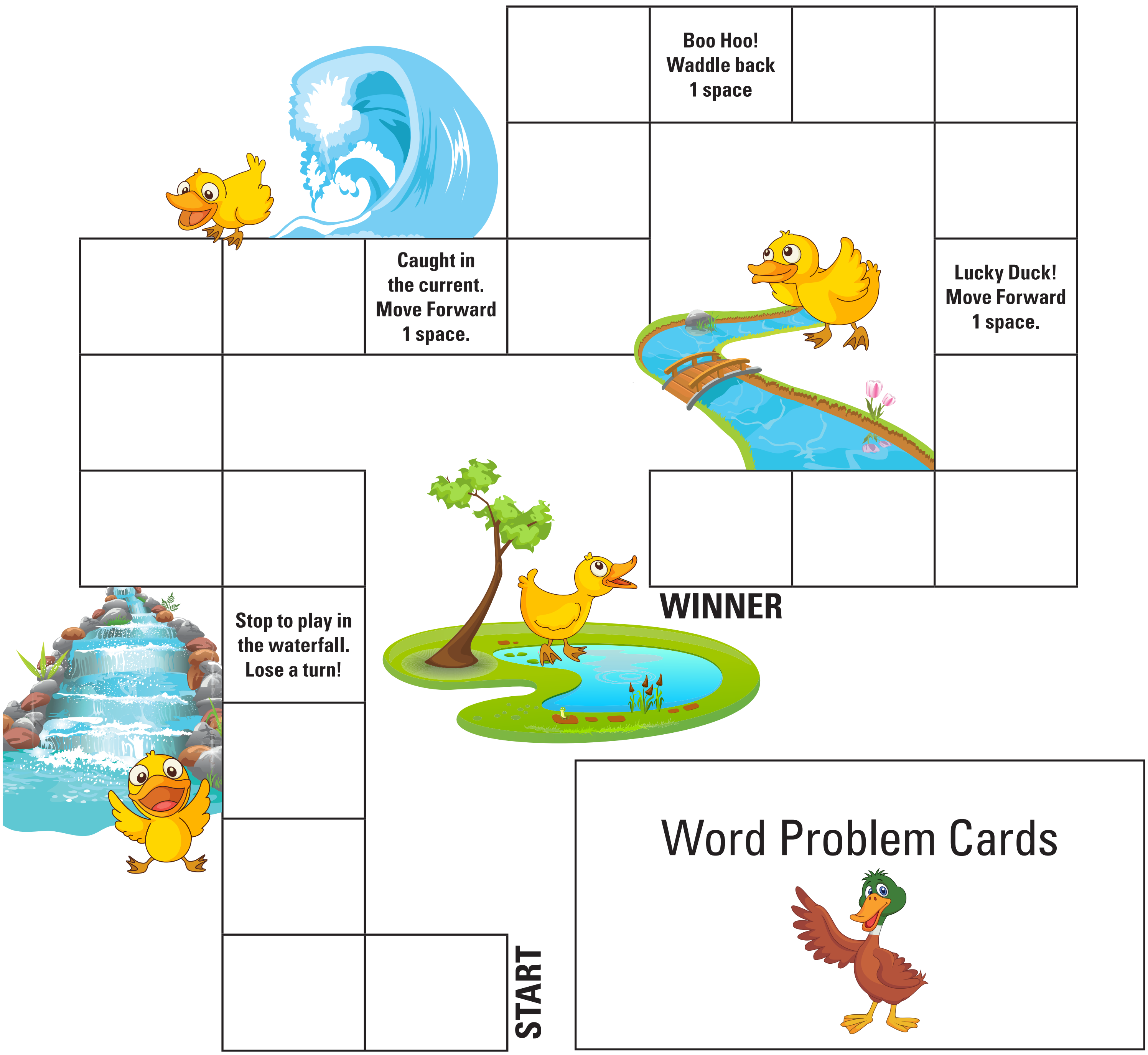
Materials: gameboard, markers, word problem cards, paper or manipulatives

Number of Players: 2-3

Directions:

1. Place the word problem cards face down on the gameboard.
2. Player 1 chooses the top word problem from the deck and reads it to Player 2.
3. If Player 2 adds to solve the problem, they waddle forward 1 space. If Player 2 subtracts to solve the problem, they waddle forward 2 spaces.
4. Players take turns drawing cards and solving problems.
5. The first player to waddle to the pond is the winner.

Variation/Extension: Students solve problems in their math notebooks.



There are eight buses in the school. If four are sent to pick up children, how many buses are still at school?

8 - 4 = 4

Alli went to the store. She bought three red apples and five yellow apples. How many apples did Alli buy?

3 + 5 = 8

A zoo has 11 black bears and 8 brown bears. How many bears are at the zoo?

11 + 8 = 19

Samantha had five hair bows. If she gave two hair bows to her friend, how many hair bows does she have left?

5 - 2 = 3

Emily and John bought nine purple flowers and five white flowers. How many flowers did they buy?

9 + 5 = 14

Carson and Ellie counted eight birds in the tree at school. Later they saw eight birds in a tree at home. How many birds did they see that day?

8 + 8 = 16

Julie baked 8 chocolate chip cookies, 3 sugar cookies and 2 peanut butter cookies. How many cookies did Julie bake?

8 + 3 + 2 = 13

Sam has nine balloons, 6 are pink and the rest are purple. How many balloons are purple?

9 - 6 = 3

7 ducks, 2 frogs and 1 swan are swimming in the pond. How many animals are in the pond?

7 + 2 + 1 = 10

Jason ate seven cookies and Madison ate two cookies. How many more cookies did Jason eat than Madison?

7 - 2 = 5

Ian bought 3 packs of baseball cards. Each pack has 4 cards. How many cards does Ian have?

4 + 4 + 4 = 12

Pierce got three new CDs on his birthday. He already had nine CDs. How many CDs does he have now?

3 + 9 = 12

I saw 2 cats and 1 dog outside. How many legs did I see?

8 + 4 = 12 or 4 + 4 + 4 = 12

Seven birds were sitting on a tree branch. A 'BANG' scared some of them away. Now there are three on the branch. How many birds were scared away?

7 - 3 = 4

Sixteen umbrellas are by the front door. Five of the umbrellas are red. The rest are yellow. How many umbrellas are yellow?

16 - 5 = 11

Harry bought seven erasers and two pencils. How many more erasers than pencils did Harry buy?

7 - 2 = 5

Six girls and three boys went to school. How many more girls than boys went?

6 - 3 = 3

Mom had three blue hats and nine pink hats. How many hats did she have?

3 + 9 = 12

At the pet store I saw 5 hamsters, 6 fish and 4 lizards for sale. How many pets did I see for sale?

5 + 6 + 4 = 19

Wilma ran five miles on Tuesday and three miles on Thursday. How many more miles did Wilma run on Tuesday than Thursday?

5 - 3 = 2

Maci has fifteen pocketbooks. Amber has eight pocketbooks. How many more pocketbooks does Maci have than Amber?

15 - 8 = 7

There were three cars. Three people were in each car. How many people were there in all?

3 + 3 + 3 = 9

The kids had three footballs and eight baseballs. How many balls did the kids have?

3 + 8 = 11

Olivia ate 1 potato, 7 green beans and 6 baby carrots. How many vegetables did Olivia eat?

1 + 7 + 6 = 14

Five cookies were on the table. Cameron ate some cookies. Then there were three cookies. How many cookies did Cameron eat?

5 - 3 = 2

Tonya invites 15 friends to her party. Two of her friends were unable to come to her party. How many of Tonya's friends will come to her party?

15 - 2 = 13

Alli has some marbles in her pocket. Five of the marbles are pink. The other eight are yellow. How many marbles does Alli have in her pocket?

5 + 8 = 13

Thomas played 3 baseball games one week. He played 6 baseball games the next week. He played 0 baseball games the third week. How many baseball games did Thomas play?

3 + 6 + 0 = 9

Robin made 7 phone calls on Saturday. She made 3 phone calls on Sunday. How many more phone calls did Robin make on Saturday than on Sunday?

7 - 3 = 4

Two frogs were sitting on a log. Six more frogs hop there. How many frogs are there now.

2 + 6 = 8

Nutty Buddies 1

Building Fluency: adding within 20

Materials: gameboard, pair of dice, 15 game markers per player

Number of Players: 2

Directions:

1. Each player places all of their game markers on any number on their gameboard. There may be more than one marker on a number.
2. Each player takes a turn rolling the dice and finding the sum.
3. The player may remove one cube from the sum that was rolled.
4. If there is not a marker to take off the gameboard, the player loses the turn.
5. The player that clears their gameboard first is the winner.

Variation/Extension: Players can roll the dice and subtract that sum from 14.

PLAYER 1	2	3	4
5	6	7	8
9	10	11	12

PLAYER 2	2	3	4
5	6	7	8
9	10	11	12

Nutty Buddies 2

Building Fluency: adding within 20

Materials: gameboard, 3 die, 16 game markers per player

Number of Players: 2

Directions:

1. Each player places all of their game markers on any number on their gameboard. There may be more than one marker on a number.
2. Each player takes a turn rolling the dice and finding the sum.
3. The player may remove one cube from the sum that was rolled.
4. If there is not a marker to take off the gameboard, the player loses the turn.
5. The player that clears their gameboard first is the winner.

Variation/Extension: Players can roll the dice and subtract that sum from 21.

PLAYER 1

3	4	5	6
7	8	9	10
11	12	13	14
15	16	17	18

PLAYER 2

3	4	5	6
7	8	9	10
11	12	13	14
15	16	17	18

Plus “1”

Using Strategies to Build: relate counting to addition and subtraction

Materials: gameboard, die, 12 markers for each player

Number of Players: 2

Directions:

1. Players take turns.
2. Each turn, a player rolls the die and adds 1 to the number of dots.
3. The player covers the sum on his gameboard.
4. Only one number may be covered at a turn.
5. If the sum is already covered, the player loses a turn.
6. The first player to cover all sums is the winner.

Variation/Extension: Use a blank gameboard to create a different game. Students can add a different number, use a different die (1-9) or digit cards.

2	2
3	3
4	4
5	5
6	6
7	7

PLAYER 1

2	2
3	3
4	4
5	5
6	6
7	7

PLAYER 2

Shorty Forty

Building Fluency: adding and subtracting within 20

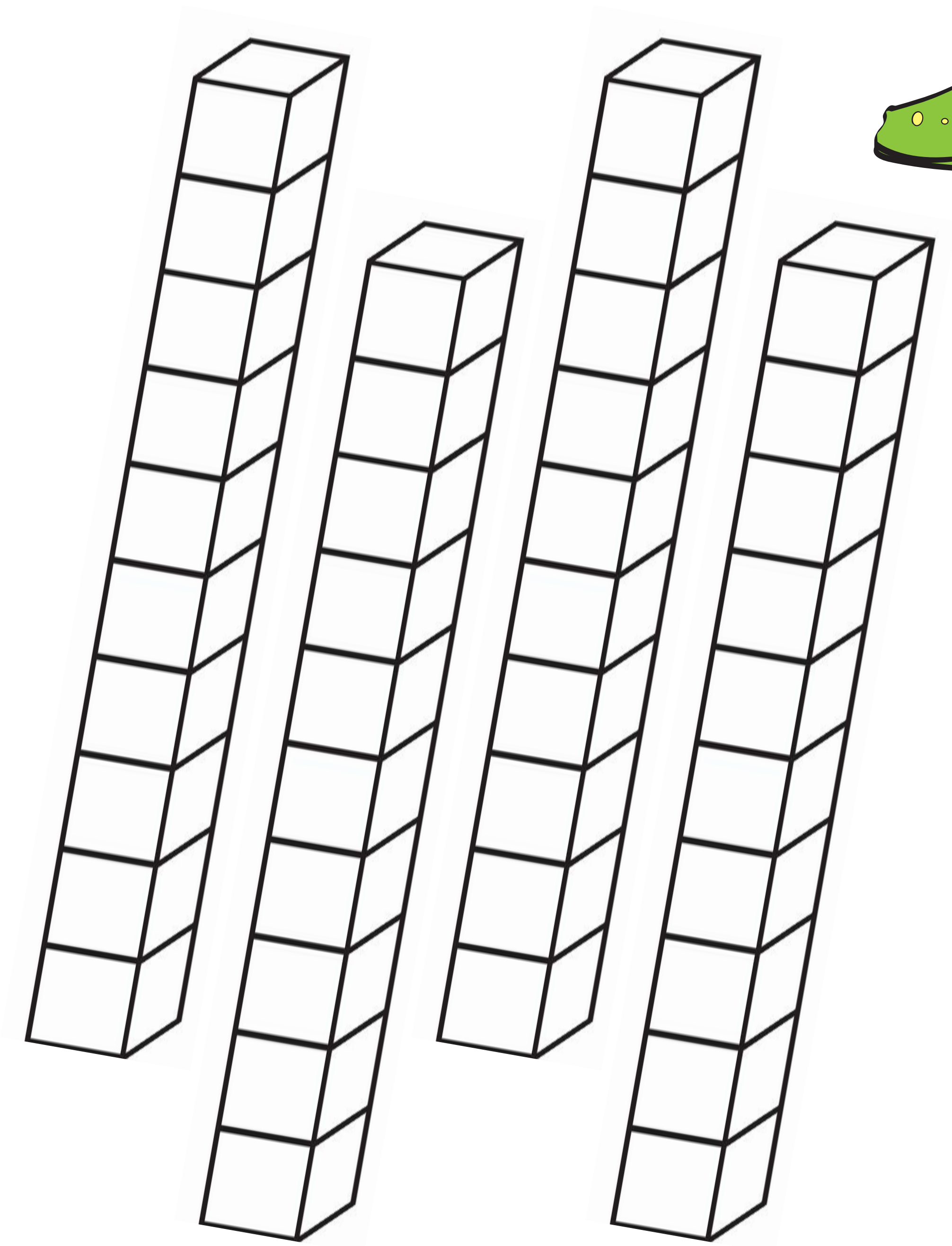
Materials: pair of dice, 40 cubes per player

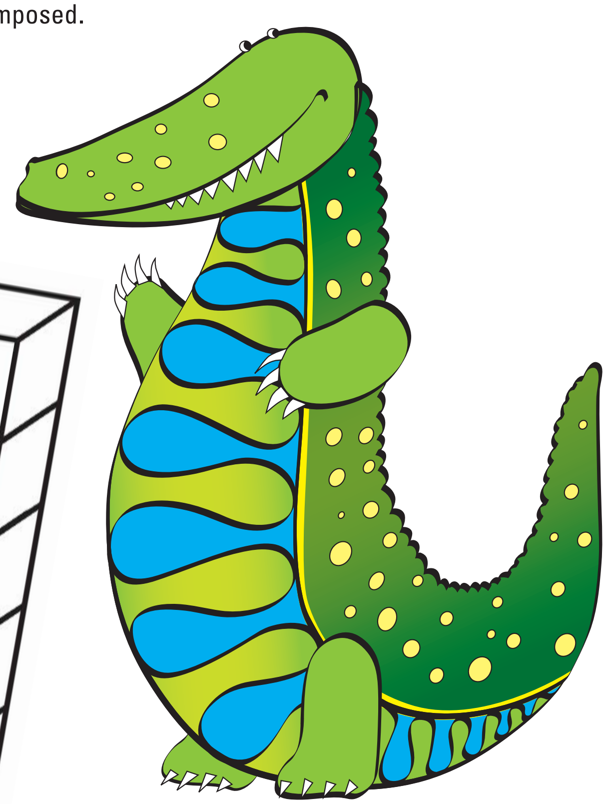
Number of Players: 2-4

Directions:

1. Players take turns
2. Each turn, a player rolls the dice and adds the number together.
3. Then, the player subtracts the sum from 20.
4. The player collects that number of cubes.
5. As cubes are collected, players should compose tens when able.
6. The first player to reach 4 tens is the winner

Variation/Extension: Players can change the number of tens that need to be composed.





Outer Space Chase

Building Fluency: adding and subtracting within 20

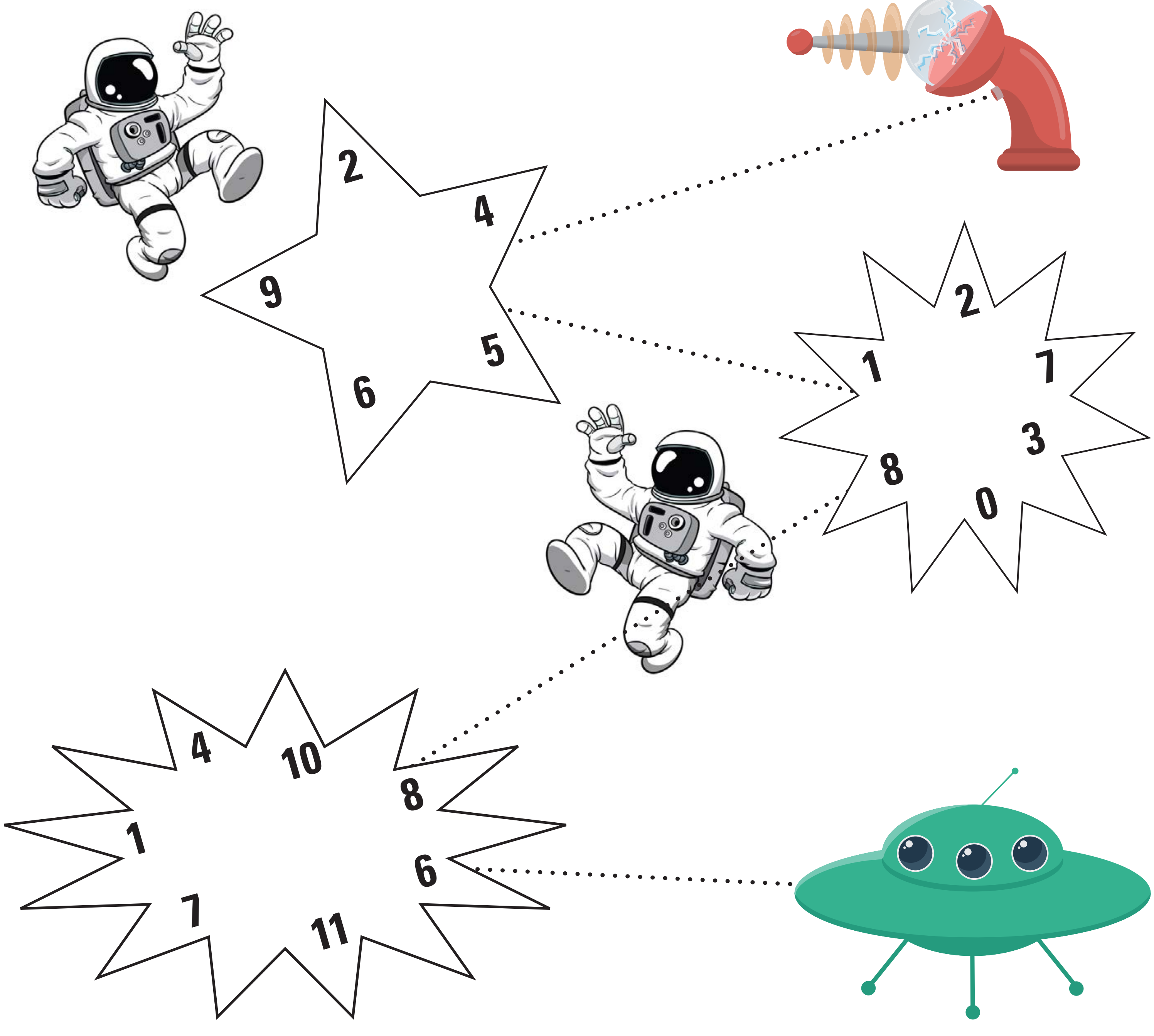
Materials: gameboard, pair of dice, game marker for each player

Number of Players: 2-3

Directions:

1. Players take turns.
2. Each turn, a player rolls the dice and adds the numbers.
3. Then, the player subtracts the sum from 12.
4. If the difference is on the next star, the player may move ahead.
5. If the difference is not on the next star, the player loses their turn.
6. The game continues until a player reaches the flying saucer.

Variation/Extension: Players can change the number of die they use and subtract from a different number.



King Seven

Building Fluency: adding within 20

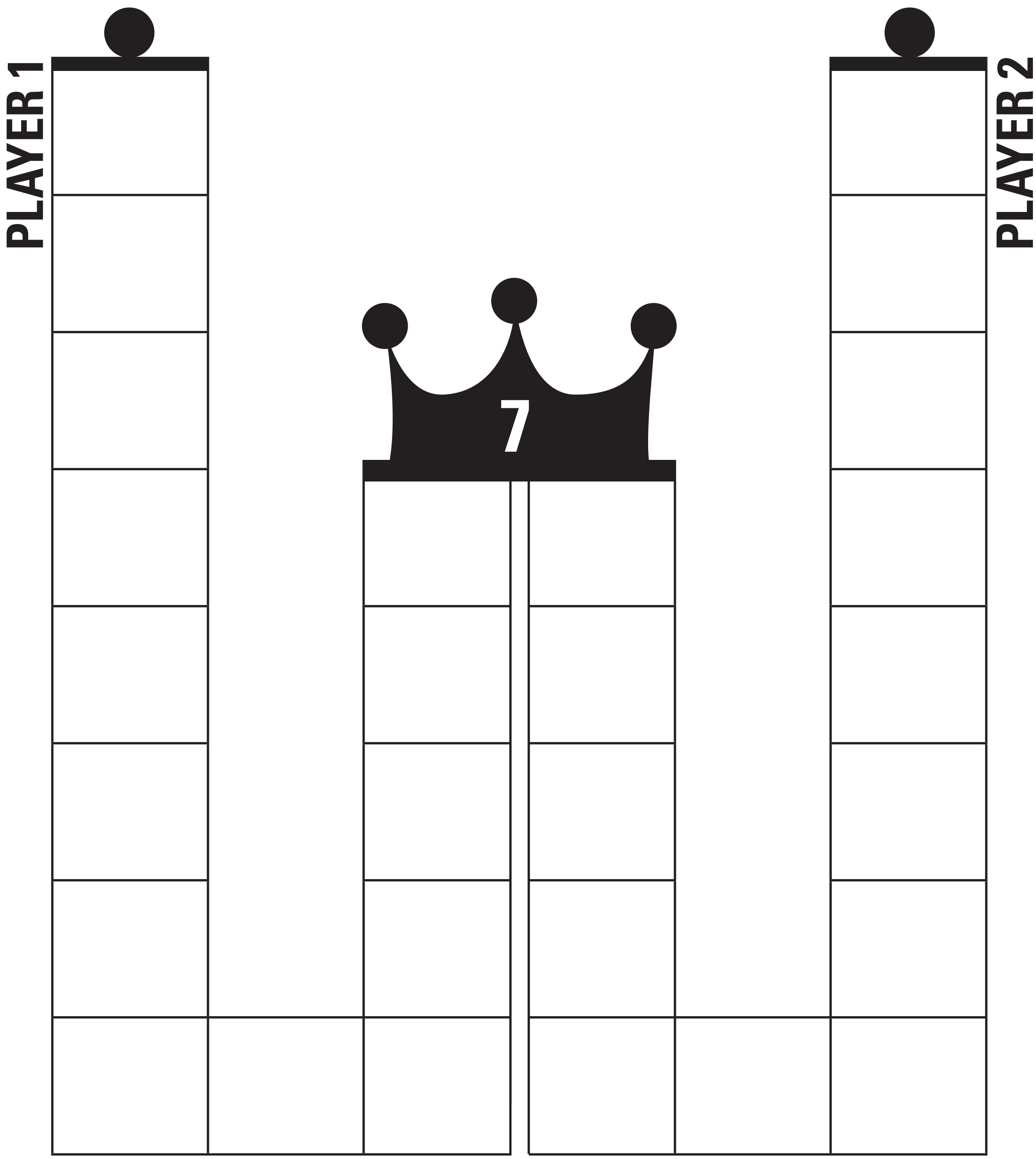
Materials: gameboard, pair of dice, game marker for each player

Number of Players: 2

Directions:

1. Players take turns rolling the dice and adding.
2. If the sum is larger than seven, player 1 moves one space.
3. If the sum is smaller than seven, player 2 moves one space.
4. If the sum is seven exactly, no one moves.
5. The first person to reach the crown is the winner.

Variation/Extension: Players could roll 3 die. If the sum is greater than 10, Player 1 moves. If the sum is smaller than 10, Player 2 moves. If the sum is exactly 10, no one moves.



Cover Up

Building Fluency: adding/subtracting within 20

Materials: gameboard for each player, 20 markers, die

Number of Players: 2-3

Directions:

1. Players take turns.
2. Each turn, a player rolls a die, collects that number of markers, and places the markers on their gameboard.
3. Each turn, the player tells how many markers are on their gameboard.
4. Then, the player tells how many more markers they need to cover the board completely.
5. The first player to cover the board exactly is the winner.

Variation/Extension: Players can begin with the gameboard covered and remove markers on each roll. Then tell how many markers are on the board and how many more need to be removed to uncover the board completely.

Double Up

Building Fluency: adding within 20

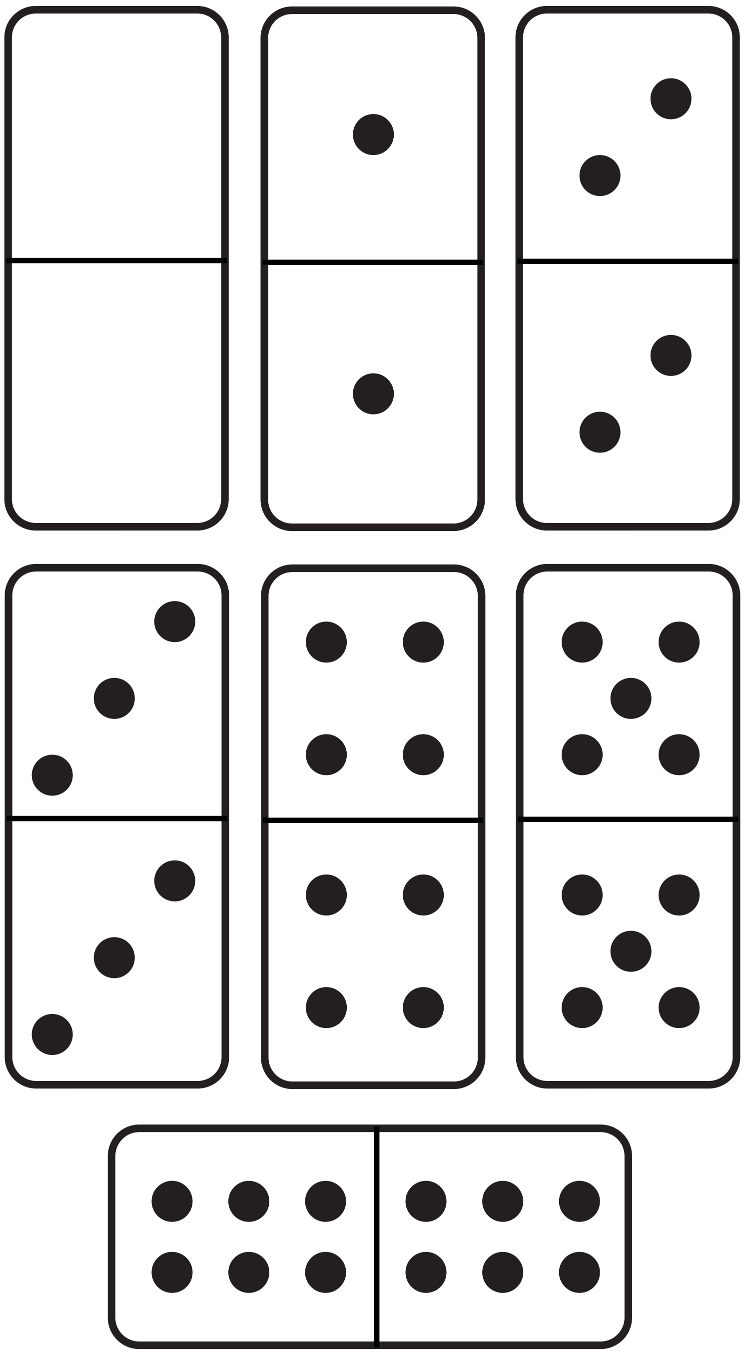
Materials: gameboard, set of dominoes, colored game markers for each player

Number of Players: 2

Directions:

1. Place all the dominoes face down.
2. Players take turns drawing a domino and adding the dots.
3. If a player finds a double, the player puts a marker on the matching double on the gameboard.
4. Play continues until all doubles are found. The winner is the player with the most doubles.

Variation/Extension: Players can remove the 11 and 12 domino, then play by drawing two dominoes and adding the two dominoes together. Each player could write the number sentence in their math notebook.



A Bunch of Fun

Building Fluency: subtracting within 20

Materials: gameboard, pair of dice, game markers

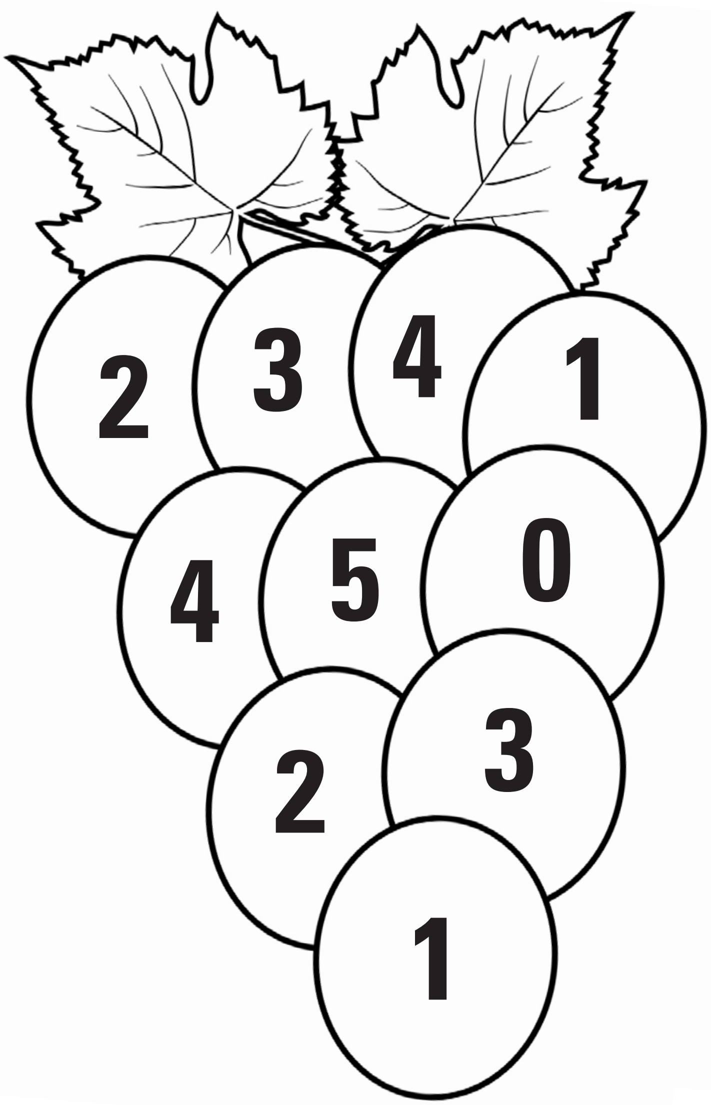
Number of Players: 2

Directions:

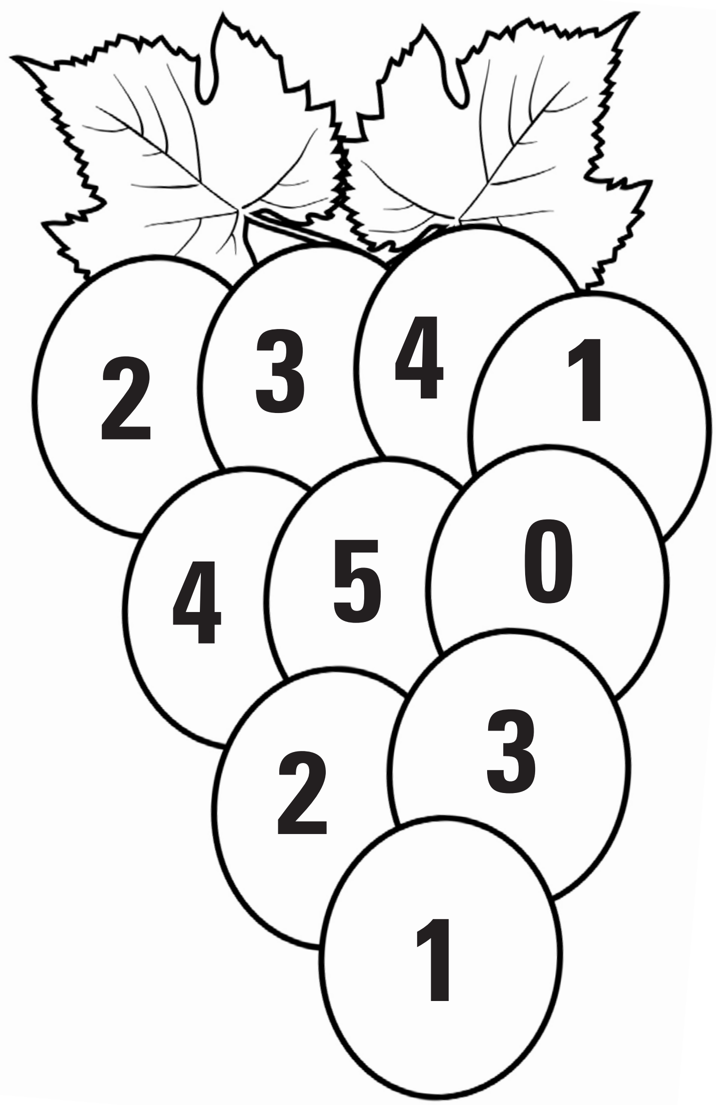
1. Players take turns.
2. Roll the dice.
3. Subtract the smaller number from the larger number.
4. Cover the difference on a grape in your bunch.
5. The winner is the person that covers all of their grapes first.

Variation/Extension: Use one die and subtract from 10. Create your own gameboard.

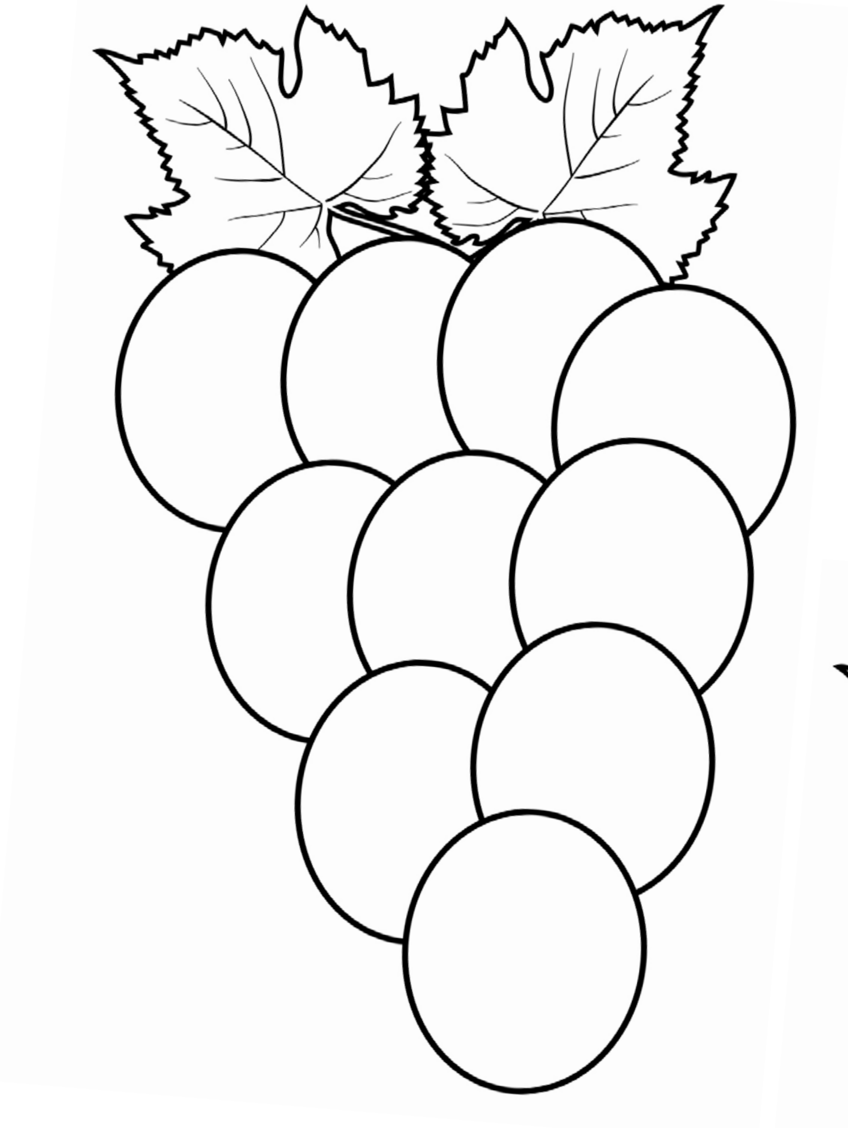
PLAYER 1



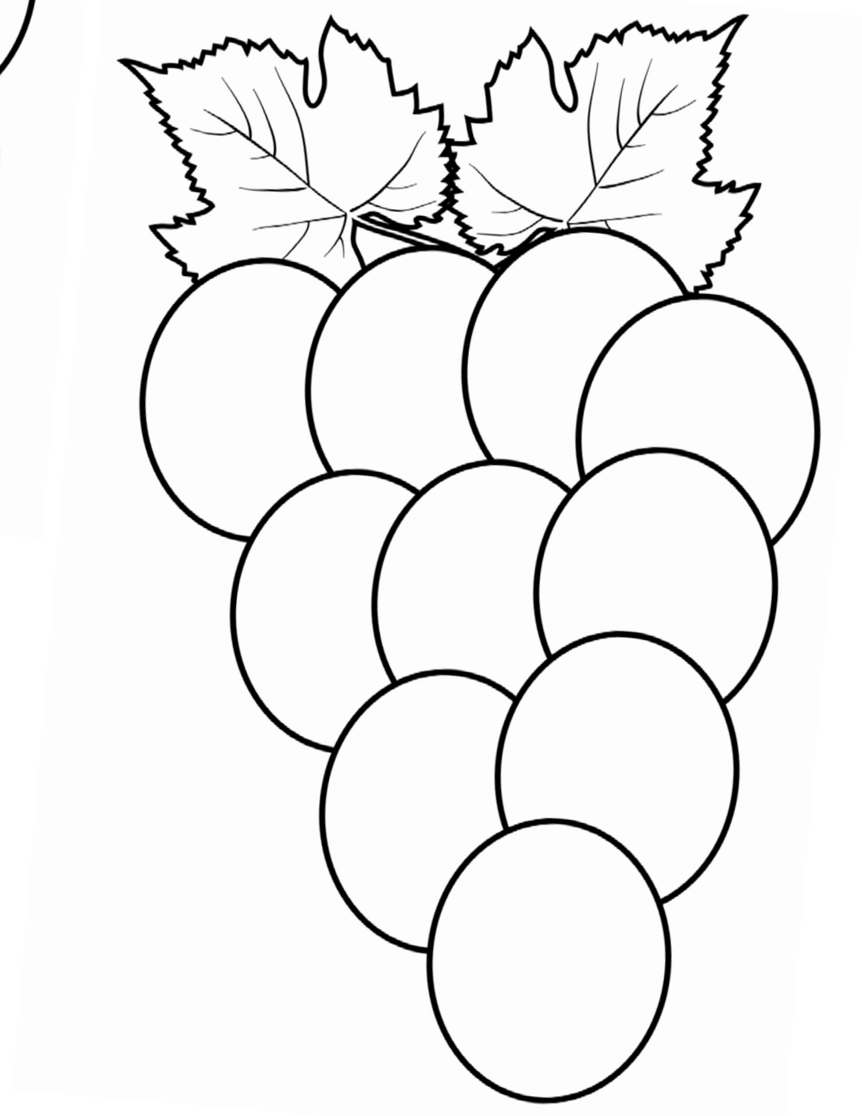
PLAYER 2



PLAYER _____



PLAYER _____



Bear Races

Building Fluency: subtracting within 10

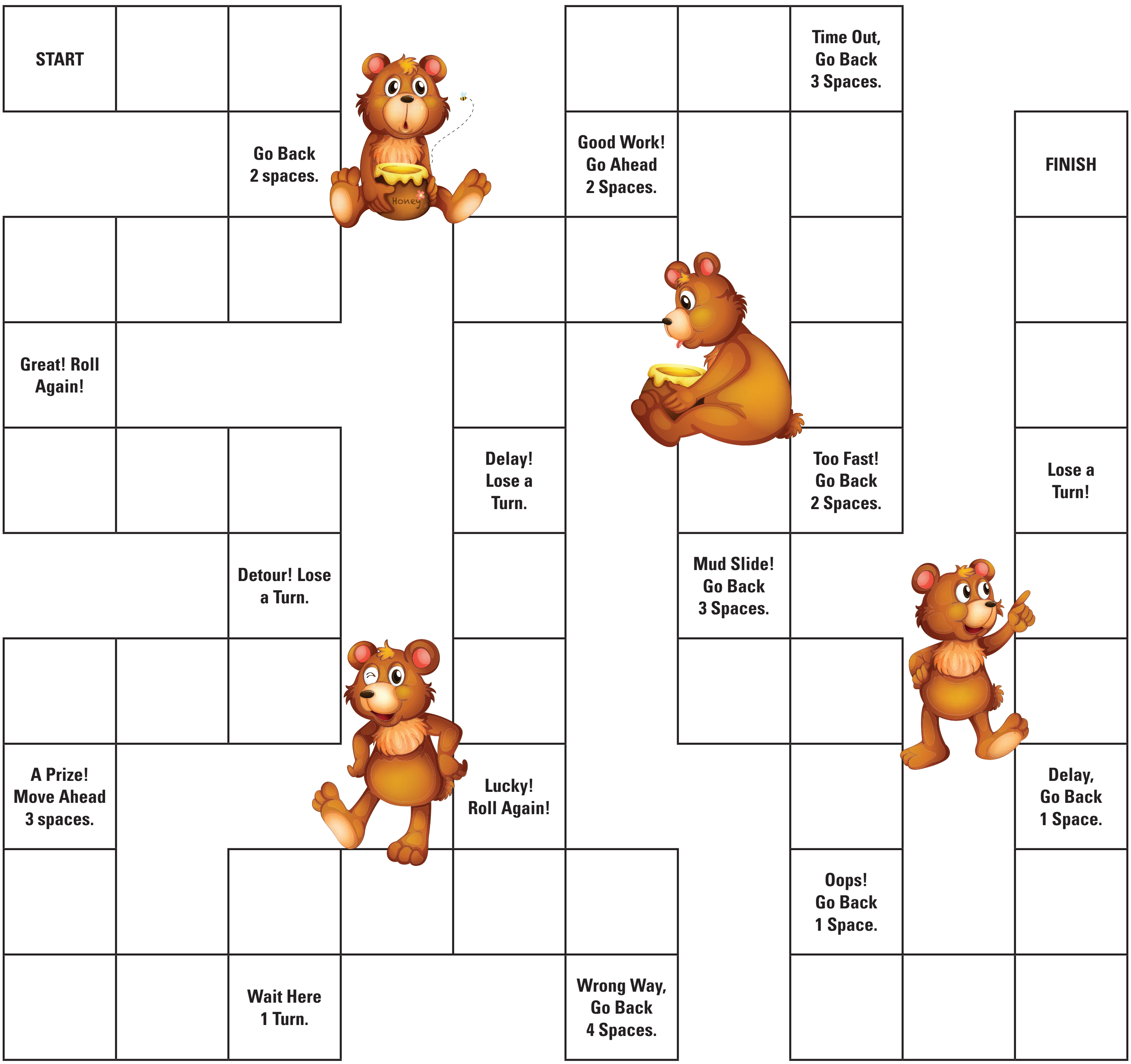
Materials: gameboard, one die, one marker per player

Number of Players: 2-3

Directions:

1. Players take turns.
2. Roll the die.
3. Subtract that number from 10.
4. Move the marker than many spaces.
5. The player that reaches the finish first is the winner.

Variation/Extension: Players can roll two dice, add them together, and move that many spaces. Players can roll two die, subtract that number from 20, and move that many spaces.



Concentration 1

Building Fluency: adding within 20

Materials: set of number facts cards (predetermine which number facts students should work with), set of digit cards (cards should match number fact cards)

Number of Players: 2-4

Directions:

1. Place the cards face down on the table.
2. Players take turns drawing two cards.
3. If the cards match, the player keeps the cards.
4. The winner is the player with the most cards when all the cards are matched.

Variation/Extension: Change the number of cards or the sets of cards for the game.

1+1	1+7	1+13	1+19
1+2	1+8	1+14	2+2
1+3	1+9	1+15	2+3
1+4	1+10	1+16	2+4
1+5	1+11	1+17	2+5
1+6	1+12	1+18	2+6
2+7	2+13	3+3	3+9

2+8	2+14	3+4	3+10
2+9	2+15	3+5	3+11
2+10	2+16	3+6	3+12
2+11	2+17	3+7	3+13
2+12	2+18	3+8	3+14
4+4	4+5	4+8	4+11
5+5	4+6	4+9	4+12

5+6	4+7	4+10	4+13
3+15	4+14	5+13	6+12
3+16	4+15	5+14	6+13
3+17	4+16	5+15	6+14
5+7	6+6	8+10	7+11
5+8	6+7	8+11	7+12
5+9	6+8	7+7	7+13

5+10	6+9	7+8	8+12
5+11	6+10	7+9	8+8
5+12	6+11	7+10	8+9
9+9	9+10	9+11	10+10
2	3	6	7
20	20	20	20
20	20	20	20

4	4	6	7
5	5	6	7
8	8	8	8
9	9	9	9
10	10	10	10
10	11	11	11
11	11	12	12

12	12	12	12
13	13	13	13
13	13	14	14
14	14	14	14
14	15	15	15
15	15	15	15
16	16	16	16

16	16	16	16
17	17	17	17
17	17	17	17
18	18	18	18
18	18	18	18
18	19	19	19
19	19	19	19

19	**19**	**20**	**20**

Move It Addition

Building Fluency: adding within 20

Materials: gameboard, 8 markers of one color for each player, pair of dice

Number of Players: 2

Directions:

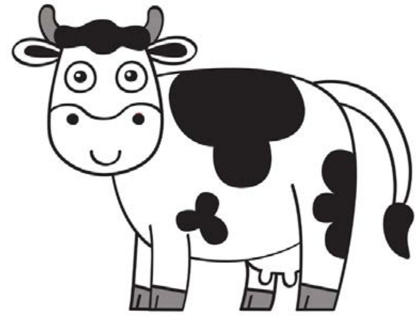
1. Players take turns.
2. Roll the dice and add the dots to find the sum.
3. Place a marker on that number.
4. If the number already has an opponent's marker on it, the player may "move" that marker off the board and return the marker to the opponent.
5. The game ends when one player has used all of their markers.

Variation/Extension: There is an additional game board with larger numbers. Players can use number cards 0-9 and draw two cards.

2	9	7	6
7	10	3	8
8	4	9	5
6	11	5	10
12	7	4	9

18	14	12	4
16	4	10	11
4	7	8	3
6	10	5	10
14	8	18	4

Moooove It!



Building Fluency: subtracting within 20

Materials: gameboard, eight markers of one color for each player, pair of dice

Number of Players: 2

Directions:

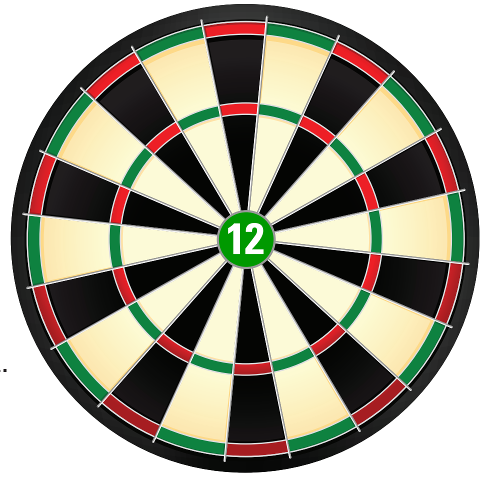
1. Player take turns.
2. Roll the dice and subtract the smaller number from the larger number.
3. Place a marker on that number.
4. If the number already has an opponent's marker on it, the player may "move" that marker off the board and return it to the opponent.
5. The winner is the player that has used all his or her markers.

Variation/Extension: Roll the dice and subtract from 20; use an additional game board

5	1	3	0
2	5	4	4
0	3	1	2
2	2	4	0
1	3	5	3

18	14	12	4
16	4	10	11
4	7	8	3
6	10	5	10
14	8	18	4

Target Twelve



Building Fluency: adding within 20 using up to 3 addends

Materials: three dice for each player, 25 markers, recording sheet

Number of Players: 2

Directions:

1. Each player rolls 2 dice.
2. They should record the addition problem on their recording sheet.
3. The player may decide to keep the sum or to roll a third die and add.
4. The winner of the round is the player whose sum (from either 2 or 3 die) is closest to 12.
5. The winner collects a marker.
6. The first person to collect 12 markers is the winner.

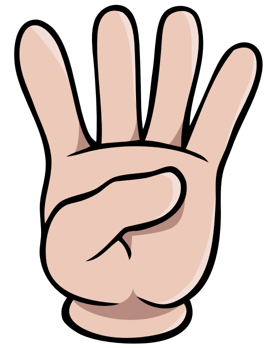
Variation/Extension: Play to a different sum.

ROLL 1 **Number Sentence**	**Sum**	ROLL 2 **Number Sentence**	**Sum**	**Closest to 12**
2 + 3	5	2 + 3 + 4	9	✓
6 + 5	11			✓

PLAYER ______

ROLL 1 **Number Sentence**	**Sum**	ROLL 2 **Number Sentence**	**Sum**	**Closest to 12**

Four's A Winner



Building Fluency: adding within 20

Materials: gameboard, two paperclips, different colored game markers for each player

Number of Players: 2

Directions:

1. Player 1 picks two numbers.
2. Put the paperclips on those numbers.
3. Add the numbers to find the sum.
4. Put a marker on the sum.
5. Player 2 moves one paperclip to a new number.
6. Add the numbers to find the sum and put a marker on that sum.
7. The winner is the first player to get four in a row.

Variation/Extension: Players can add numbers together and subtract the sum from 20. Players can create their own gameboard. Players cannot cross paperclips.

16	1	12	13	4
6	17	8	9	10
2	13	14	5	16
10	8	11	2	13
15	6	7	18	9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

Gone Fishing 1

Building Fluency: adding within 12

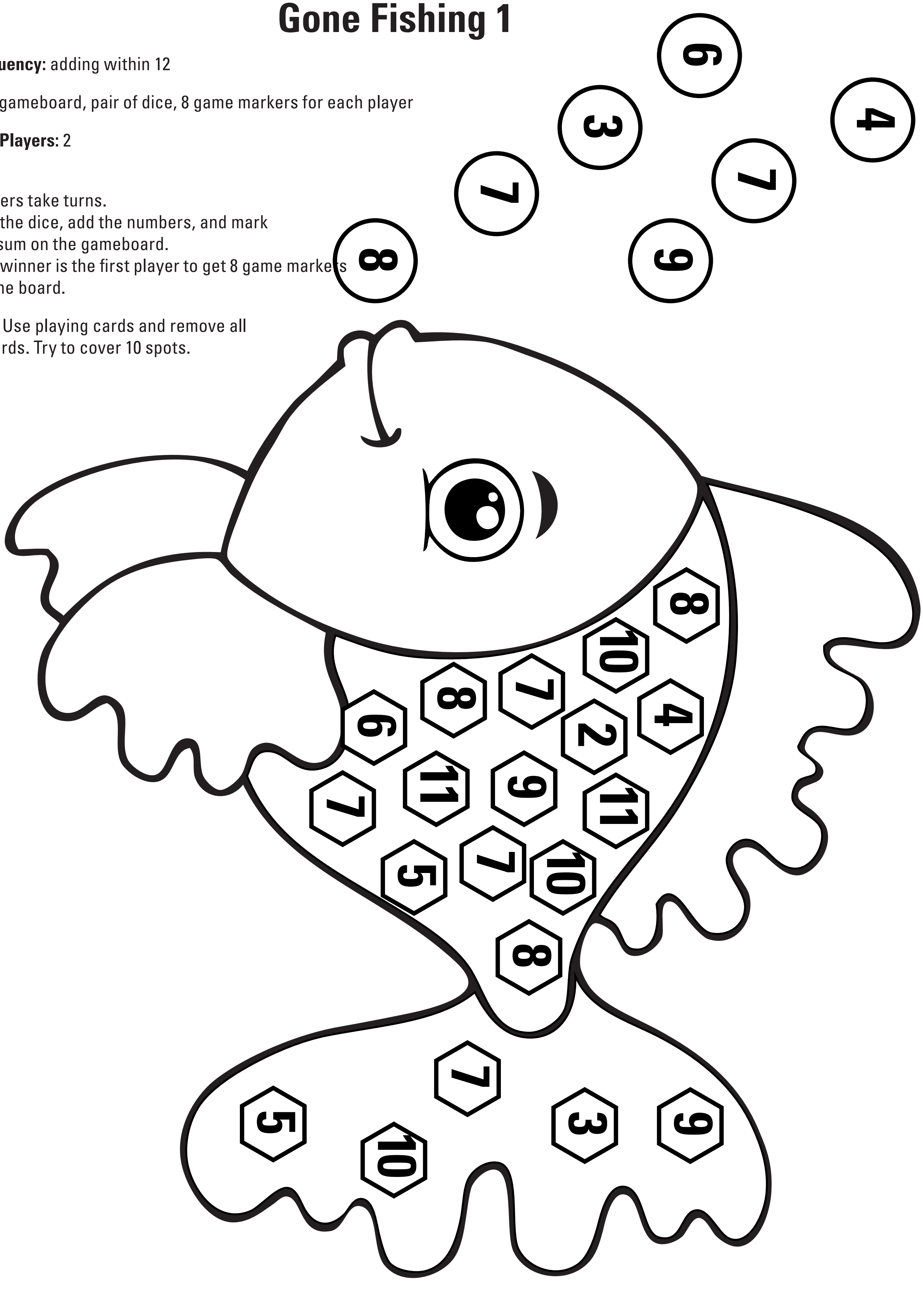
Materials: gameboard, pair of dice, 8 game markers for each player

Number of Players: 2

Directions:

1. Players take turns.
2. Roll the dice, add the numbers, and mark the sum on the gameboard.
3. The winner is the first player to get 8 game markers on the board.

Variations: Use playing cards and remove all the face cards. Try to cover 10 spots.



Gone Fishing 2

Building Fluency: adding within 20

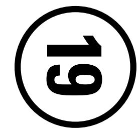
Materials: gameboard, number cubes (included), 8 game markers for each player

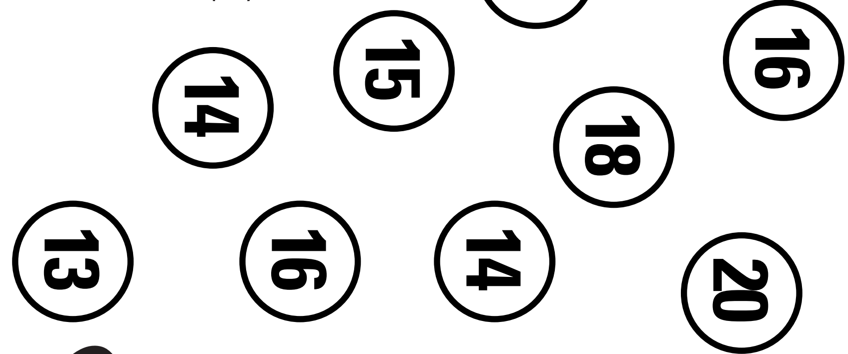
Number of Players: 2

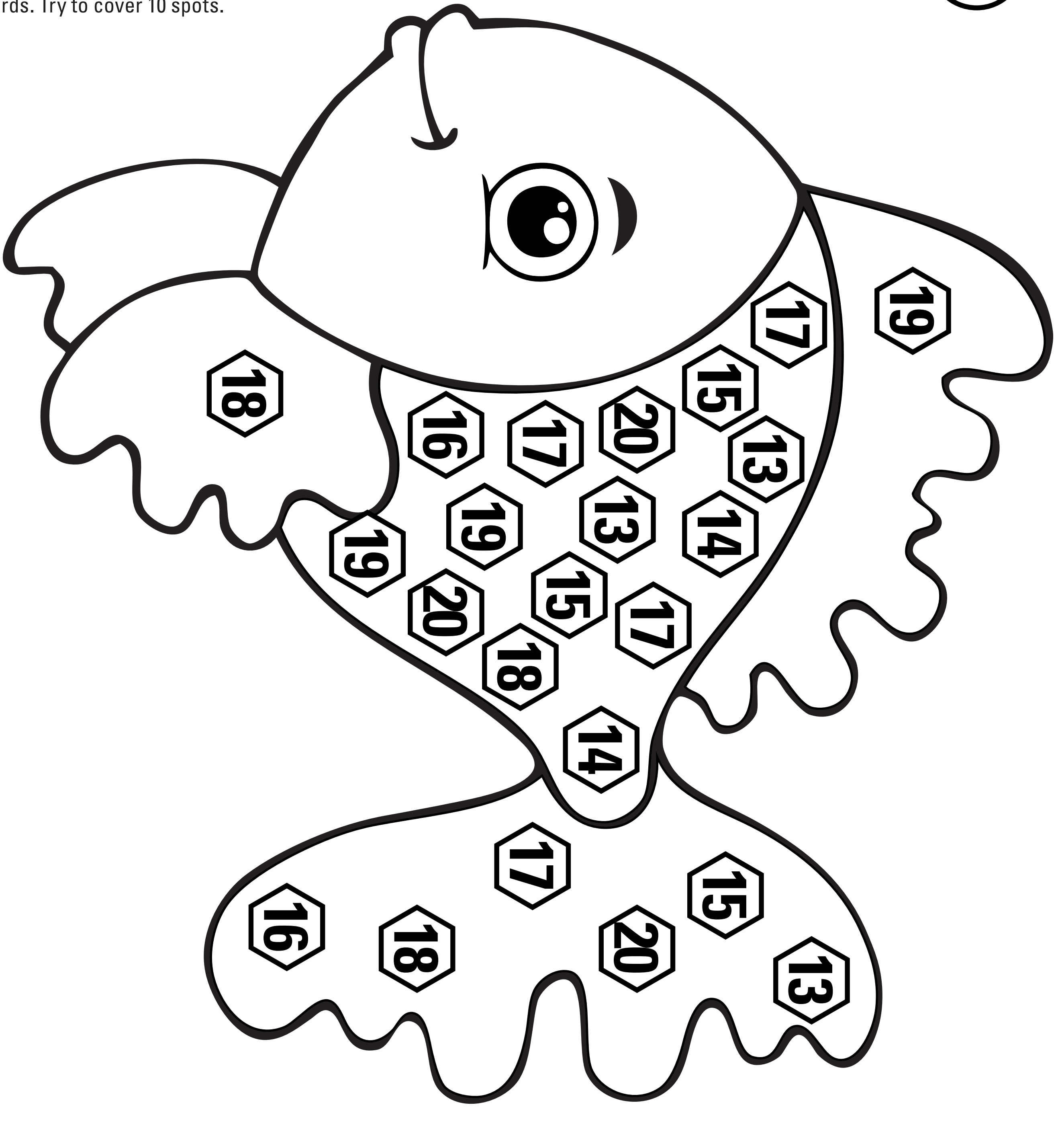
Directions:

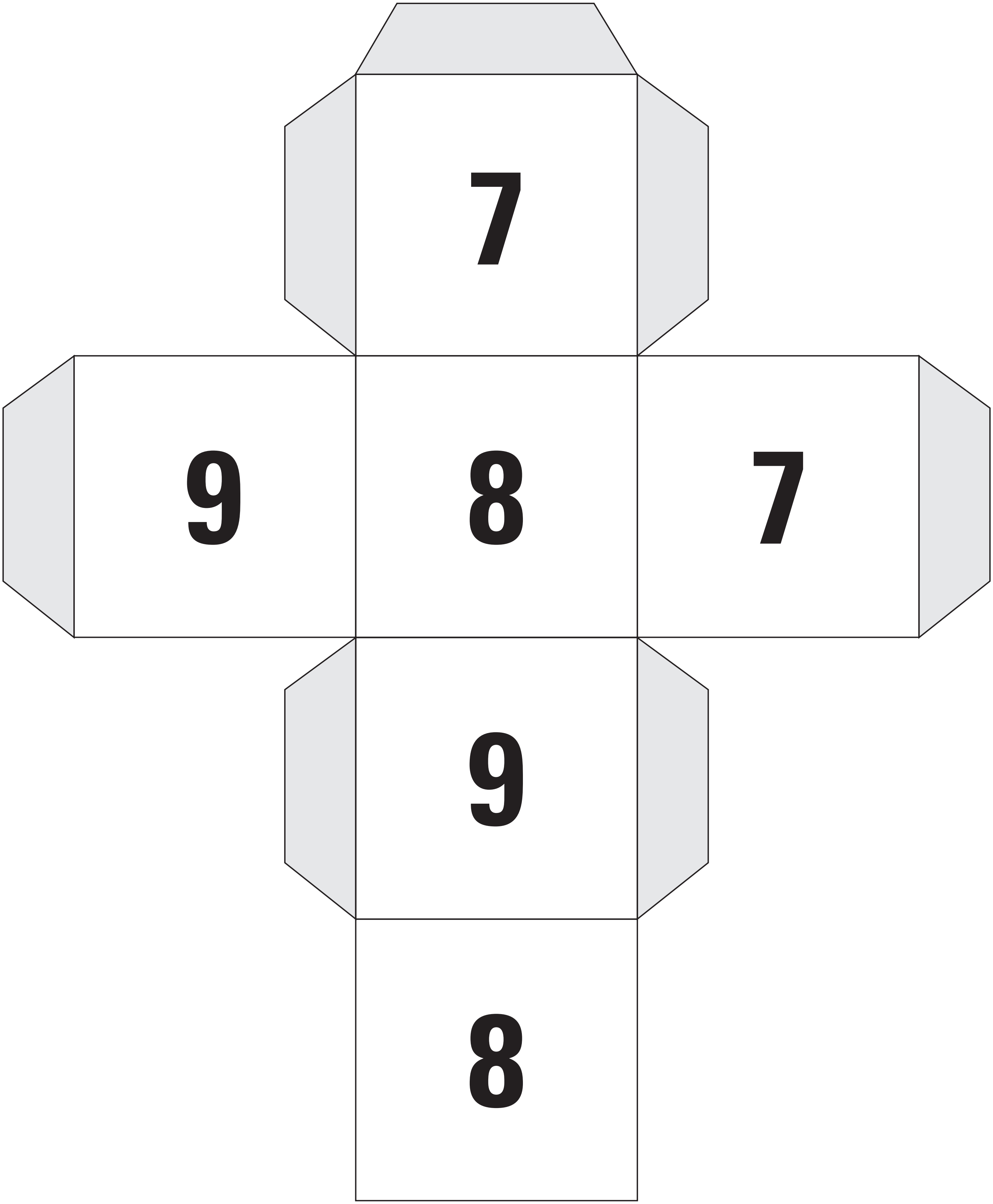
1. Players take turns.
2. Roll the number cube, add the numbers, and mark the sum on the gameboard.
3. The winner is the first player to get 8 game markers on the board.

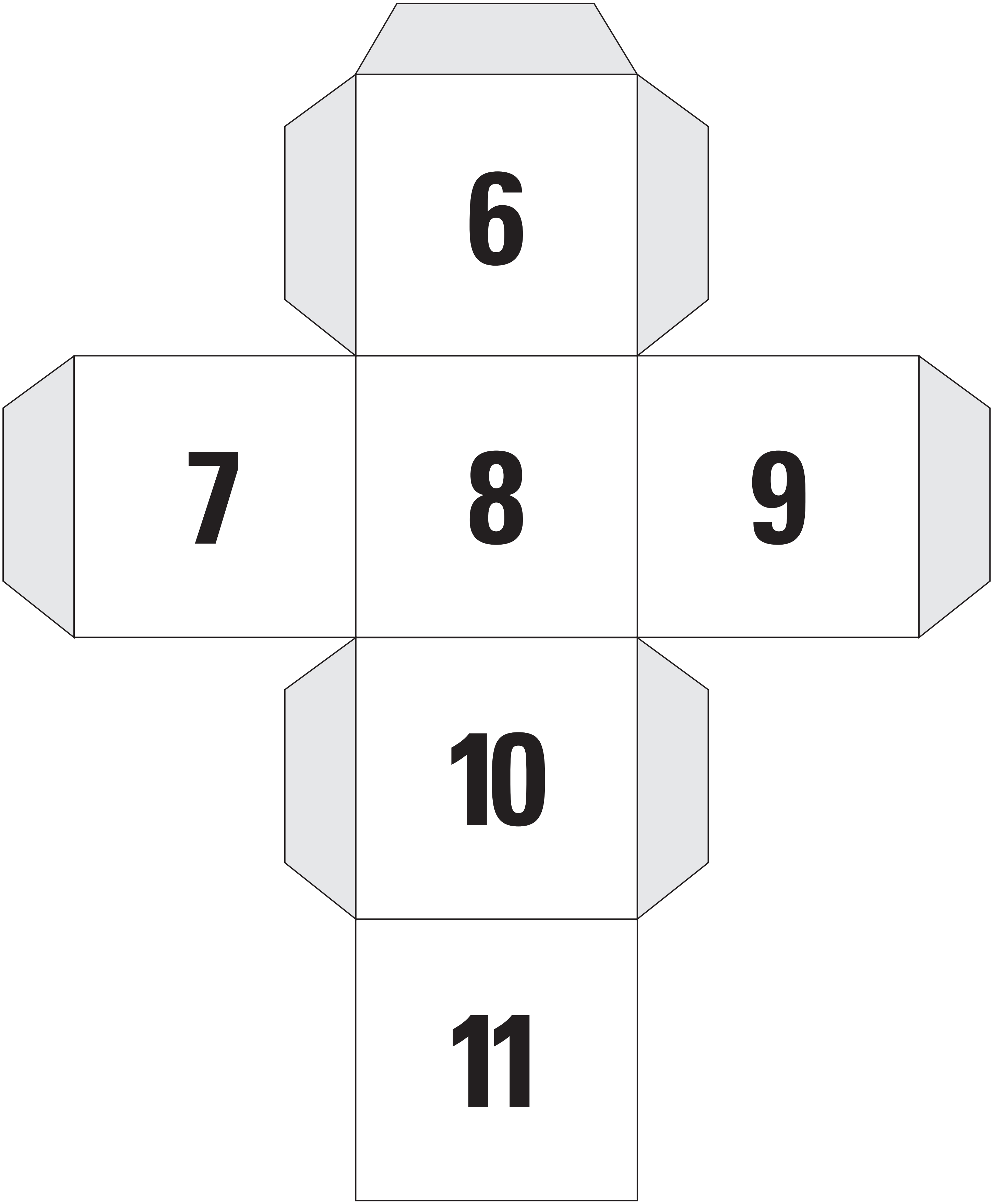
Variations: Use playing cards and remove all the face cards. Try to cover 10 spots.








7
9
8
7
9
8


6
7
8
9
10
11

Gone Fishing 3

Building Fluency: adding within 20

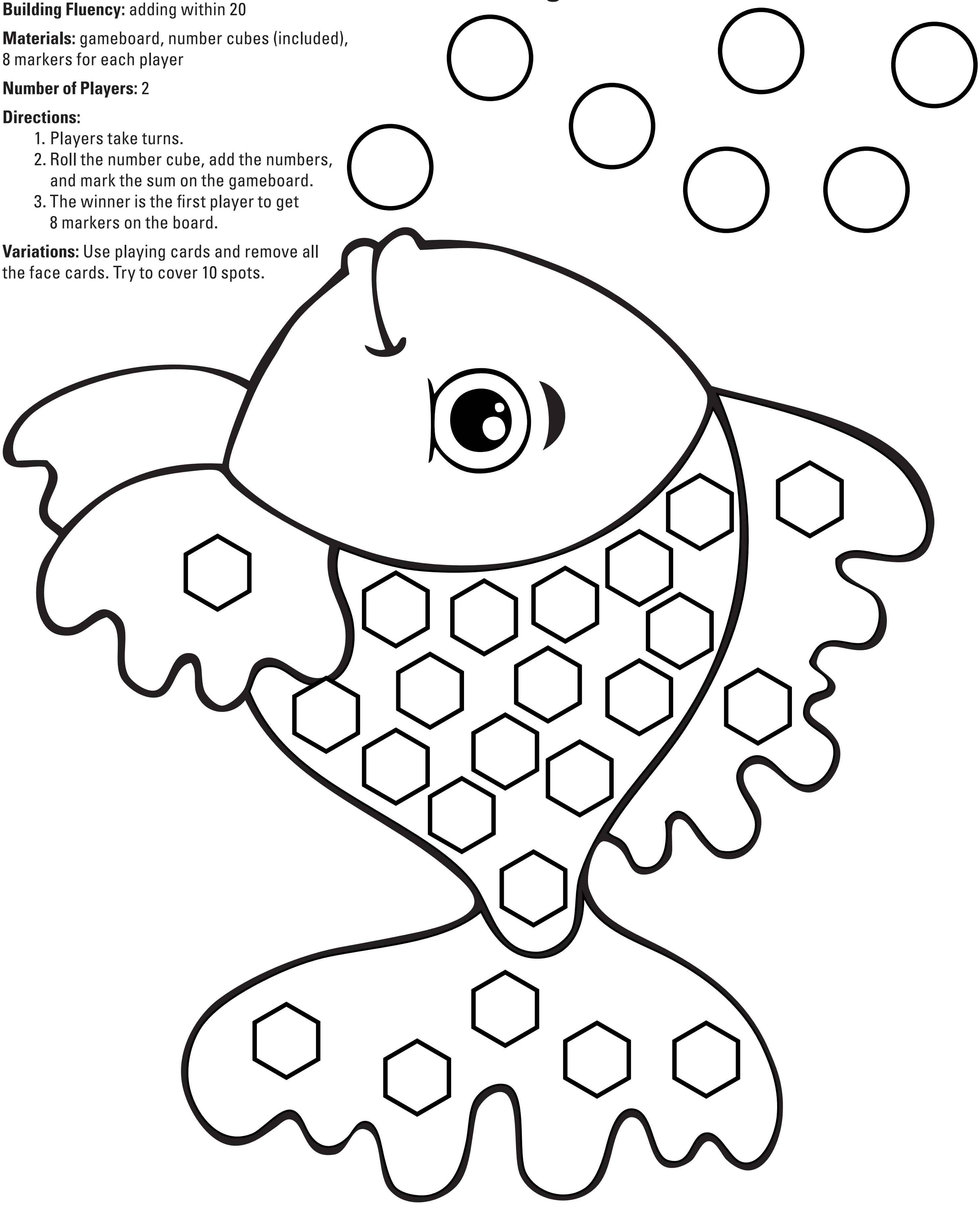
Materials: gameboard, number cubes (included), 8 markers for each player

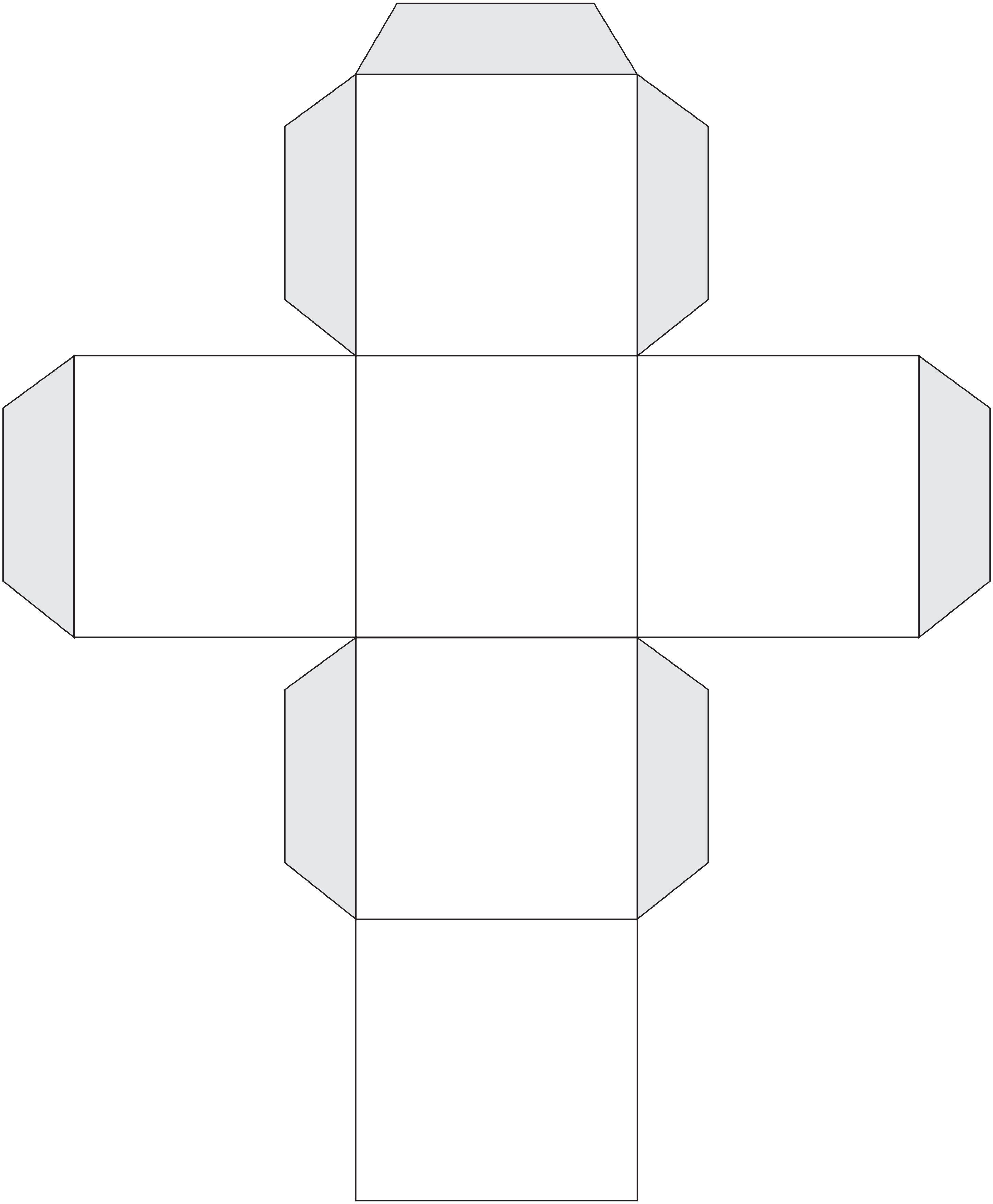
Number of Players: 2

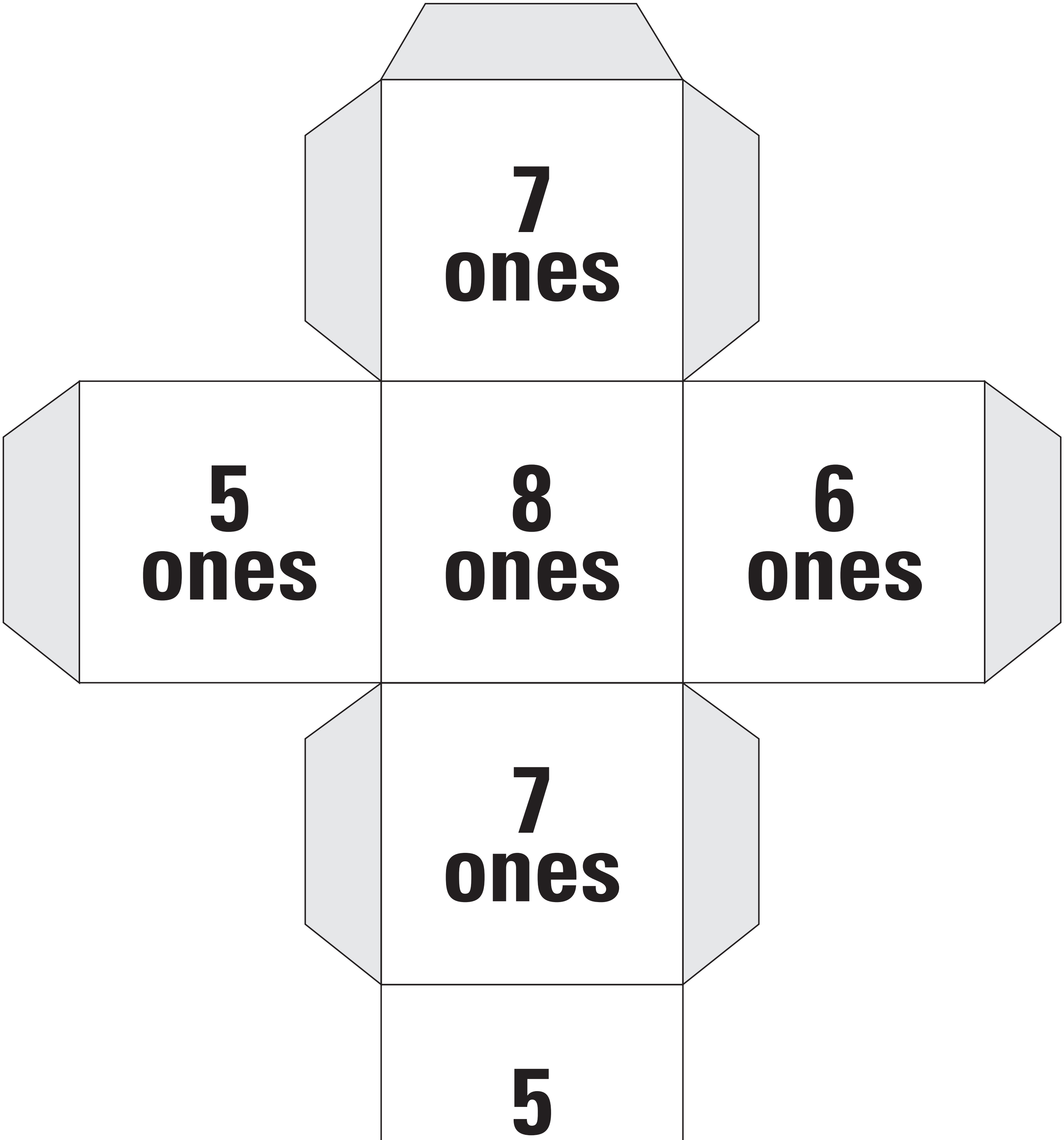
Directions:

1. Players take turns.
2. Roll the number cube, add the numbers, and mark the sum on the gameboard.
3. The winner is the first player to get 8 markers on the board.

Variations: Use playing cards and remove all the face cards. Try to cover 10 spots.






7 ones
5 ones
8 ones
6 ones
7 ones
5 ones

True or False?

Building Fluency: understand the meaning of the equal sign

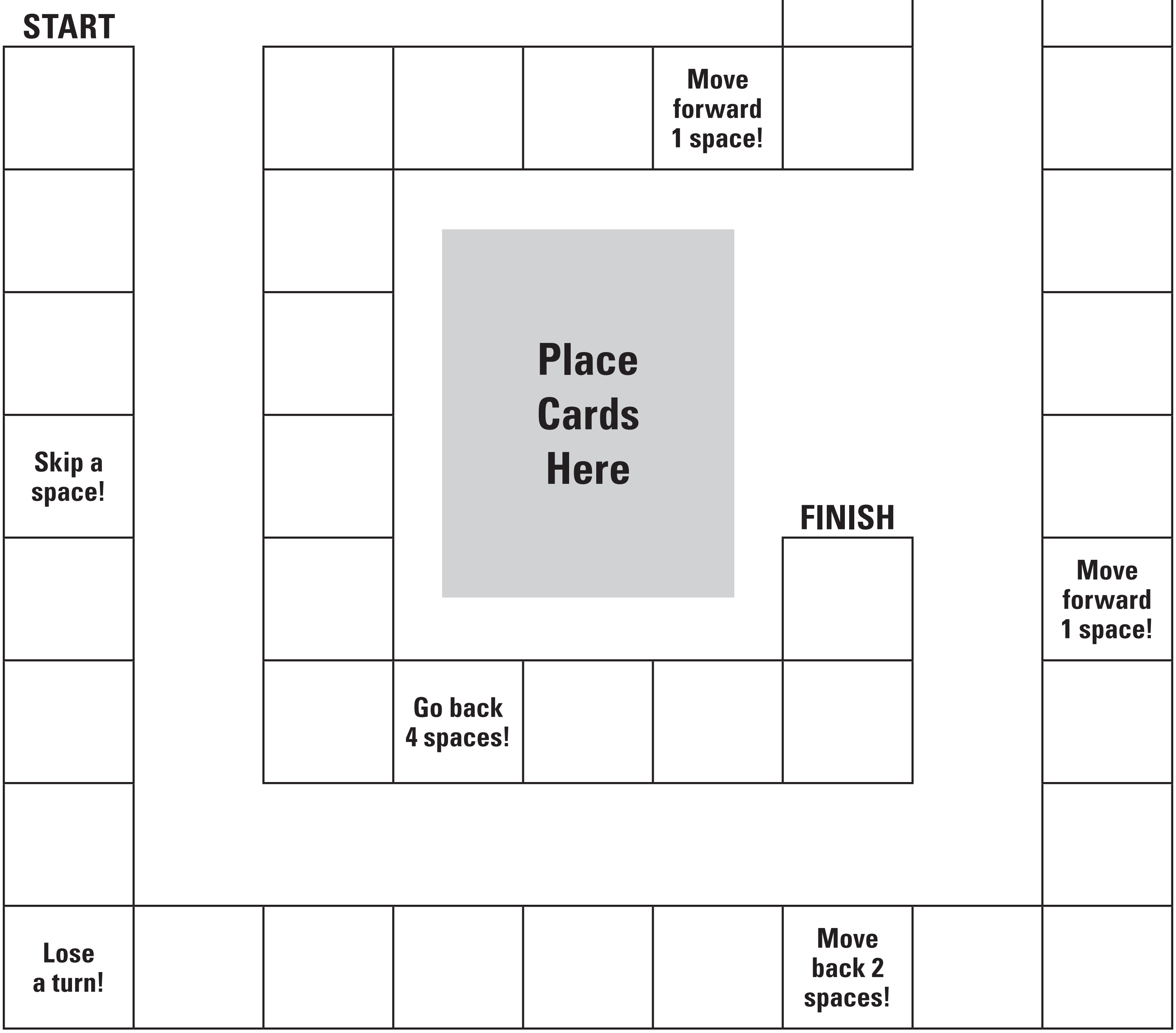
Materials: gameboard, game cards, marker for each player

Number of Players: 2-4

Directions:

1. Players take turns.
2. Draw a card and determine if the equation is true or false.
3. If the equation is true, the player moves forward 2 spaces.
4. If the equation is false, the player moves forward 1 space.
5. The winner is the player that reaches the finish line first.

Variation/Extension: Students can rewrite false equations to make them true or create their own cards.



4 + 5 = 9	7 - 2 = 8 - 5	3 + 4 = 4 + 3	4 + 2 = 1 + 6
14 - 9 = 5	12 - 8 = 5	5 + 2 = 4 + 4	3 + 6 = 1 + 5
7 + 6 = 15 - 2	8 + 7 = 15	3 + 5 = 2 + 6	1 + 8 = 4 + 5
3 + 3 = 9	4 - 2 = 9 - 5	4 + 7 = 9 + 2	2 + 3 = 7 + 1

$8 - 4 = 3$	$12 - 6 = 6$	$12 - 5 = 9$	$11 - 4 = 7$
$5 - 2 = 3$	$8 - 2 = 6$	$9 - 5 = 3$	$10 - 5 = 4$
$6 + 4 = 5 + 5$	$11 - 2 = 9$	$9 - 4 = 5$	$8 - 2 = 7$
$3 + 2 = 0 + 5$	$9 - 6 = 3$	$3 - 2 = 1$	

Balance Your Partner

Building Fluency: understand meaning of the equal sign

Materials: gameboard, pair of dice, pencil or marker

Number of Players: 2

Directions:

1. Player 1 rolls the dice.
2. Player 1 writes the two numbers rolled in the first two spaces on the gameboard.
3. Player 2 "balances" the equation by writing two numbers that will have the same sum as the first side.
4. Player 1 checks to be sure the equation is balanced.
5. Players take turns rolling the dice and balancing equations.

Variation/Extension: Write equations in math notebooks

_______ + _______ = _______ + _______

_______ + _______ = _______ + _______

_______ + _______ = _______ + _______

_______ + _______ = _______ + _______

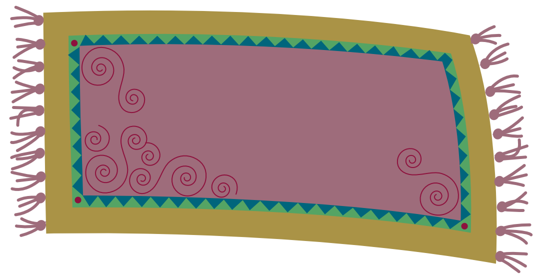
_______ + _______ = _______ + _______

_______ + _______ = _______ + _______

_______ + _______ = _______ + _______

_______ + _______ = _______ + _______

Under the Rug



Building Fluency: Determining the unknown whole number

Materials: 10 counters, rug

Number of Players: 2

Directions:

1. Place 10 counters on the rug.
2. Player 1 turns away or hides their eyes.
3. Player 2 takes some of the 10 counters and hides them under the rug.
4. Player 1 must figure out how many are "under the rug."
5. The student should record on the recording sheet.
6. Students take turns and repeat until the recording sheet is complete.

Variation/Extension: Modify to facts to 20 by using 20 counters.

______ + ______ = 10 10 - ______ = ______

______ + ______ = 10 10 - ______ = ______

______ + ______ = 10 10 - ______ = ______

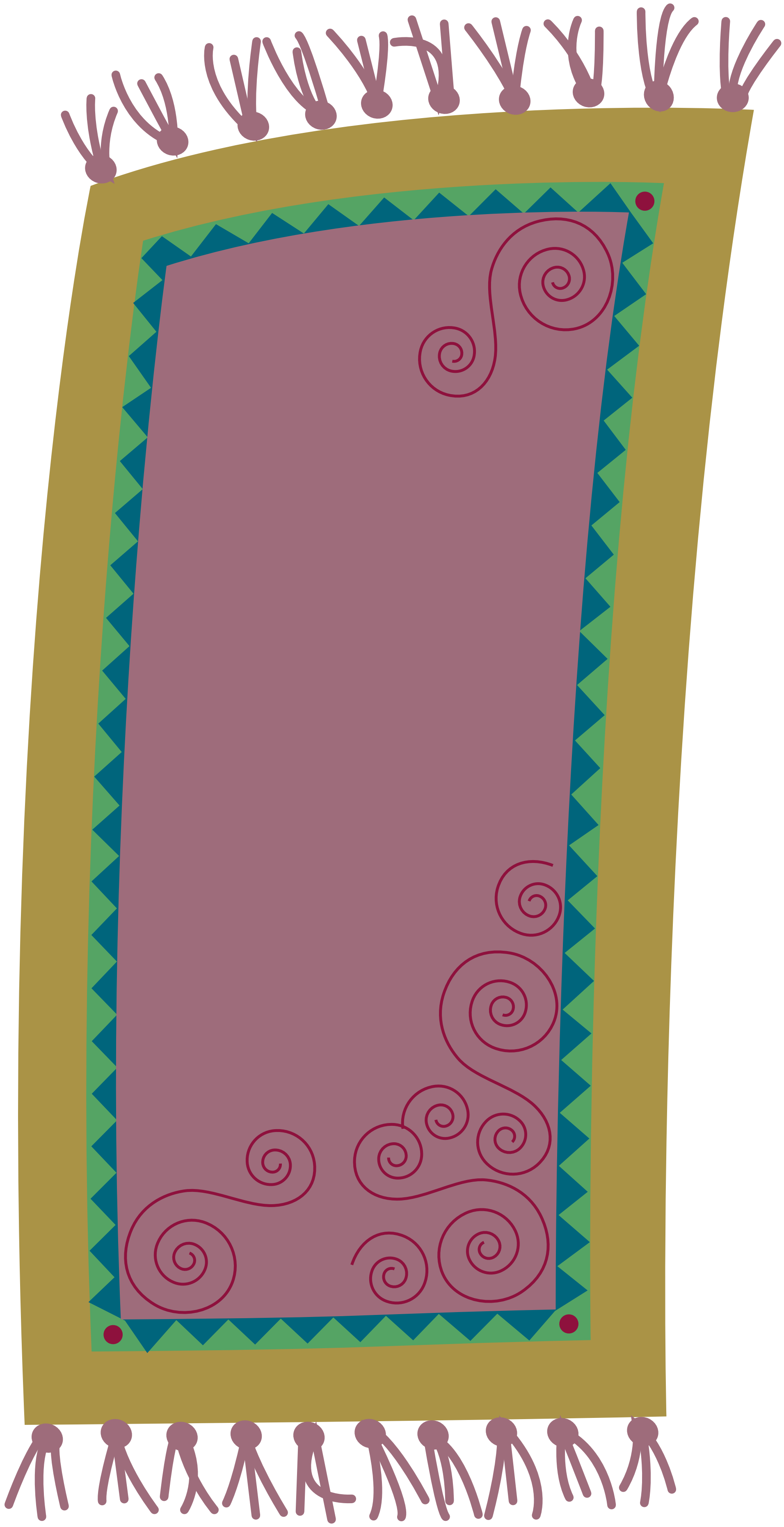
______ + ______ = 10 10 - ______ = ______

______ + ______ = 10 10 - ______ = ______

______ + ______ = 10 10 - ______ = ______

______ + ______ = 10 10 - ______ = ______

______ + ______ = 10 10 - ______ = ______



What's My Number?

Building Fluency: Determining the unknown whole number

Materials: digit cards 1-10

Number of Players: 3

Directions:

1. Students play in groups of 3.
2. Player 1 is the "adder" and players 2 and 3 are the "addends".
3. The addends will sit next to each other facing the adder.
4. Each addend will draw a digit card without looking at it and hold it up to their noses.
5. The adder will add the 2 digits together and tell the 2 addends the sum.
6. The addends will then face each other and look at each other's digit card and try to determine what their digit is.
7. The first player to guess their digit wins both digits.
8. The winner is the player with the most digit cards when all the cards have been used. That player then becomes the adder.

Variation/Extension: Students can write equations in their math notebooks.

1	2	3	4
5	6	7	8
9	10	1	2
3	4	5	6
7	8	9	10

Skidoo

Building Fluency: Counting to 150

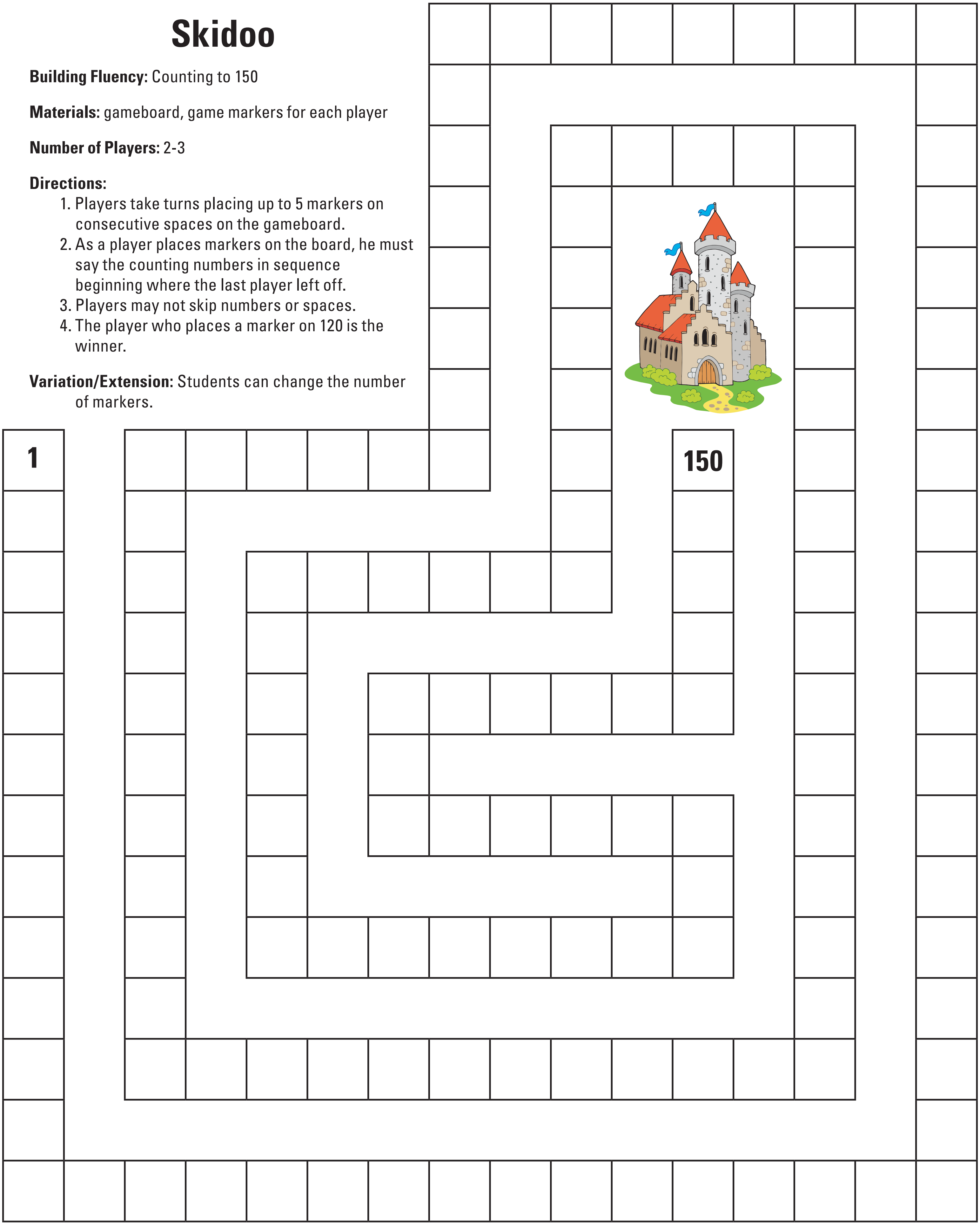
Materials: gameboard, game markers for each player

Number of Players: 2-3

Directions:

1. Players take turns placing up to 5 markers on consecutive spaces on the gameboard.
2. As a player places markers on the board, he must say the counting numbers in sequence beginning where the last player left off.
3. Players may not skip numbers or spaces.
4. The player who places a marker on 120 is the winner.

Variation/Extension: Students can change the number of markers.



Scoop-De-Doo

Building Fluency: place value understanding

Materials: gameboard for each player, game markers, beans or other manipulative, spoon

Number of Players: 2-4

Directions:

1. Players take turns scooping a spoonful of beans and placing the beans on the mat in the ones places.
2. When possible, players should trade 10 ones for a ten.
3. When a player trades 10 ones for a ten, he should place a marker on one of the tens and replace the beans in the pot.
4. The first player to have 9 tens is the winner.

Variation/Extension: Player could draw models in their math notebook.

10

10 10 10

10 10 10 10 10

1	1	1	1	1	1	1	1	1	1

Nifty Fifty

Building Fluency: composing tens

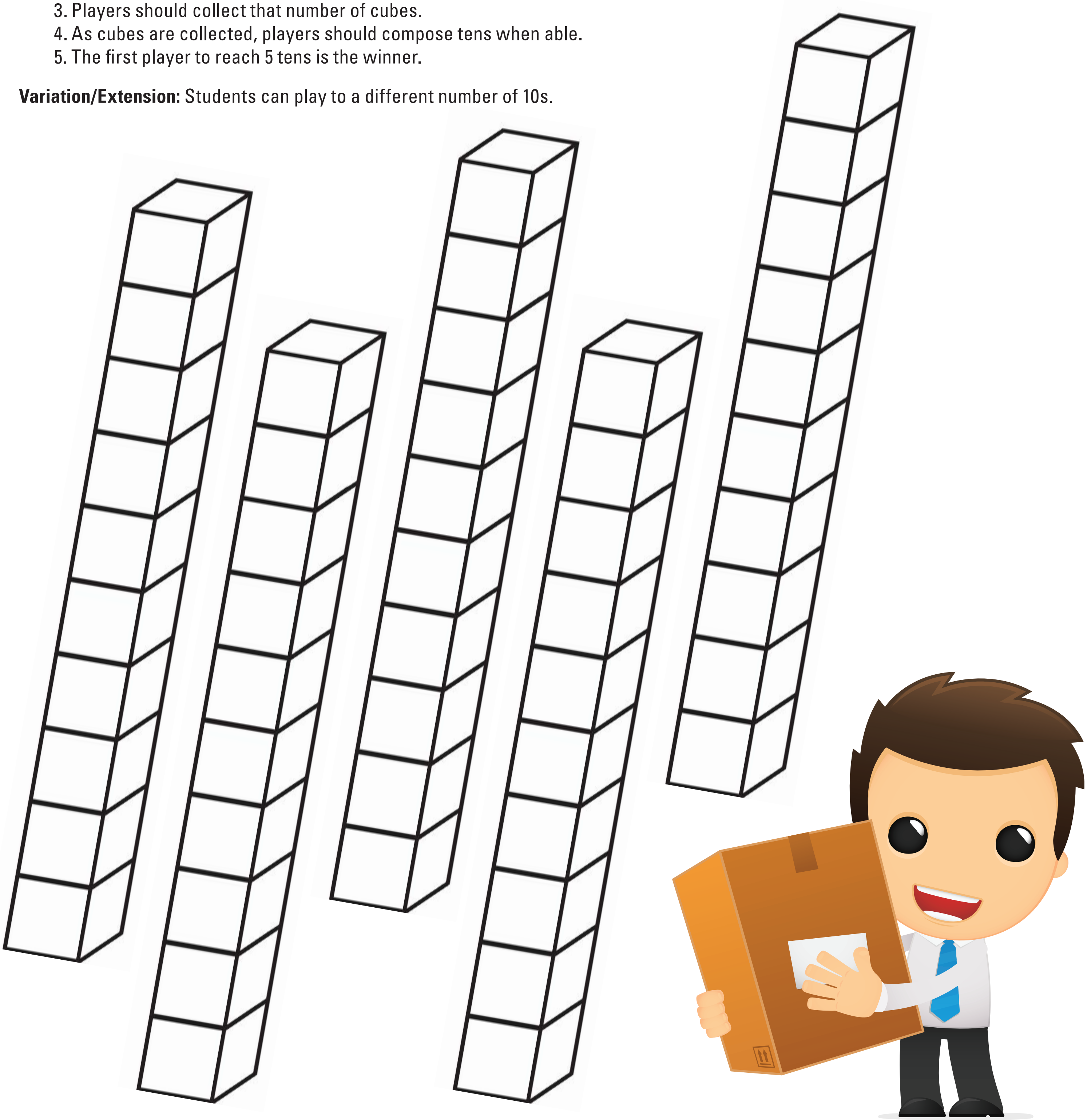
Materials: die, cubes (50 for each player)

Number of Players: 2-3

Directions:

1. Players take turns.
2. Rolls the die and add the number on the die and 4. (4 + ?)
3. Players should collect that number of cubes.
4. As cubes are collected, players should compose tens when able.
5. The first player to reach 5 tens is the winner.

Variation/Extension: Students can play to a different number of 10s.



Big Cheese

Building Fluency: comparing two digit numbers

Materials: 2 sets of numbers cards 11-99

Number of Players: 2-4

Directions:

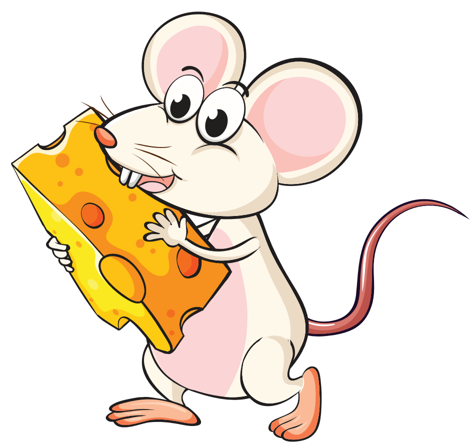
1. Shuffle and stack cards face down on the gameboard.
2. Each player draws one card from the stack and places it face up.
3. The player with the number that is largest takes the cards.
4. If there is a tie, those players turn over another card and the player with the highest number takes the cards.
5. The game ends when all the cards are drawn.
6. The winner is the player with the most cards.

Variation/Extension: The player with the number that is smaller takes both cards. Limit the series of cards to numbers that are appropriate for the level of the students.

PLAYER 1

PLAYER 3

PLACE CARDS HERE



PLAYER 2

PLAYER 4

11	12	13	14
15	16	17	18
19	20	21	22
23	24	25	26
27	28	29	30
31	32	33	34

35	36	37	38
39	40	41	42
43	44	45	46
47	48	49	50
51	52	53	54
55	56	57	58

59	60	61	62
63	64	65	66
67	68	69	70
71	72	73	74
75	76	77	78
79	80	81	82

83	84	85	86
87	88	89	90
91	92	93	94
95	96	97	98
99			

Tick Tock Clock 3 in a Row

Building Fluency: tell time in hours and half hours

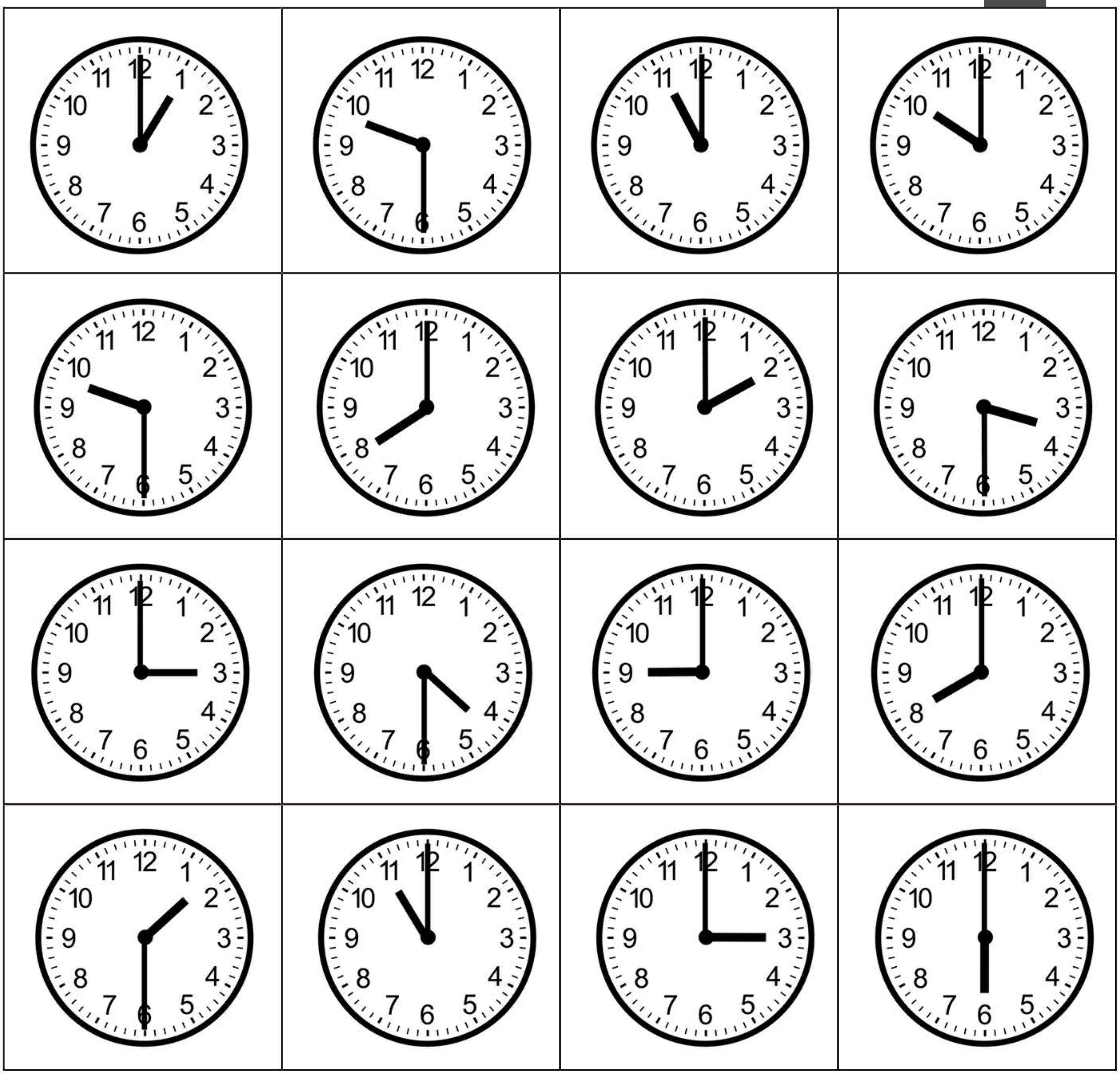
Materials: gameboard, two sets of time cards and ten markers of one color per player

Number of Players: 2

Directions:

1. Players take turns.
2. Draw a time card from the deck and cover that time on the gameboard with a marker.
3. If no clock with that time is available, the player loses a turn.
4. The winner is the first player to get three markers in a row.

Variation/Extension: Players could try to get 4 in a row.



6:00	3:00	1:30
2:00	3:30	9:00
1:00	5:00	8:00
8:00	10:00	2:00
4:30	3:00	10:30
9:30	6:00	5:00
11:00	4:00	

Time Concentration

Building Fluency: tell time in hours and half hours

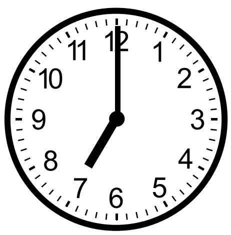
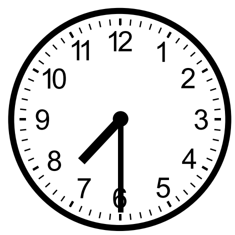
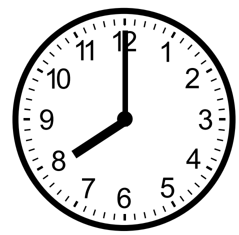
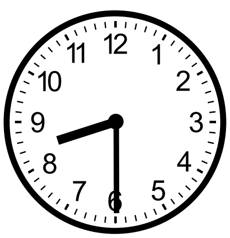
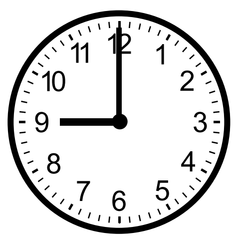
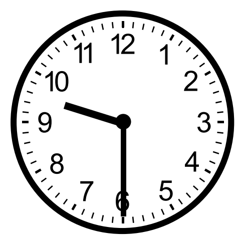
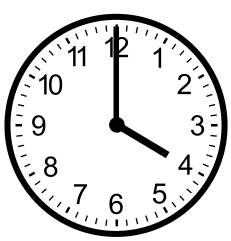
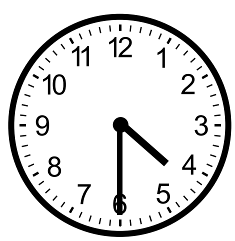
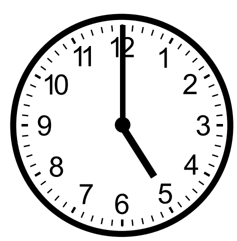
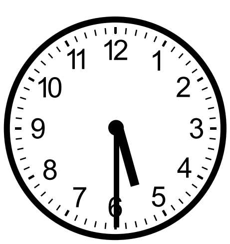
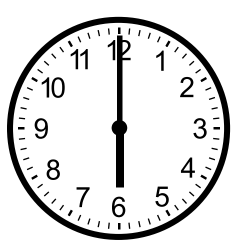
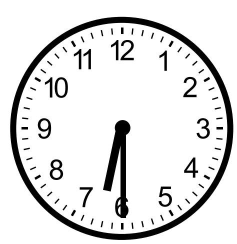
Materials: game cards

Number of Players: 2

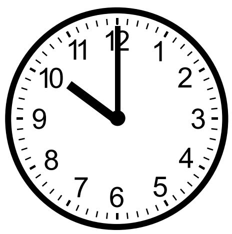
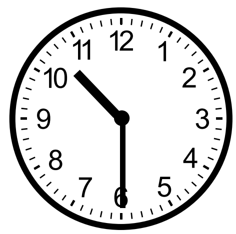
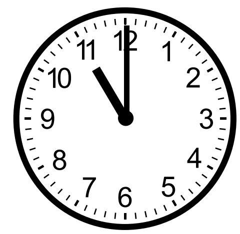
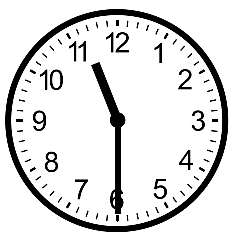
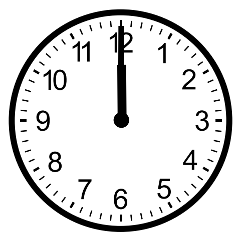
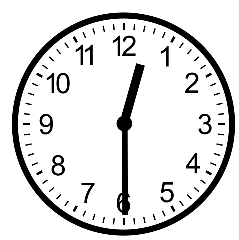
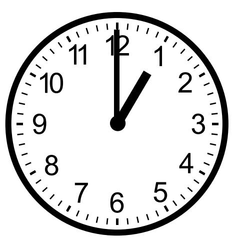
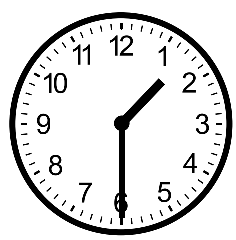
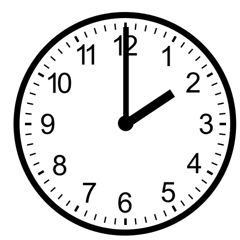
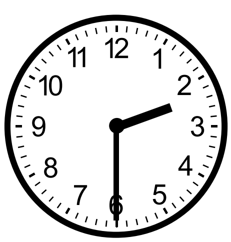
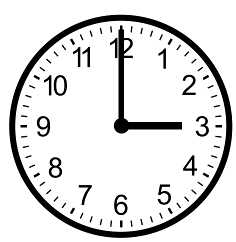
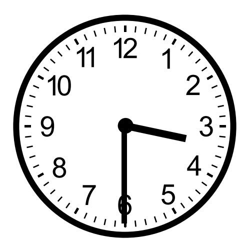
Directions:

1. Place all cards face down on the table.
2. Players take turns.
3. Choose two cards and tell the time.
4. If the cards match, the player keeps the cards.
5. If they do not match, the player turns the cards over.
6. The winner is the player with the most matches.

Variation/Extension: Players can play with cards face up.

10:00	10:30	11:00
11:30	12:00	12:30
1:00	1:30	2:00
2:30	3:00	3:30
4:00	4:30	5:00
5:30	6:00	6:30

8:30	9:00	9:30
		
		
		
		
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