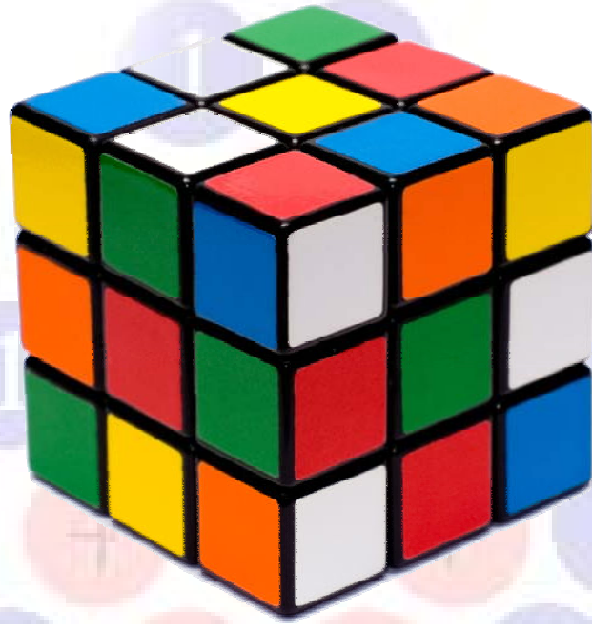


ល្បែងកម្សាន្តគណិតវិទ្យា



រៀបរៀងដោយ:

អ៊ឹង សំណាង

Tel : 092 200 672

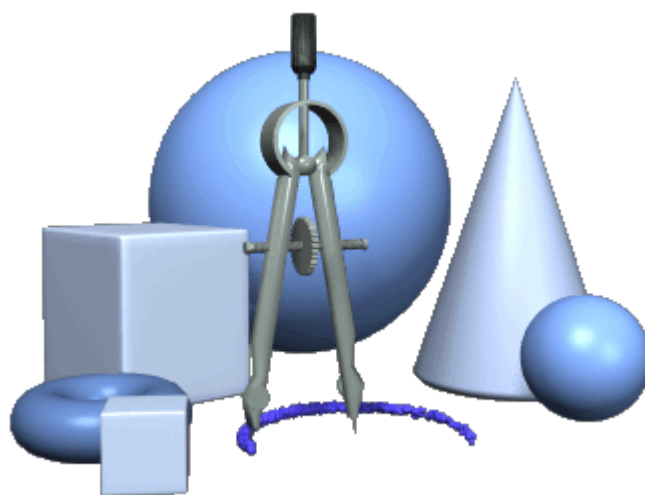
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The Game of Mathematics

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*THE GAME OF
MATHEMATICS*








In-Class Game

Polygon Tic-Tac-Toe (Lesson 14-4)

● Get Ready!

Separate the students into pairs.

- Polygon Tic-Tac-Toe master, p. 42
- Polygon Cube masters, pp. 43–44
- scissors 
- tape  or glue 
- 10 counters per team (5 of one color, 5 of another color) 
- 1 number cube per team 

● Get Set!

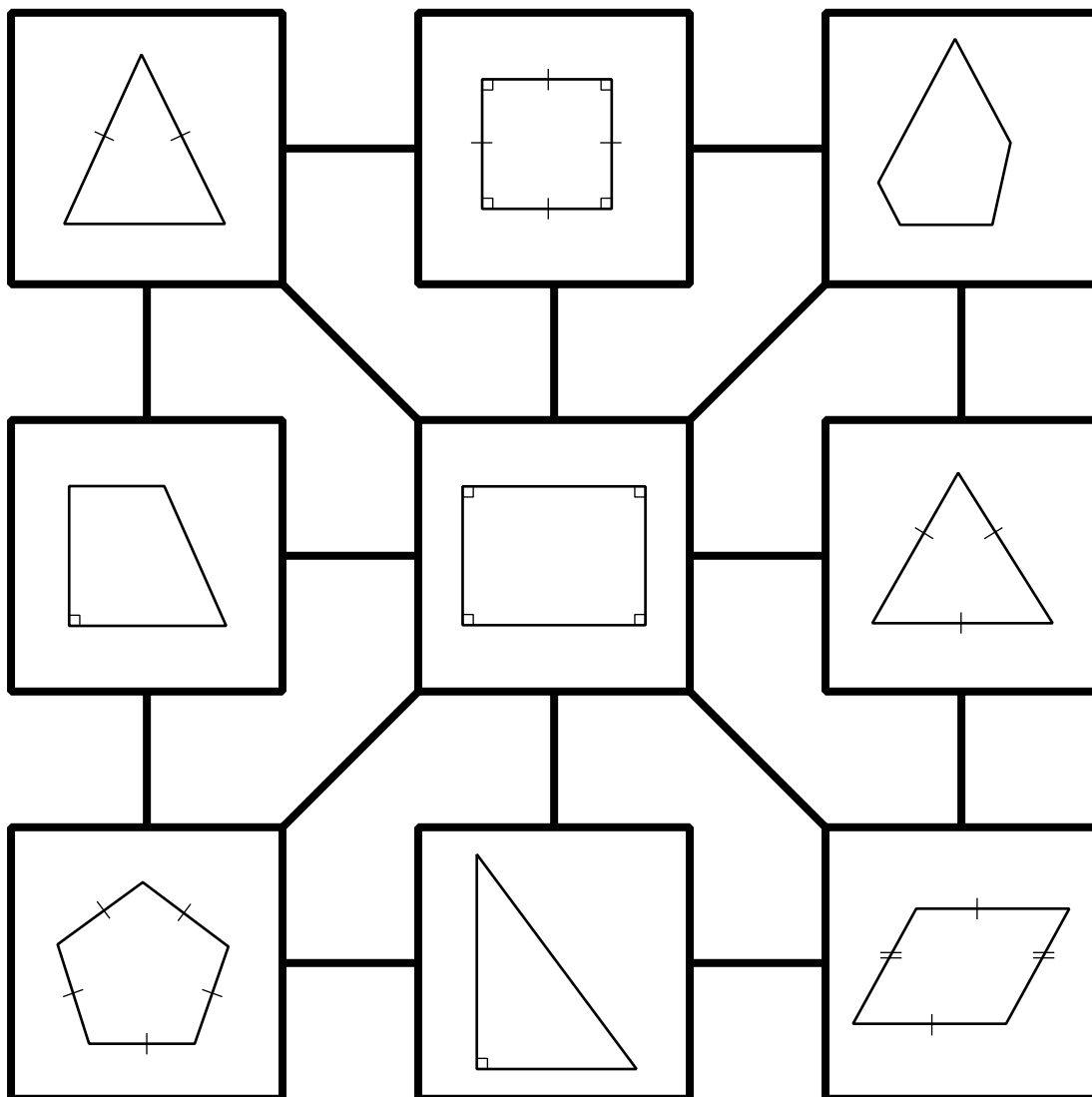
Make a copy of the Polygon Tic-Tac-Toe master on page 42 for each student in the class. Make a copy of the Polygon Cube masters on pages 43 and 44 for each team. Have students cut out each cube, fold, and tape or glue the ends. Give each student 5 counters.

● Go!

- A player rolls both polygon cubes and uses a counter to cover any shape that matches the information shown on the two cubes. If at any time a player cannot find a matching figure, he or she loses a turn.
- The players alternate turns. The first player to get three in a row horizontally, vertically, or diagonally wins.

In-Class Game***Polygon Tic-Tac-Toe*** (Lesson 14-4)**Work with a partner.**

- A player rolls both cubes and uses a counter to cover any shape that matches the information shown on the two cubes. If at any time a player cannot find a matching figure, he or she loses a turn.
- The players alternate turns. The first player to get three in a row horizontally, vertically, or diagonally wins.



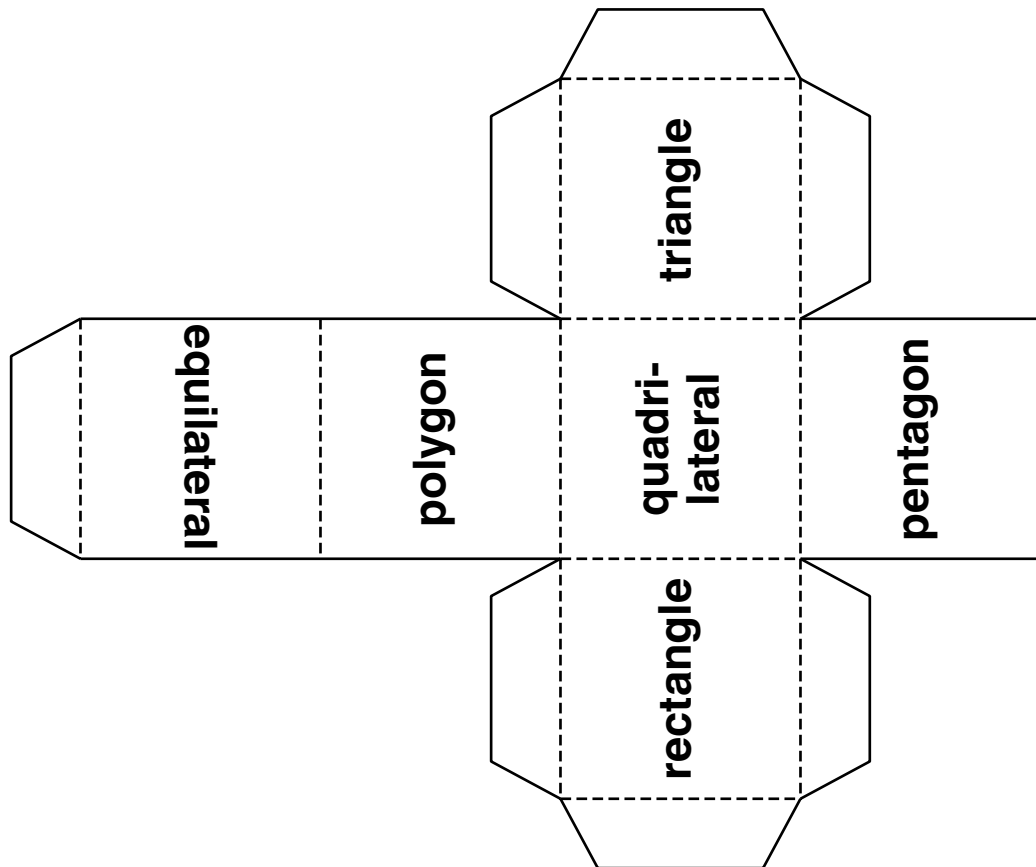
In-Class Game

Polygon Cube A (Lesson 14-4)

Cut along the solid black lines.

Fold along the dashed lines.

Tape or glue tabs.



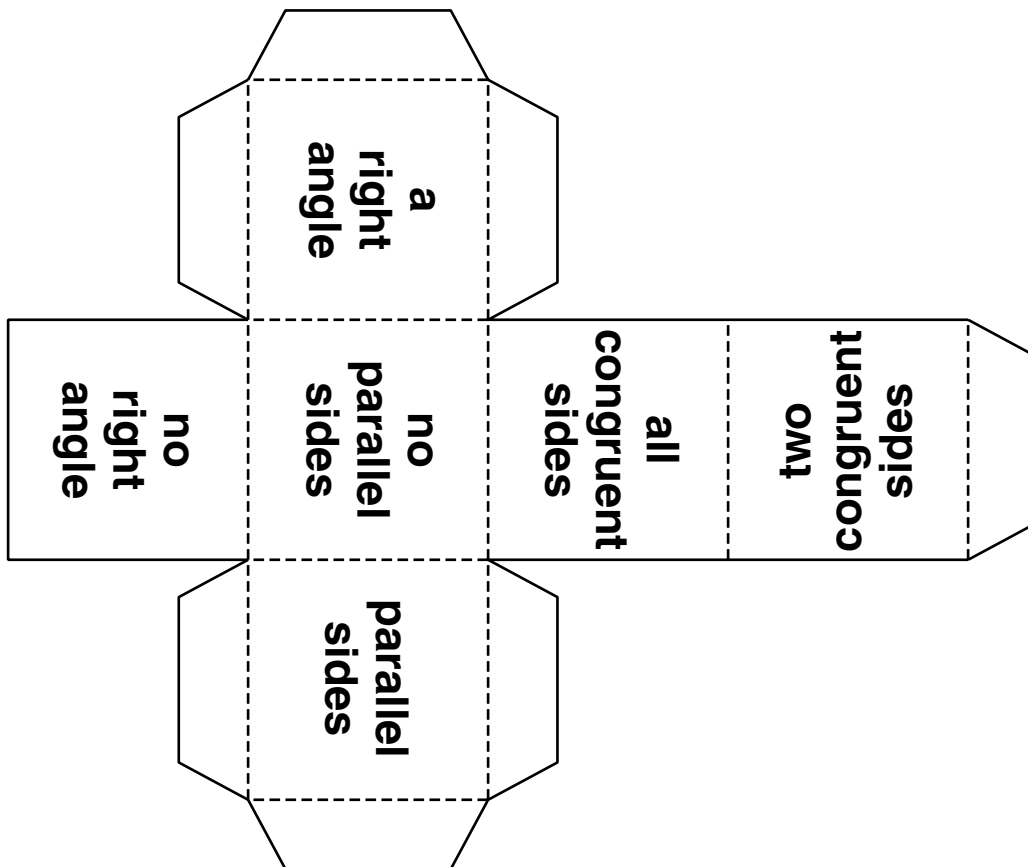
In-Class Game

Polygon Cube B (Lesson 14-4)

Cut along the solid black lines.

Fold along the dashed lines.

Tape or glue tabs.



In-Class Game

Mathematical Tennis (Lesson 7-4)

● **Get Ready!** _____

Separate the class into two teams.

- Mathematical Tennis master, p. 20

● **Get Set!** _____

Make a copy of the Mathematical Tennis master on page 20 for each student in the class.

● **Go!** _____

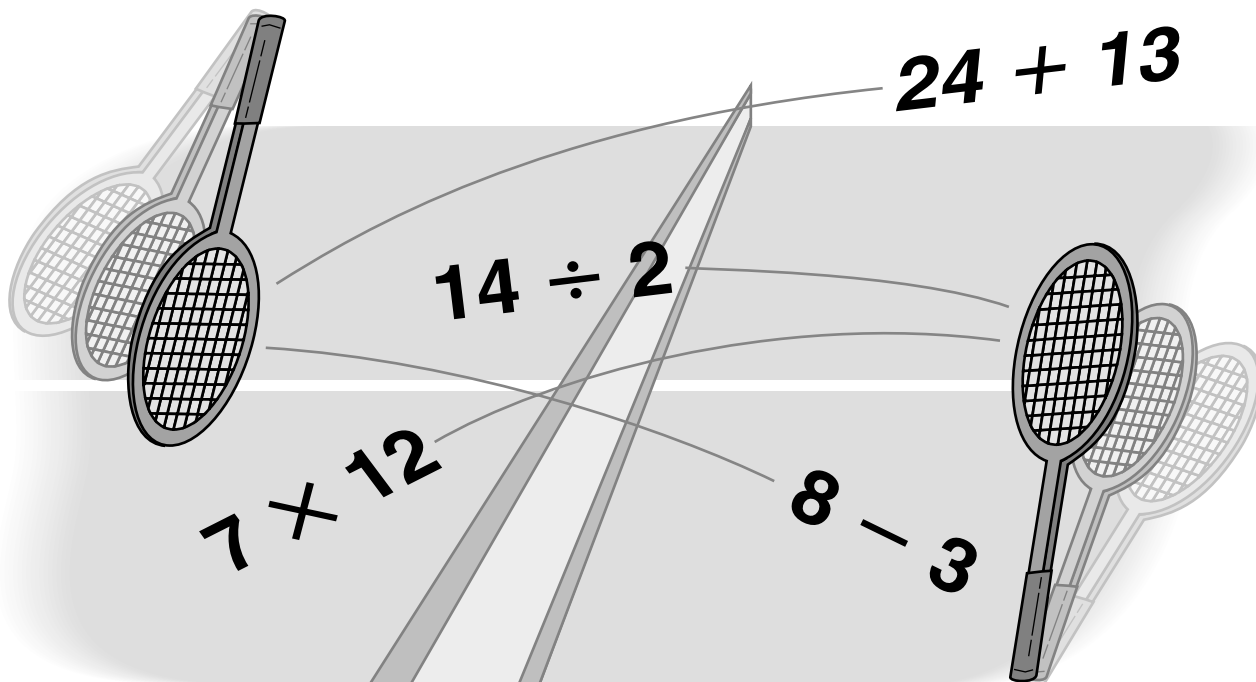
- The first player on Team A “serves” a “ball” that consists of an expression that involves addition, subtraction, multiplication, division, decimals, fractions, or any combination of them; for example, 6×3 .
- Within an agreed-upon time limit, the first player on Team B “returns” the ball by stating an expression that is equivalent to the first expression; for example, “half of 36.”
- This continues without any repetition of expressions. Each player should try to make his or her expression as complex as possible. An example is, “2 times open parenthesis, 5 squared minus 4 squared, close parenthesis” or “2 thirds times 3 fourths times 36.” The value is still 18.
- If a player cannot return the ball within the time limit, the opposing team scores 1 point. If a player repeats an expression or makes an error, the opposing team scores 2 points. The winning team is the first to score 10 points.

In-Class Game

Mathematical Tennis (Lesson 7-4)

Work in two teams.

- The first player on Team A “serves” a “ball” that consists of an expression that involves addition, subtraction, multiplication, division, decimals, fractions, or any combination of them; for example, 6×3 .
- Within an agreed-upon time limit, the first player on Team B “returns” the ball by stating an expression that is equivalent to the first expression; for example, “half of 36.”
- This continues without any repetition of expressions. Each player should try to make his or her expression as complex as possible. An example is, “2 times open parenthesis, 5 squared minus 4 squared, close parenthesis” or “2 thirds times 3 fourths times 36.” The value is still 18.
- If a player cannot return the ball within the time limit, the opposing team scores 1 point. If a player repeats an expression or makes an error, the opposing team scores 2 points. The winning team is the first to score 10 points.






In-Class Game

The Integer 500 (Lesson 8-5)

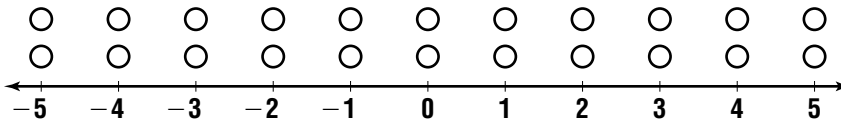
● Get Ready!

Separate the students into pairs.

- The Integer 500 master, p. 22
- The Integer 500 Spinner master, p. 23
- 2 counters for each team (two different colors) 
- scissors 
- 1 brass fastener per team 

● Get Set!

Make a copy of The Integer 500 master on page 22 for each student. Copy the Integer 500 Spinner master on page 23 onto card stock for each team. Have students cut out and construct the spinners using the brass fasteners. Give each student 2 counters. Construct an Integer 500 Track for each team using a piece of paper or cardboard 4 inches wide by 28 inches long. A section of the game board is shown below, but the actual tracks should go from -32 to 32 .



● Go!

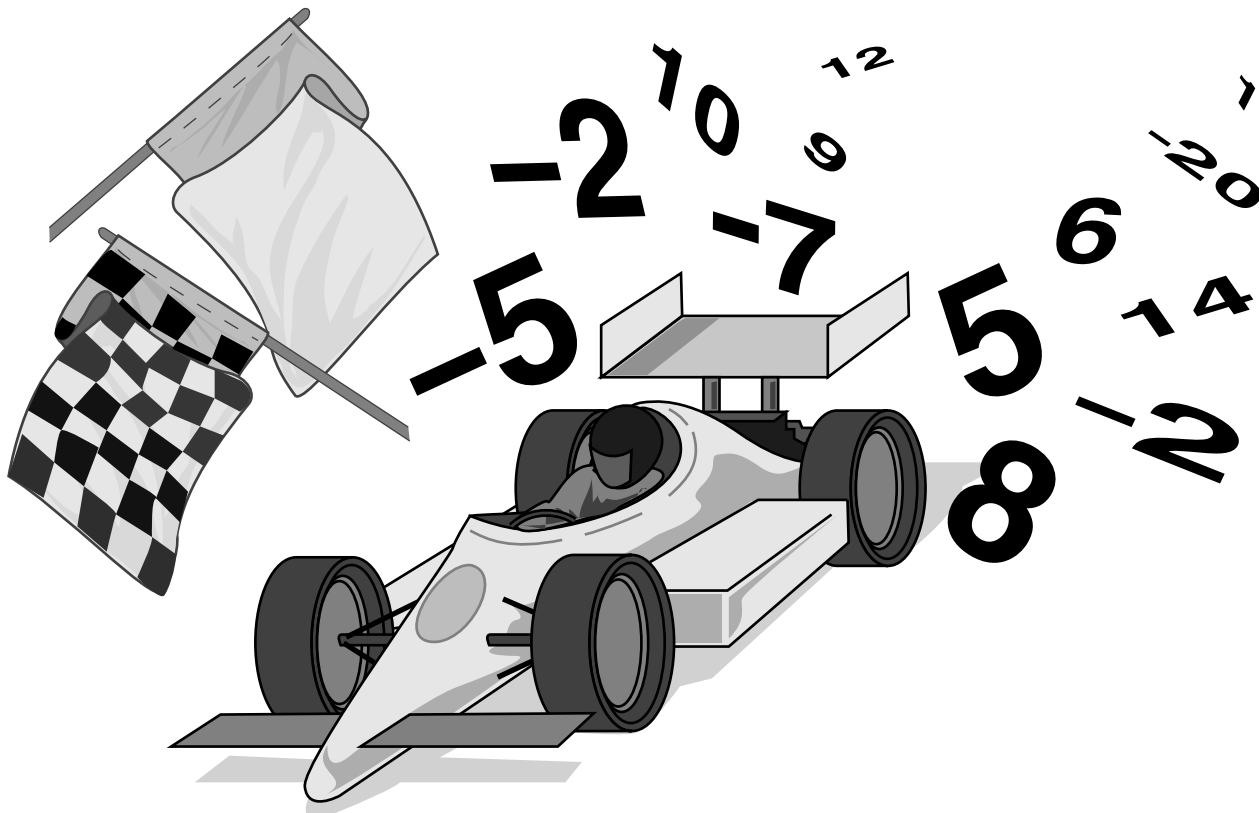
- Have each student place a counter on a track above 0 (one row per student). Give each team a target number. For example, let's assume that our target number is 19. The goal of Player 1 is to reach $+19$; the goal of Player 2 is to reach -19 .
- Player 1 spins the spinner and chooses the operation—addition, subtraction, multiplication, or division—that will give the best result when the number on the spinner is combined with the number below the player's counter. If the spinner lands in the shaded area or on the line separating the two integers, the player spins again. Then Player 1 moves the counter accordingly. Play continues with Player 2, and so on.
- The round is over when a player lands exactly on his or her target number.

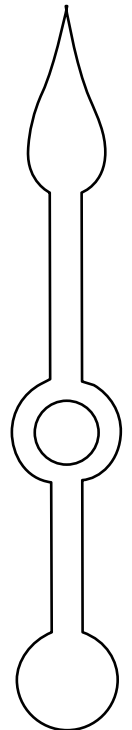
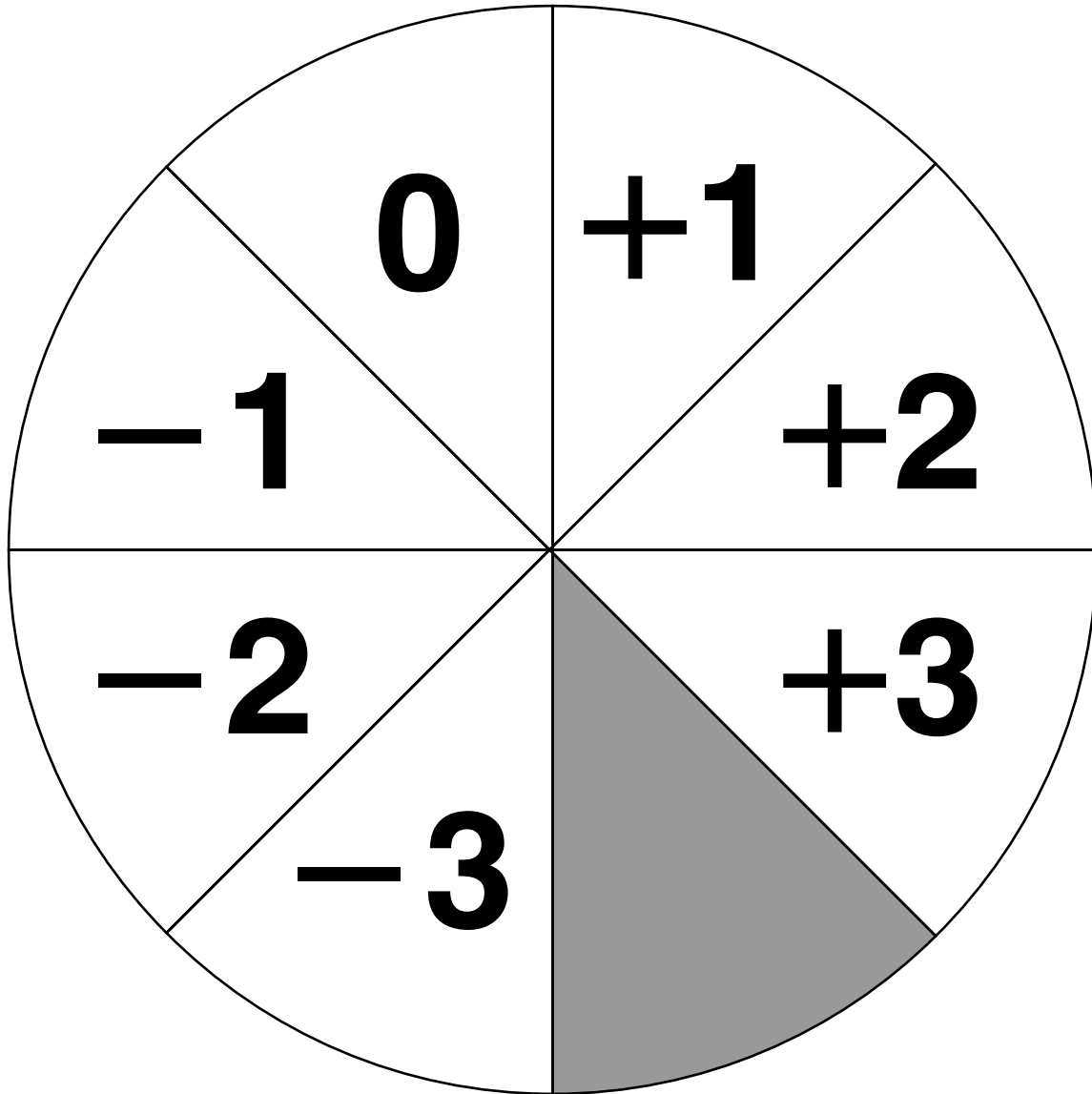
In-Class Game***The Integer 500*** (Lesson 8-5)**Work with a partner.**

- Each student places a counter on a track above 0 (one row per student). Your teacher will give each team a target number. For example, let's assume that our target number is 19. The goal of Player 1 is to reach +19; the goal of Player 2 is to reach -19.
- Player 1 spins the spinner and chooses the operation—addition, subtraction, multiplication, or division—that will give the best result when the number on the spinner is combined with the number below the player's counter. If the spinner lands in the shaded area or on the line separating the two integers, the player spins again. Then Player 1 moves the counter accordingly. Play continues with Player 2, and so on.
- The round is over when a player lands exactly on his or her target number.

Variations:

- A player who spins a 0 can use it to return his or her opponent's counter to 0.
- A player who lands on a multiple of 5 must return to 0.
- The round is over when a player exceeds his or her target number.





In-Class Game***The Integer 500 Spinner*** (Lesson 8-5)

In-Class Game

Equation Fish (Lesson 9-3)

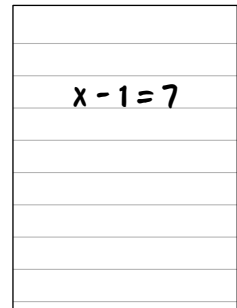
● Get Ready!

Separate the class into groups of four.

- Equation Fish master, p. 26
- Equation Fish Cards masters, pp. 27–28
- scissors 
- tape  or glue 
- 48 index cards per group 

● Get Set!

Make a copy of the Equation Fish master on page 26 for each student. Using the card at the right as an example, prepare a deck of cards for each group that consists of two cards for each equation shown on page 27 and two cards for each solution shown on page 28. You may want to use the Equation Fish Cards masters on pages 27 and 28 to copy, cut out, and tape or glue onto the index cards.



● Go!

- The dealer shuffles the cards and deals 5 cards to each player. The remaining cards are placed in a stack facedown in the middle of the table.
- The object of the game is to collect pairs of cards, one card with an equation and one with the solution to that equation. Whoever collects most pairs wins.
- The player to dealer's left starts. A turn consists of asking a specific player for a specific card. For example, a player might say "Mary, please give me your sevens." The player who asks must already hold at least one card that makes a pair with the requested card. If the player who was asked has cards of the named rank, he or she must give all those cards to the player who asked for them. That player then gets another turn and may again ask any player for any card matching a card held by the asker.
- If the person asked does not have any of the cards requested, they say "Go fish!". The asker must then draw the top card of the undealt stock. If the drawn card is the one asked for, the asker shows it and gets another turn. If the drawn card is not the one asked for, the asker keeps it but the turn now passes to the next player.
- As soon as a player has a pair of cards showing an equation and its solution, this must be shown and displayed face down.
- The game continues until either someone has no cards left in their hand or the stock runs out. The winner is the player who then has the most pairs.

In-Class Game

Equation Fish (Lesson 9-3)

Work in groups of four.

- The dealer shuffles the cards and deals 5 cards to each player. The remaining cards are placed in a stack facedown in the middle of the table.
- The object of the game is to collect pairs of cards, one card with an equation and one with the solution to that equation. Whoever collects most pairs wins. An example of a matching pair is shown below.

$x - 1 = 7$	8

- The player to dealer's left starts. A turn consists of asking a specific player for a specific card. For example, a player might say "Mary, please give me your sevens." The player who asks must already hold at least one card that makes a pair with the requested card. If the player who was asked has cards of the named rank, he or she must give all those cards to the player who asked for them. That player then gets another turn and may again ask any player for any card matching a card held by the asker.
- If the person asked does not have any of the cards requested, they say "Go fish!". The asker must then draw the top card of the undealt stock. If the drawn card is the one asked for, the asker shows it and gets another turn. If the drawn card is not the one asked for, the asker keeps it but the turn now passes to the next player.
- As soon as a player has a pair of cards showing an equation and its solution, this must be shown and displayed face down.
- The game continues until either someone has no cards left in their hand or the stock runs out. The winner is the player who then has the most pairs.

In-Class Game**Equation Fish Cards A** (Lesson 9-3)

$b - 1 = 6$	$g - 2 = 6$	$9 = x - 1$	$1 = n - 2$
$t - 7 = -1$	$y - 3 = -3$	$c - 3 = -2$	$k - 4 = -8$
$-5 = x - 7$	$-5 = g - 4$	$x - 6 = -8$	$y - 10 = -6$

In-Class Game**Equation Fish Cards B** (Lesson 9-3)


7	8	10	3
6	0	1	-4
2	-1	-2	4

In-Class Game

Percent Three-in-a-Row (Lesson 10-8)

● **Get Ready!** _____

Separate the students into pairs.

- Percent Three-in-a-Row master, p. 30
- 16 counters per team (8 of one color, 8 of another color) 

● **Get Set!** _____

Make a copy of the Percent Three-in-a-Row master on page 30 for each student in the class. Give each student 8 counters.

● **Go!** _____

- One player chooses two numbers from the number table and finds the percent one number is of the other. For example, if a player chooses 8 and 40, he or she can find 8% of 40 or 40% of 8.
- The player then places a counter on the uncovered box on the game board that is closest to his or her answer. If there is no number on the board that is close to the percentage, the player loses his or her turn.
- The players alternate turns. The first player to get three in a row horizontally, vertically, or diagonally wins.

Name _____ Date _____

In-Class Game**Percent Three-in-a-Row** (Lesson 10-8)**Work with a partner.**

- One player chooses two numbers from the number table and finds the percent one number is of the other. For example, if a player chooses 8 and 40, he or she can find 8% of 40 or 40% of 8.
- The player then places a counter on the uncovered box on the game board that is closest to his or her answer. If there is no number on the board that is close to the percentage, the player loses his or her turn.
- The players alternate turns. The first player to get three in a row horizontally, vertically, or diagonally wins.

Game Board

95	40	50	15
85	90	75	20
70	80	60	25
35	30	5	10

Number Table


5	8	10	12
15	20	25	32
37	40	45	54
55	60	65	75
80	96	105	150

In-Class Game

Shut the Box (Lesson 11-5)

● Get Ready!

Separate the class into groups of two or three.

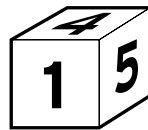
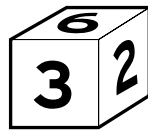
- Shut the Box master, p. 32
- Box and Chips master, p. 33
- number cubes 

● Get Set!

Make a copy of the Shut the Box master on page 32 and the Box and Chips master on page 33 for each student. Each pair of students will need a pair of number cubes.

● Go!

- The first player rolls the two number cubes and then decides which boxes he or she will cover with chips. Any two boxes that have the same sum as the numbers showing on the number cubes may be covered. For example, if the number cubes show 4 and 6 the sum is 10. A sum of 10 allows the player to cover 1 and 9, or 2 and 8, or 3 and 7, and so on. The diagram shows a sample play.



1
2
●
4
5
6
●
8
9

$6 + 4 = 10$ thrown
 $7 + 3 = 10$ covered

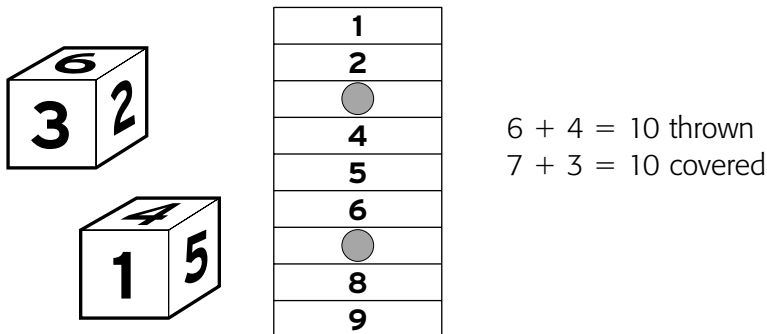
- The same player then rolls the two number cubes again and tries to cover two other boxes. The player is not allowed to use combinations involving numbers that are already covered. Encourage students to think of the probability of rolling a needed sum when determining which boxes to cover.
- Once boxes 7, 8, and 9 are covered, a player rolls one number cube on a turn, but he or she must still cover two boxes at a time.
- A player's turn continues until he or she is unable to make use of a sum. Then the player's final score is the sum of all of the numbers in the uncovered boxes. Play passes to the next player.
- The winner is the player with the lowest score.

In-Class Game

Shut the Box (Lesson 11-5)

Work in groups of two or three.

- The first player rolls the two number cubes and then decides which boxes he or she will cover with chips. Any two boxes that have the same sum as the numbers showing on the number cubes may be covered. For example, if the number cubes show 4 and 6 the sum is 10. A sum of 10 allows the player to cover 1 and 9, or 2 and 8, or 3 and 7, and so on. The diagram below shows a sample play.

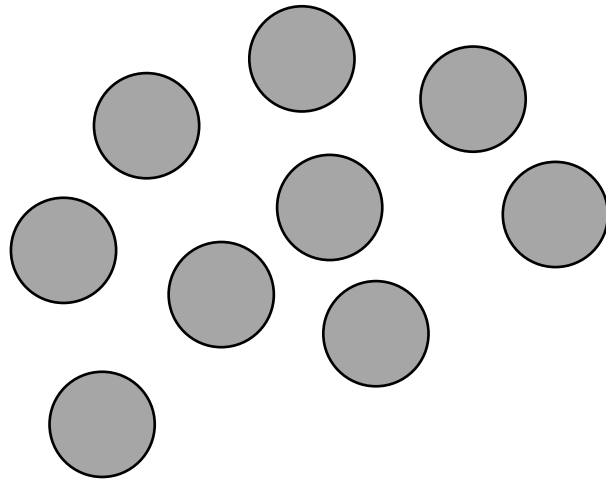


- The same player then rolls the two number cubes again and tries to cover two other boxes. The player is not allowed to use combinations involving numbers that are already covered. As you choose which boxes to cover, think of the probability of rolling numbers with a sum that allows you to cover the numbers that you are leaving uncovered.
- Once boxes 7, 8, and 9 are covered, you may only roll one number cube on a turn, but you must still cover two boxes at a time.
- A player's turn continues until he or she is unable to make use of a sum. Then the player's final score is the sum of all of the numbers on the uncovered boxes. Play passes to the next player.
- The winner is the player with the lowest score.

In-Class Game

Box and Chips (Lesson 11-5)

1
2
3
4
5
6
7
8
9







In-Class Game

Measurement Relay (Lesson 12-6)

● Get Ready!

This game is for the entire class.

- Measurement Relay master, p. 36
- Measurement Relay Cards masters, pp. 37–38
- index cards 
- scissors 
- glue  or tape 

● Get Set!

Make a copy of the Measurement Relay master on page 36 for each student in the class. Make one copy of the Measurement Relay Cards masters on pages 37 and 38. Cut out the cards and glue or tape them to index cards.

● Go!

- Shuffle the deck of index cards and pass out the cards until each student has at least 1 card and all of the cards have been distributed.
- Each card tells the student what they have and what they are looking for. Allow some time for students to read their cards and understand what they are looking for.
- When students are ready, have them stand and begin trying to find the person whose card matches theirs. Point out that all they are allowed to tell their fellow students is what information is on the card.
- After the first round, the game can be repeated by having each student pass his or her card(s) to the third person on their right to ensure that students receive cards that they have not yet seen.

Name _____ Date _____

In-Class Game

Measurement Relay (Lesson 12-6)

Work with your classmates.

- Your teacher will shuffle the deck and pass out the cards. You will receive at least 1 card.
- Each card tells you what you have and what you are looking for. Take some time to read your cards and understand what you are looking for.
- When your teacher tells you to begin, stand and begin trying to find the person whose card matches yours. All you are allowed to tell your classmates is what information is on the card.
- Your teacher may want you to repeat this game. Pass your card(s) to the third person on your right to ensure that you receive cards that you have not yet seen.

In-Class Game

Measurement Relay Cards A (Lesson 12-6)

I have 12,000 milligrams. Who has a unit of measure for mass?	I have grams (g). Who has a quart?
I have 32 fluid ounces. Who has the basic unit of measure for length in the metric system?	I have a meter (m). Who has 5 yards?
I have 15 feet. Who has the metric unit of length that you would use to measure the distance to school from home?	I have kilometers (km). Who has the sum of 4 h 30 min 50 s and 1 h 45 min 18 s?
I have 6 h 16 min 8 s. Who has 18 feet?	I have 6 yards. Who has a centimeter?
I have 0.01 meter. Who has the difference of 5 h 20 min 40 s and 1 h 45 min 28 s?	I have 3 h 35 min 12 s. Who has the metric unit of length you would use to measure the thickness of a pen tip?
I have a millimeter. Who has the metric unit of capacity that you would use to measure the amount of ink in a pen?	I have a milliliter (mL). Who has 10.4 grams?
I have 10,400 milligrams. Who has 40 fluid ounces?	I have 5 cups. Who has 300 feet?
I have 100 yards. Who has 0.75 meters?	I have 75 centimeters. Who has 72 inches?
I have 2 yards. Who has the basic unit of capacity in the metric system?	I have a liter. Who has the number you would multiply by to change meters to centimeters?

In-Class Game

Measurement Relay Cards B (Lesson 12-6)


I have 100. Who has 500 milliliters?	I have 0.5 liter. Who has the number you would divide by to change grams to kilograms?
I have 1,000. Who has the number of 8-ounce servings in a gallon of milk?	I have 16. Who has the operation used to change from a smaller unit of measure to a larger one?
I have division. Who has $3\frac{1}{2}$ pounds?	I have 56 ounces. Who has the sum of 1 h 42 min 10 s and 3 h 28 min 12 s?
I have 5 h 10 min 22 s. Who has the weight in tons of a 200,000 pound blue whale?	I have 100 tons. Who has the elapsed time from 6:20 P.M. to 1:40 A.M.?
I have 7 h 20 min. Who has 4 miles?	I have 21,120 feet. Who has $\frac{1}{2}$ quart?
I have 16 fluid ounces. Who has the elapsed time of a movie that starts at 7:55 P.M. and ends at 9:27 P.M.?	I have 1 h 32 min. Who has the weight in grams of a mink that weighs 0.7 kilograms?
I have 700 grams. Who has the abbreviation for meters?	I have m. Who has the length in centimeters of a cane frog that is 238 millimeters long?
I have 23.8 centimeters. Who has the number of 8-inch pieces that can be cut from 4 feet of rope?	I have 6. Who has the number of half-cup servings of ice cream in a two-gallon container?
I have 64. Who has the time that a 1 hour 48 minute movie will end if it begins at 2:45 P.M.?	I have 4:33 P.M. Who has the weight in milligrams of an Oldfield mouse that weighs 12 grams?

Outside-of-Class Game

Venn Diagram Game (Lesson 13-3)

● Get Ready!

Separate the class into two teams.

- Venn Diagram Game master, p. 40
- 3 skeins of thick yarn per team (3 different colors) 

● Get Set!

Make a copy of the Venn Diagram Game master on page 40 for each student in the class. Give each team three skeins of yarn. You may want to play this game outside or in a large room, like a gymnasium.

● Go!

- Have each team make a human Venn diagram for each set of clues. Use the yarn to form a circle. All of the team members who match the first clue should step into the circle. Then add additional circles and have team members step into them accordingly.
- The first team with everyone in the correct circles wins the round.
- Clues:

Round	Set A	Set B	Set C
1	I like rock music.	I like rap music.	
2	I live in (your state).	I live in (your city).	
3	I was born in the U.S.	I live in the U.S.	
4	I am a sister.	I am a brother.	I am an only child.
5	I am female.	I am male.	I have used a calculator.
6	I am wearing red.	I am wearing blue.	I am wearing yellow.
7	I drank orange juice today.	I ate cereal today.	I drank a soft drink today.
8	I like to rollerblade.	I like to play soccer.	I like to play video games.
9	My favorite ice cream is chocolate.	My favorite ice creams are chocolate and vanilla.	My favorite ice cream is neither chocolate nor vanilla.
10	Set A: There is an <i>a</i> in my name. Set B: There is an <i>e</i> in my name.	Set C: There is an <i>i</i> in my name. Set D: There is an <i>o</i> in my name.	

Outside-of-Class Game

Venn Diagram Game (Lesson 13-3)

Work in two teams.




- Each team makes a human Venn diagram for each set of clues. Use the yarn to form a circle. All of the team members who match the first clue should step into the circle. Then add additional circles and have team members step into them accordingly.
- The first team with everyone in the correct circles wins the round.
- Clues:
 1. Round 1
 - a. I like rock music.
 - b. I like rap music.
 2. Round 2
 - a. I live in (your state).
 - b. I live in (your city).
 3. Round 3
 - a. I was born in the U.S.
 - b. I live in the U.S.
 4. Round 4
 - a. I am a sister.
 - b. I am a brother.
 - c. I am an only child.
 5. Round 5
 - a. I am female.
 - b. I am male.
 - c. I have used a calculator.
 6. Round 6
 - a. I am wearing red.
 - b. I am wearing blue.
 - c. I am wearing yellow.
 7. Round 7
 - a. I drank orange juice today.
 - b. I ate cereal today.
 - c. I drank a soft drink today.
 8. Round 8
 - a. I like to rollerblade.
 - b. I like to play soccer.
 - c. I like to play video games.
 9. Round 9
 - a. My favorite ice cream is chocolate.
 - b. My favorite ice creams are chocolate and vanilla.
 - c. My favorite ice cream is neither chocolate nor vanilla.
 10. Round 10
 - a. There is an *a* in my name.
 - b. There is an *e* in my name.
 - c. There is an *i* in my name.
 - d. There is an *o* in my name.

In-Class Game

Fraction Sentences (Lesson 6-4)

● Get Ready!

Separate the students into pairs.

- Fraction Sentences master, p. 16
- Fraction Sentences Cube masters, pp. 17–18
- scissors 
- tape  or glue 

● Get Set!

Make a copy of the Fraction Sentences master on page 16 for each student in the class. Make three copies of the Fraction Sentences Cube A master on page 17 for each team. Make two copies of the Fraction Sentences Cube B master on page 18 for each team. Have students cut out each cube, fold, and tape or glue the ends.

● Go!

- A player rolls all eight cubes, then tries to place the fractions shown in the appropriate places on the game board.
- Score 1 point per square filled and 10 points if all eight squares are filled on a turn. If the opponent sees a way to use all eight fractions after the player tallies his score, the opponent may show how and score 5 points. Then the opponent takes his or her regular turn.
- The first player to reach 50 points wins.

Name _____ Date _____

In-Class Game

Fraction Sentences (Lesson 6-4)

Work with a partner.

- A player rolls all eight cubes, then tries to place the fractions shown in the appropriate places on the game board.
- Score 1 point per square filled and 10 points if all eight squares are filled on a turn. If the opponent sees a way to use all eight fractions after the player tallies his score, the opponent may show how and score 5 points. Then the opponent takes his or her regular turn.
- The first player to reach 50 points wins.

Fraction Sentences

$$\square - \square = \square$$

$$\square + \square = \square$$

$$\square > \square$$

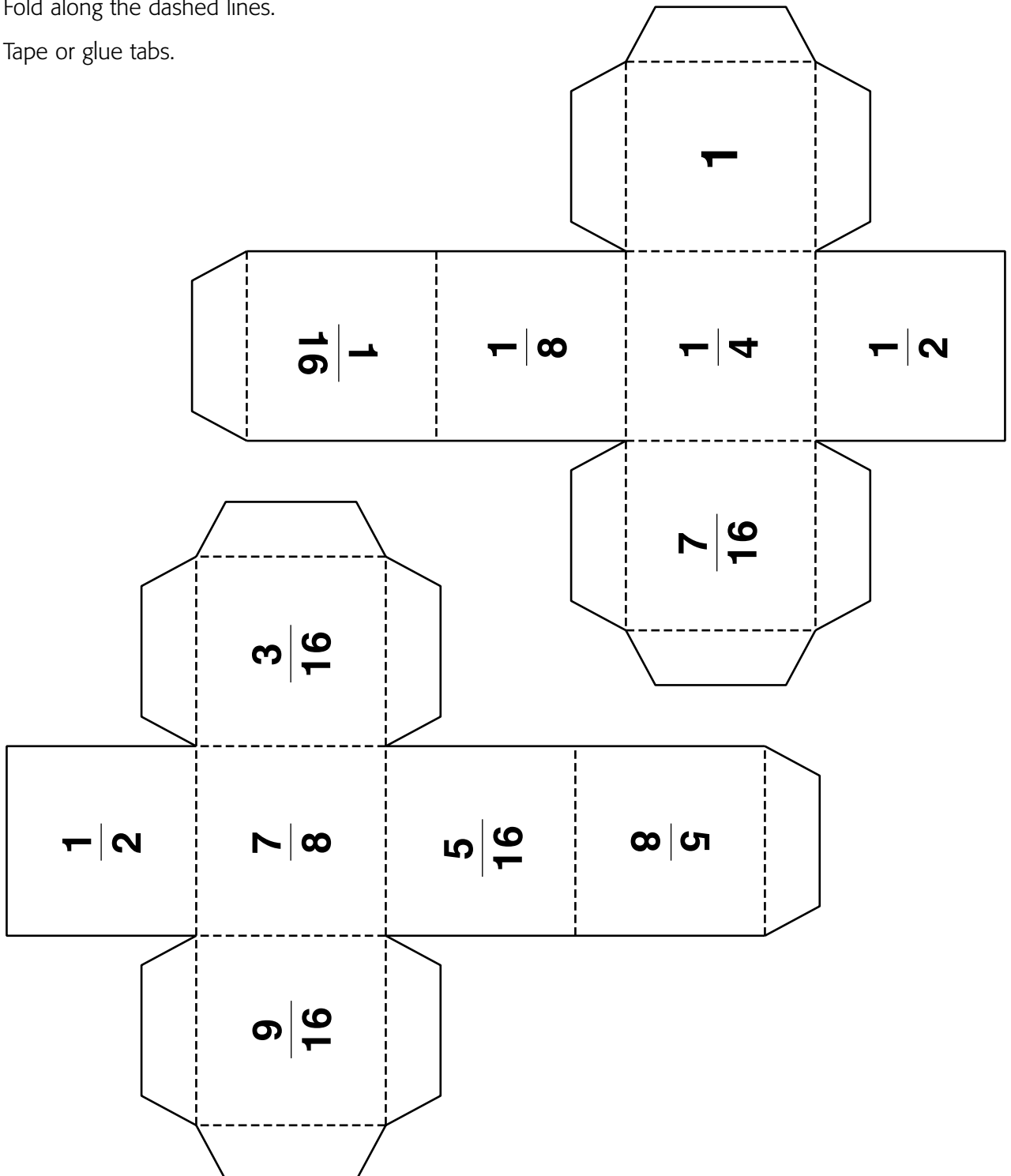
In-Class Game

Fraction Sentences Cube A (Lesson 6-4)

Cut along the solid black lines.

Fold along the dashed lines.

Tape or glue tabs.



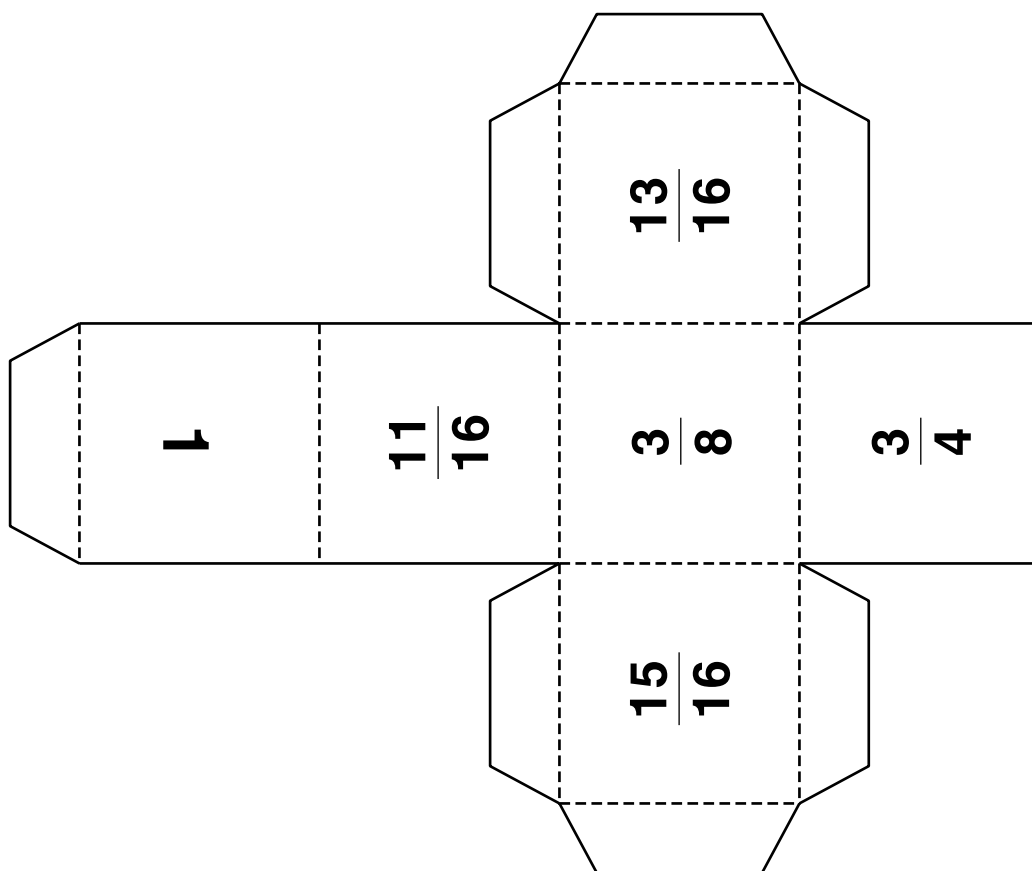
In-Class Game

Fraction Sentences Cube B (Lesson 6-4)

Cut along the solid black lines.

Fold along the dashed lines.

Tape or glue tabs.



In-Class Game

Geometry Scavenger Hunt (Lesson 12-5)

● **Get Ready!** _____

Separate the class into four teams.

- Geometry Scavenger Hunt master, p. 36

● **Get Set!** _____

Make a copy of the Geometry Scavenger Hunt master on page 36 for each student in the class.

● **Go!** _____

- Students try to collect as many of the items on the list as possible.
- The number of points they receive for each item is listed next to the item on the Geometry Scavenger Hunt master.
- Give students a specified amount of time to collect the items. A suggested time is 1–2 weeks. Require students to bring the items to class at the end of the time period. You may wish to ask students to explain and/or justify their findings.
- The team with the most points wins.

In-Class Game

Geometry Scavenger Hunt (Lesson 12-5)

- Find and bring in as many items on this list as you can. Be prepared to identify or explain your findings.
- The points you will receive for each item are listed next to the item.
- You have until _____ to bring in the items.
- The team with the most points wins.

Recall that if you can fold a figure exactly in half, it is said to have **line symmetry**. If a figure can be turned less than 360° about its center and it looks like the original, then the figure has **rotational symmetry**.

1. Items from school

- a) an object from the physical education department that has rotational symmetry but not line symmetry (10)
- b) a tool or device from the science department that uses geometry (15)
- c) a photo of a tessellation (10) or reflection (15) at school
- d) a signed statement from a nonmathematics teacher saying that he or she has used geometry during the past week (20)

2. Items from home

- a) an abacus (10) or slide rule (20)
- b) an object that has rotational symmetry but not line symmetry (10)
- c) a measuring tool that has metric units (10)
- d) a symmetrical object from another culture (15)

3. Items from newspapers, magazines, books, or the Internet

- a) a photo that includes at least four geometric shapes (15)
- b) an article about how someone uses geometry in his or her job (15)
- c) a nonmathematics book that uses geometry to explain a concept (15)
- d) a cartoon about geometry (10)
- e) a printed page from a web site that discusses geometry, including the address (10)

4. Items from the community

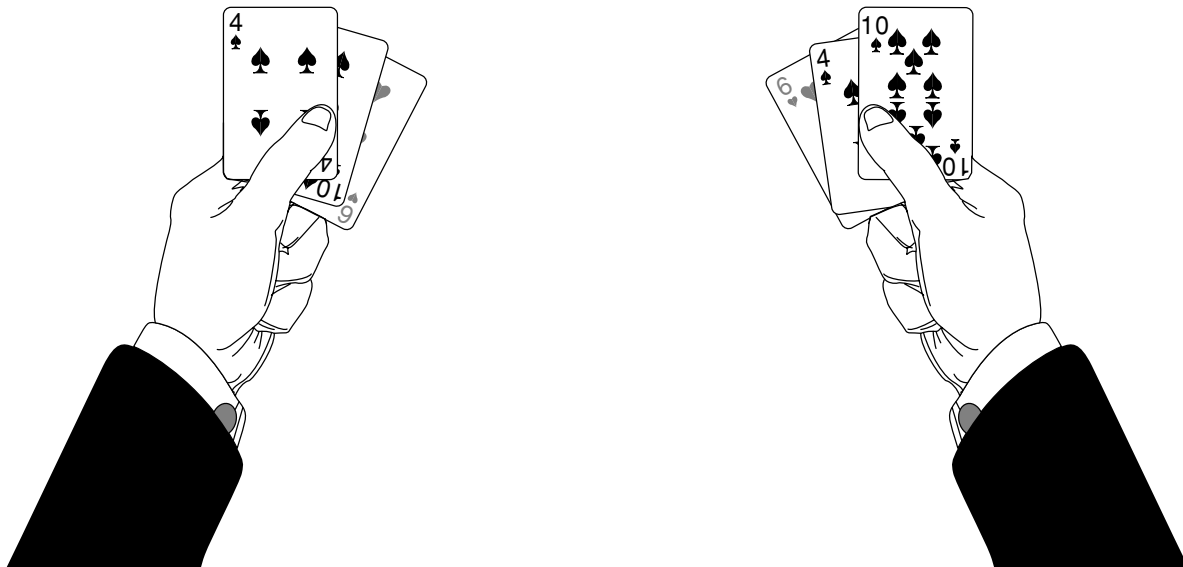
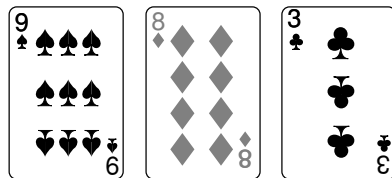
- a) an object from nature that has rotational but not line symmetry (10)
- b) a photo you have taken that includes three geometric items (15)
- c) a sketch or photo of a public building whose design includes at least two of these items: a cylinder, a cone, and a prism (10)
- d) an adult willing to visit your class to describe how he or she uses geometry in his or her job (25)

In-Class Game

Luck of the Draw (Lesson 2-4)

Work in groups of four.

- Shuffle the cards and deal 10 cards to each player.
- Each team plays five rounds. For each round, each player finds and states his or her range, mode, median, mean, or outlier.
 - On the first round, the player with the greatest range wins 10 points.
 - On the second round, the player with the greatest mode wins 10 points.
 - On the third round, the player with the greatest median wins 10 points.
 - On the fourth round, the player with the greatest mean wins 10 points.
 - On the fifth round, players with outliers win 5 points. Players must agree that a hand contains an outlier.
- If there is a tie, players split the 10 points. At the end of the game, the player with the most points wins.



In-Class Game

Integer Football (Lesson 3-5)

● Get Ready!

Separate the class into two teams.

- Integer Football master, p. 8
- Integer Football Field master, p. 9
- 22 index cards 
- scissors 
- 2 different colored counters 
- coin 

● Get Set!

Make a copy of the Integer Football master on page 8 for each student in the class. Cut the index cards in half. Number one set of cards $+1, +2, \dots, +20$. Number the other set of cards $-1, -2, \dots, -20$. Make four penalty cards: $+5, +15, -5, -15$. Shuffle the deck of cards and place them facedown on the table. Photocopy the Integer Football Field master on page 9 onto a transparency. Have a scorekeeper use counters to keep track of each team's scoring position and the score.

● Go!

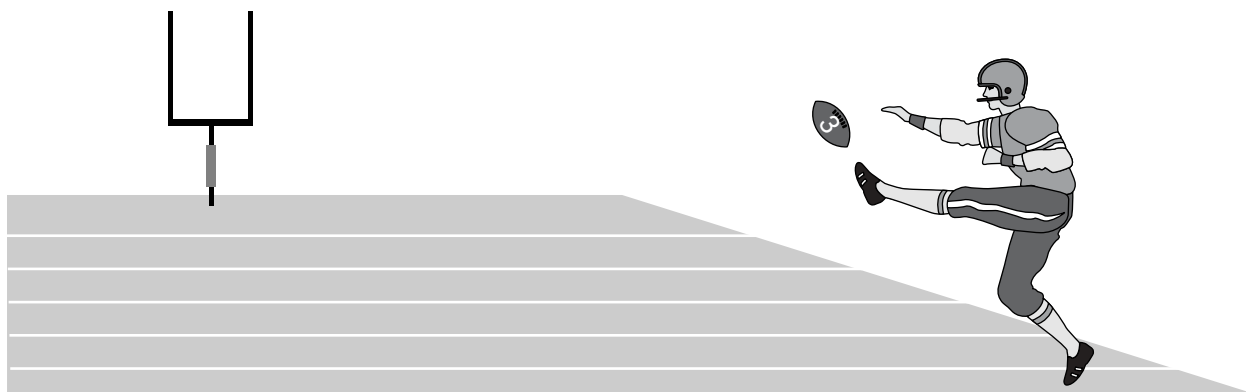
- Each team begins with their counter on the 50-yard line. A flip of a coin determines which team kicks off.
- A member of the team that won the toss turns over the top card. The team subtracts the integer on the card from the 50 yards on which the team began. For example, if the top card is -8 , the play is $50 - (-8) = 58$. This means that the team now needs 58 yards to score. If the top card is $+8$, the team needs $50 - (+8)$ or 42 yards to score. On each subsequent play, the integer on the card drawn is subtracted from the total from the previous play. A team makes a touchdown and scores six points whenever the team's running total is zero or less. If a team fails to subtract a total of $+10$ or score in four plays, play is passed to the other team.
- A team plays for an extra point by drawing the next card. If the next card is positive, the team scores the extra point. If it is negative, they do not.
- After the play for each extra point, play resumes on the 50-yard line. The team that did not score begins the play.
- Play continues until time runs out. (Thirty minutes is suggested.) The team with the greatest score at the end of the playing time wins.

In-Class Game

Integer Football (Lesson 3-5)

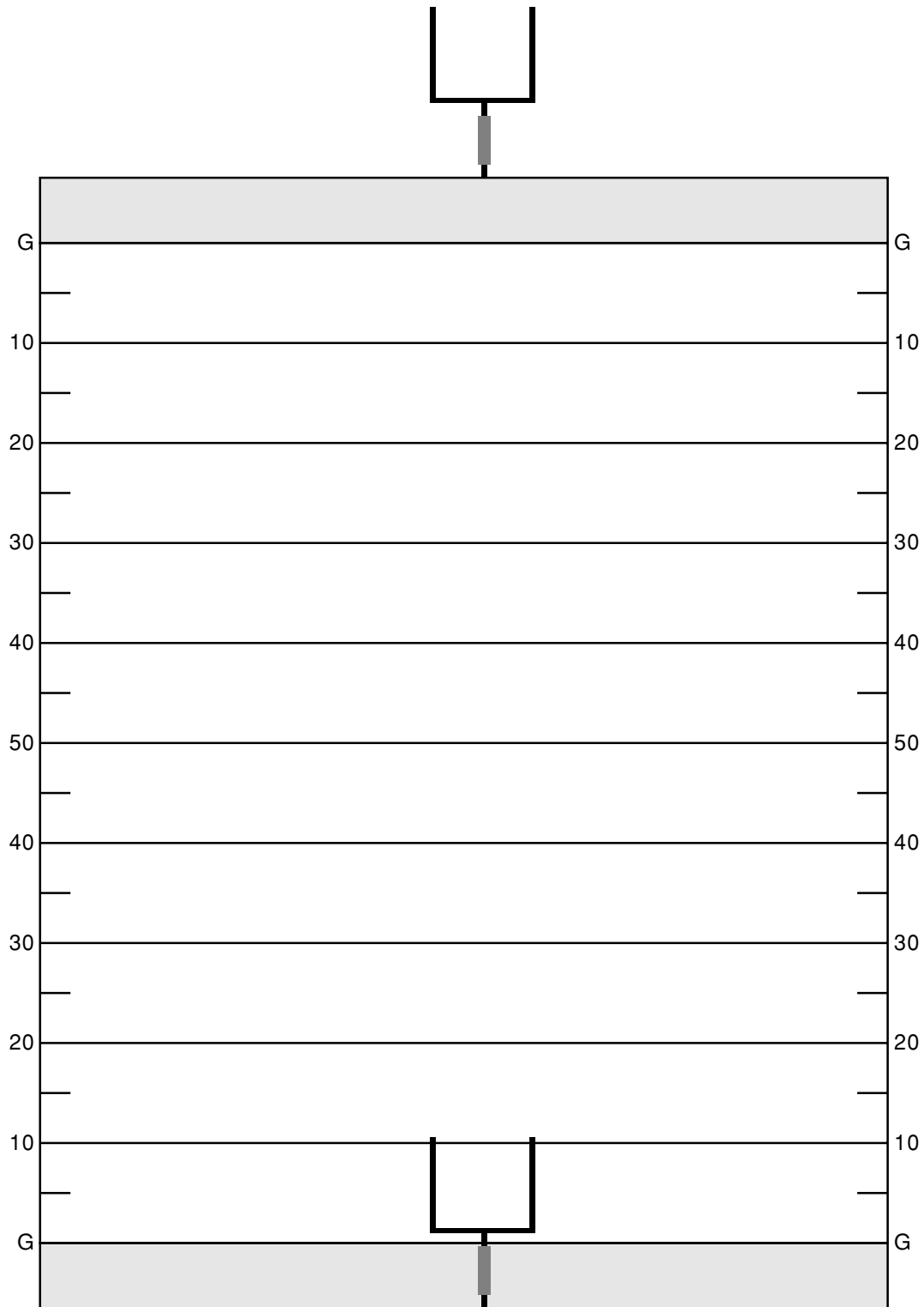
Work with your team.

- Each team begins on the 50-yard line. Flip a coin to determine which team kicks off.
- A member of the team that won the toss turns over the top card. The team subtracts the integer on the card from the 50 yards on which the team began. For example, if the top card is -8 , the play is $50 - (-8) = 58$. This means that the team now needs 58 yards to score. If the top card is $+8$, the team needs $50 - (+8)$ or 42 yards to score.
- On each subsequent play, the integer on the card drawn is subtracted from the total from the previous play.
- If a team fails to subtract a total of $+10$ or score in four plays, play is passed to the other team.
- A team makes a touchdown and scores six points whenever the team's running total is zero or less.
- When a team scores a touchdown, they play for the extra point by drawing the next card. If the next card is positive, the play is good, and the team scores the extra point. If it is negative, they do not score an extra point.
- After every touchdown and the play for the extra point, play resumes on the 50-yard line. The team that did not score begins the play.
- Play continues until the predetermined time runs out. The team with the greatest score at the end of the playing time wins the game.



In-Class Game

Integer Football Field (Lesson 3-5)







In-Class Game

Who Has My Number? (Lesson 4-6)

● Get Ready!

This game is for the entire class.

- Who Has My Number? master, p. 12
- Number Cards masters, pp. 13–14
- 25 index cards 
- scissors 
- tape  or glue 

● Get Set!

Make a copy of the Who Has My Number? master on page 12 for each student in the class. Copy the Number Cards masters on pages 13 and 14, cut along the dashed lines, and glue or tape to index cards. Make sure that the numeral is on one side of the card and the corresponding clue is on the back of the card. Give each student one card. If extra cards are available, some students can have two, or the teacher can play, but all cards must be distributed.

● Go!

- The students begin by reading the number on the front of their card and the clue on the back. Their task is to find the person with the card whose number matches their clue. For example, if the clue is “Who has twice my number?” and the number is 5, the student must find the person with the number 10.
- Eventually, the students should form a circle with each student standing next to the person who “matches” them.

Variation:

- After a round of play, you may want to guide students into creating their own set of cards. First, have each student select two numbers. (No number can be used more than once.) Then each student should think of directions that will lead from one of the numbers to the second number. Then all of the students' numbers can be put together to form a new deck.

In-Class Game**Who Has My Number?** (Lesson 4-6)**Work with your classmates.**

- Begin by reading the number on the front of your card and the clue on the back. Your task is to find the person with the card whose number matches your clue. For example, if the clue is “Who has twice my number?” and the number is 5, you must find the person with the number 10.
- Eventually, form a circle with each student standing next to the person who “matches” them.



In-Class Game

Number Cards A (Lesson 4-6)

Front	Back
17	Subtract 1 and add 25.
27	Who has my number increased by 3, divided by 10, multiplied by 7, divided by 3, and squared?
49	Who has 20 less than twice my number?
78	Who has 3 less than this number, divided by the square of 5?
3	Who has 3 less than 27 times this number, then halved?
39	Who has twice one third of this number?
26	Take this number, subtract 1, subtract the square of 3, and divide by 8.
2	Use this number as an exponent of 6 and divide what you get by 1.
36	Who has 28 more than 36 less than this number?
28	Divide this number by 4 and add 36.
43	Who has 15 less than 14 more than this number?
42	Divide this number by 42.
1	Who has 1 less than the product of this number and 3 times 6?

In-Class Game

Number Cards B (Lesson 4-6)

Front	Back
9	Who has my number times 3?
41	Add 7 to the quotient of this number divided by 41.
8	Who has this number multiplied by 7?
56	Divide 4 more than this number by the number of minutes in a half hour. Then add 2.
4	Who has the square of this number?
16	Who has the square root of this number increased by 1 and squared?
25	Who has 5 more, divided by 5?
6	Who has 3 times my number, increased by 2?
20	Who has my square, divided by 10?
40	Who has twice this value, divided by 16?
5	Who has 3 times its square?
75	Divide this number by 15 and add 4 to the quotient.

In-Class Game

Prime Round (Lesson 5-1)

● Get Ready!

Separate the class into three teams of eight to ten students.

- Prime Round master, p. 16

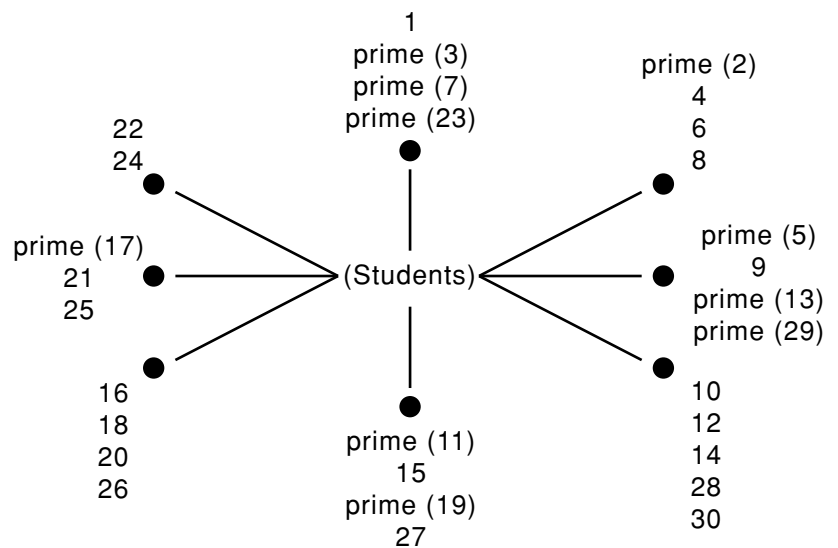
● Get Set!

Make a copy of the Prime Round master on page 16 for each student in the class. Have students sit or stand in a circle. Because the teams will shout out their numbers, you may want to play this game outside or in a large room, like a gymnasium.

● Go!

- Students begin counting in a clockwise direction.
- When it is a student's turn to say his or her number and it is a prime number, the student says "prime" instead.
- At this point, the counting direction reverses, going counterclockwise, so that the person who said "1" now says "prime" instead of "3," and so on.
- The game continues in this manner. When a student says the wrong number, forgets to say "prime," or doesn't say anything (especially when the counting reverses direction), the game starts over with this person saying "1." After a few practice rounds, you may want to eliminate players who make mistakes.

The diagram at the right indicates the correct moves up to 30 for an eight-person team.



Name _____ Date _____

In-Class Game

Prime Round (Lesson 5-1)

Work with your team.

- Begin counting in a clockwise direction.
- When it is your turn to say your number and it is a prime number, you say "prime" instead.
- At this point the counting direction reverses, going counterclockwise, so that the person who said "1" now says "prime" instead of "3," and so on.
- The game continues in this manner. When a person
 - says the wrong number,
 - forgets to say "prime," or
 - doesn't say anything (especially when the counting reverses direction),the game starts over with this person saying "1."

In-Class Game

Ten Questions (Lesson 6-6)

● **Get Ready!** _____

Separate the students into pairs.

- Ten Questions master, p. 18

● **Get Set!** _____

Make a copy of the Ten Questions master on page 18 for each student in the class.

● **Go!** _____

- Player A picks a secret fraction and writes it down on his or her game card.
- Player A gives clues to Player B on the basis of questions printed on the card, in any order Player A chooses. Player A records the order of the questions asked in the Order column and the clues given in the Clue column.
- After each clue, Player B guesses the number. Player A records each guess in the Guess column.
- The number of points scored by Player A (from 1 to 10) is the number of clues Player A gives before Player B guesses the correct number. Players A and B alternate turns. The winner is the player with the most points after a designated number of turns.

In-Class Game**Ten Questions** (Lesson 6-6)**Work with a partner.**

- Player A picks a secret fraction and writes it down on his or her game card.
- Player A gives clues to Player B on the basis of questions printed on the card, in any order Player A chooses. Player A records the order of the questions asked in the Order column and the clues given in the Clue column.
- After each clue, Player B guesses the number. Player A records each guess in the Guess column.
- The number of points scored by Player A (from 1 to 10) is the number of clues Player A gives before Player B guesses the correct number. Players A and B alternate turns. The winner is the player with the most points after a designated number of turns.






Question	Order	Clue	Guess	Order	Clue	Guess
Secret fraction						
Number of digits in numerator?						
Number of digits in denominator?						
Sum of the numerator and denominator?						
Product of the numerator and denominator?						
Numbers odd or even?						
Lesser number, numerator or denominator?						
Equivalent to—?						
Sum when added to $\frac{1}{4}$?						
Product when multiplied by $\frac{1}{3}$?						
Quotient when divided by 2?						

In-Class Game

Fraction-Decimal-Percent Bingo (Lesson 7-6)

● Get Ready!

This game is for the entire class.

- Fraction-Decimal-Percent Bingo master, p. 20
- Key List master, p. 21
- 10 index cards 
- scissors 
- large bowl  or paper bag 
- counters (15–20 for each student) 

● Get Set!

Make a copy of the Fraction-Decimal-Percent Bingo master on page 20 for each student in the class. In each box, write one of the items in the Key List master on page 21. Each card should have 8 fractions, 8 decimals, and 8 percents. Cut each index card into 6 game pieces (3 columns, 2 rows). Write each item on the Key List master on one of the game pieces. Or you may want to make a copy of the Key List master, cut out the items, and tape or glue them onto the index card pieces. Then place the game pieces in a large bowl or paper bag.

● Go!

- A caller (either a student or the teacher) chooses a game piece randomly from the bowl and calls the number on the game piece. (The caller should not replace the game pieces in the bowl.) When a player locates an equivalent value on his or her card, the player places a counter on the square.
- When someone completes a horizontal, vertical, or diagonal line, he or she calls out “Bingo!” The caller then checks the winning entry by looking for equivalents of the covered numbers as shown on the game pieces used.

Name _____ Date _____

In-Class Game***Fraction-Decimal-Percent Bingo*** (Lesson 7-6)**Work with your classmates.**

- Listen to the number called. When you locate an equivalent value on your card, place a counter on the square.
- If you complete a horizontal, vertical, or diagonal line, call out "Bingo!" The caller will check the winning entry by looking for equivalents of the covered numbers as shown on the game pieces used.

RATIONAL NUMBER BINGO				
		FREE		

In-Class Game

Key List (Lesson 7-6)



1	$\frac{12}{12}$	$\frac{32}{32}$	1.0	1.000	100%
$\frac{1}{2}$	$\frac{2}{4}$	$\frac{3}{6}$	0.5	0.50	50%
$\frac{1}{3}$	$\frac{3}{9}$	$\frac{4}{12}$	$0.\bar{3}$	0.33...	$33\frac{1}{3}\%$
$\frac{1}{4}$	$\frac{2}{8}$	$\frac{4}{16}$	0.25	0.250	25%
$\frac{1}{5}$	$\frac{2}{10}$	$\frac{4}{20}$	0.2	0.20	20%
$\frac{1}{6}$	$\frac{2}{12}$	$\frac{3}{18}$	$0.1\bar{6}$	0.1666...	$16\frac{1}{6}\%$
$\frac{1}{7}$	$\frac{2}{14}$	$\frac{4}{28}$			
$\frac{1}{8}$	$\frac{2}{16}$	$\frac{5}{40}$	0.125	0.1250	12.5%
$\frac{1}{9}$	$\frac{2}{18}$	$\frac{3}{27}$	$0.\bar{1}$	0.111...	$11\frac{1}{9}\%$
$\frac{1}{10}$	$\frac{2}{20}$	$\frac{4}{40}$	0.1	0.100	10%

In-Class Game

The Accounting Game (Lesson 8-5)

● Get Ready!

Separate the class into groups of four.

- The Accounting Game master, p. 24
- 1 pair of different-colored number cubes per group 
- 1 calculator per group 

● Get Set!

Make a copy of The Accounting Game master on page 24 for each student in the class. Give each group one pair of different-colored number cubes. Make sure that at least one student per group has a calculator.

● Go!

- Choose which color number cube represents the tens and the units digits. A player rolls both number cubes. Use the two numbers to form a two-digit number that represents the amount of money the player has won on this roll. For example, 3 on a red cube and 6 on a green cube could represent \$36 or \$63.

- For each amount of money won, the player must pay taxes. Calculate the tax and subtract. Round to the nearest dollar after each operation. For example, taxes on \$63 would be $35\% \times 63$ or \$22.05. Round \$22.05 to \$22 and subtract from \$63, and the result would be \$41.

Tax Schedule	
Money Won	Tax Percentage
\$11–\$26	15%
\$31–\$46	25%
\$51–\$66	35%

- If a player rolls a prime number that is greater than 20, the player gets a bonus before taxes of 20%. Then the player must pay taxes on the new amount. For example, if on the second roll, the player rolls \$23, there is a 20% bonus.

\$23 won	20% prime bonus of \$4.60
<u>+ 5</u>	rounds to \$5.
\$28	new subtotal
<u>– 4</u>	15% tax of \$4.20 rounds to \$4.
\$24	new total

- All players must keep a neat record of all transactions. Anyone can become an accountant and check another player's records at any time. The accountant wins a \$10 fee if he or she corrects any errors found. The accountant is charged a \$5 nuisance fee if they find no errors.
- The winner is the player with the most money when you end the game.

In-Class Game

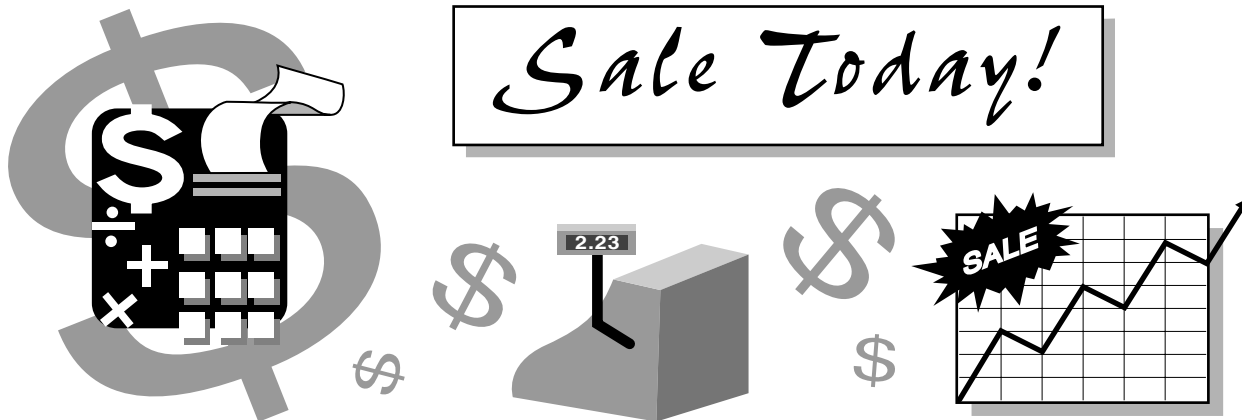
The Accounting Game (Lesson 8-5)

Work in groups of four.

- Choose which color number cube represents the tens and the units digits. A player rolls both number cubes. Use the two numbers to form a two-digit number that represents the amount of money the player has won on this roll. For example, 3 on a red cube and 6 on a green cube could represent \$36 or \$63.
- For each amount of money won, the player must pay taxes. Calculate the tax and subtract. Round to the nearest dollar after each operation. For example, taxes on \$63 would be $35\% \times 63$ or \$22.05. Round \$22.05 to \$22 and subtract from \$63, and the result would be \$41.
- If a player rolls a prime number that is greater than 20, the player gets a bonus before taxes of 20%. Then the player must pay taxes on the new amount. For example, if on the second roll, the player rolls \$23, there is a 20% bonus.
- All players must keep a neat record of all transactions. Anyone can become an accountant and check another player's records at any time. The accountant wins a \$10 fee if he or she corrects any errors found. The accountant is, however, charged a \$5 nuisance fee if they find no errors.
- The winner is the player with the most money when your teacher ends the game.

Tax Schedule	
Money Won	Tax Percentage
\$11–\$26	15%
\$31–\$46	25%
\$51–\$66	35%

\$23 won	20% prime bonus of \$4.60
+ 5	rounds to \$5.
\$28	new subtotal
– 4	15% tax of \$4.20 rounds to \$4.
\$24	new total




In-Class Game

Take a Chance (Lesson 9-6)

● **Get Ready!** _____

Separate the class into groups of two, three, or four.

- Take a Chance master, p. 26
- Take a Chance score sheet, p. 27
- 2 number cubes per group 

● **Get Set!** _____

Make a copy of the Take a Chance master on page 26 and a copy of the Take a Chance score sheet on page 27 for each student. Provide each group with 2 number cubes.

● **Go!** _____

- Each letter of CHANCE on the score sheet represents a different round of the game. The object of the game is to get the greatest number of points during the six rounds.
- The first player rolls the number cubes and records the sum of the numbers in the first C column, unless a "1" is rolled on either of the cubes.
- If a "1" is rolled, all of the player's points in the first C column are wiped out, and his or her turn is over. If "double 1" is rolled, all of the points in the previous rounds are also wiped out.
- If a "1" is not rolled, the player chooses to roll again or to stop and keep the points he or she already has. Then it is the next player's turn. After each player has a turn, the first round is complete. Continue in this manner for the next rounds. Encourage students to think of the probability of rolling a "1" or a "double 1" when choosing whether to continue rolling in their turn.
- The winner is the player with the most points at the end of six rounds.

Name _____ Date _____

In-Class Game

Take a Chance (Lesson 9-6)

Work in groups of two, three, or four.

- Each letter of CHANCE on your score sheet represents a different round of the game. The object of the game is to get the greatest total number of points during the six rounds.
- The first player rolls the number cubes and records the sum of the numbers in the first C column, unless a “1” is rolled on either of the cubes.
- If you roll a “1,” all of your points in the first C column are wiped out, and your turn is over. If you roll a “double 1,” all of your points in the previous rounds are also wiped out.
- If you do not roll a “1,” you choose whether you want to roll again or to stop and keep the points you already have. Then it is the next player’s turn. After each player has a turn, the first round is complete. Continue in this manner for the next rounds. When you are deciding whether to continue rolling in your turn, think of the probability of rolling a “1” or a “double 1.”
- The winner is the player with the most points at the end of six rounds.

In-Class Game

Take a Chance Score Sheet (Lesson 9-6)

C	H	A	N	C	E

C	H	A	N	C	E

C	H	A	N	C	E



C	H	A	N	C	E

In-Class Game

Pentominoes (Lesson 10-7)

● Get Ready!

Separate the class into groups of four.

- Pentominoes master, p. 31
- scissors 
- 1 ruler or yardstick per group 

● Get Set!

Make two copies of the Pentominoes master on page 31 for each group: one on regular paper for the group to read and another copy on card stock enlarged (about 140%) so that the rectangle measures 6 in. \times 10 in. Then have students cut out the 12 pentominoes on the card stock.

● Go!

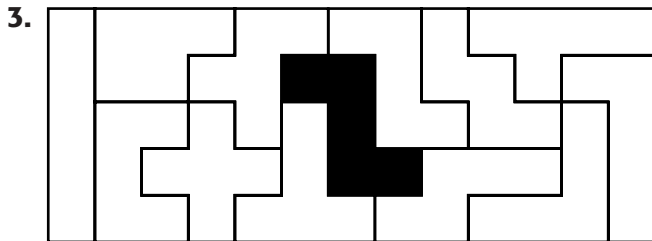
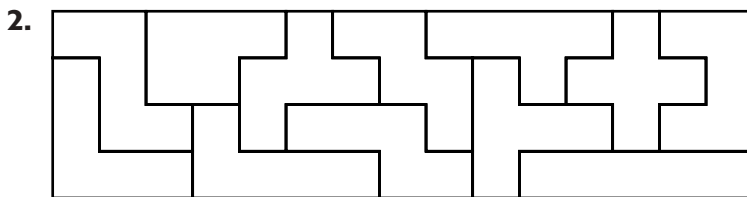
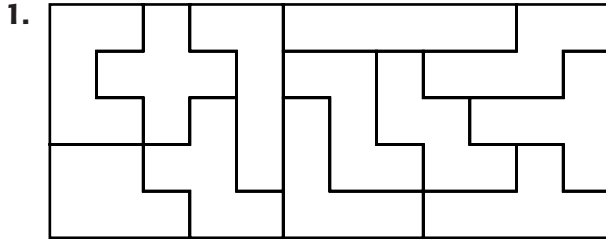
- Have each group cut out and try to arrange the pentominoes to form each of the following. They may need to flip the pieces over to fit.

Shape/ Size	Number of Solutions	Points
1. a rectangle that measures 5 in. \times 12 in.	many	10
2. a rectangle that measures 4 in. \times 15 in.	many	10
3. a rectangle that measures 5 in. \times 13 in., but has a hole in the shape of one of the pentominoes	one for each of the twelve shapes	20
4. a rectangle that measures 3 in. \times 30 in.	two distinct	30
5. two rectangles that measure 5 in. \times 6 in.	one	30

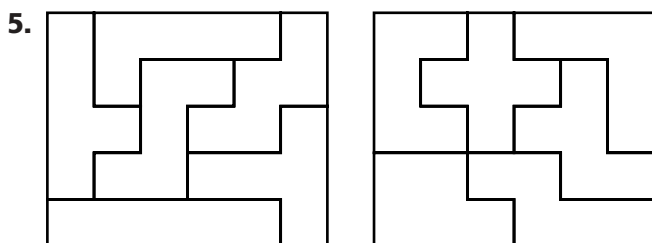
In each case, the first group to come up with an answer wins the points. (You may want to give the second group that comes up with an answer half the points of the winning group.)

- Sample answers are shown on the following page.

In-Class Game

Pentominoes (continued) (Lesson 10-7)

4. See students' work.

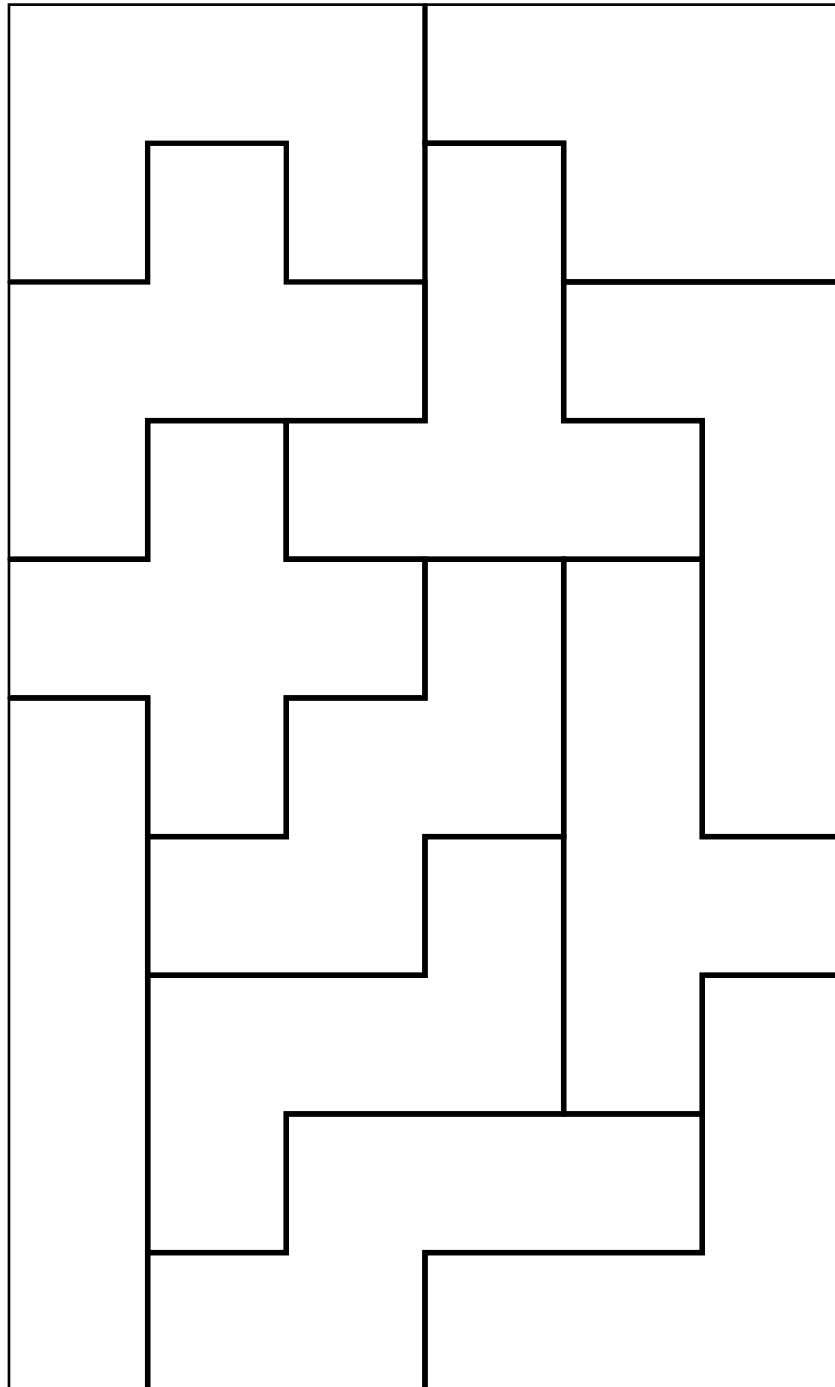
**Variation:**

- Use a checkerboard for this variation and have students work in groups of two. Have each player choose a pentomino and place it anywhere on the checkerboard in turn. The first person who is unable to place one of the remaining pentominoes completely on the checkerboard loses. If all of the pentominoes are placed successfully, the player who puts down the last one wins.

Name _____ Date _____

In-Class Game***Pentominoes*** (Lesson 10-7)**Work in groups of four.**

In your group, cut out and arrange the pentomino pieces below to form the shape that your teacher will describe to you. You may have to flip the pieces over to fit.



In-Class Game

Find the Region (Lesson 11-5)

● **Get Ready!** _____

Separate the class into two teams.

- Find the Region master, p. 34
- 2 blank transparencies (optional)

● **Get Set!** _____

Make a copy of the Find the Region master on page 34 for each student in the class. You may wish to make a transparency of the master for each team to use when playing the game.

● **Go!** _____

- One team draws a rectangular region on their grid with the vertices at points that can be identified with whole-number ordered pairs. The team names the region; for example, "rectangular region, area X."
- Each team chooses a spokesperson. The spokesperson on the opposing team calls out ordered pairs, while the spokesperson on the team that is answering calls out "inside," "outside," or "on the boundary" in response. A tally is kept of the number of guesses.
- The region is located when the opposing team has named all four vertices.

Variations:

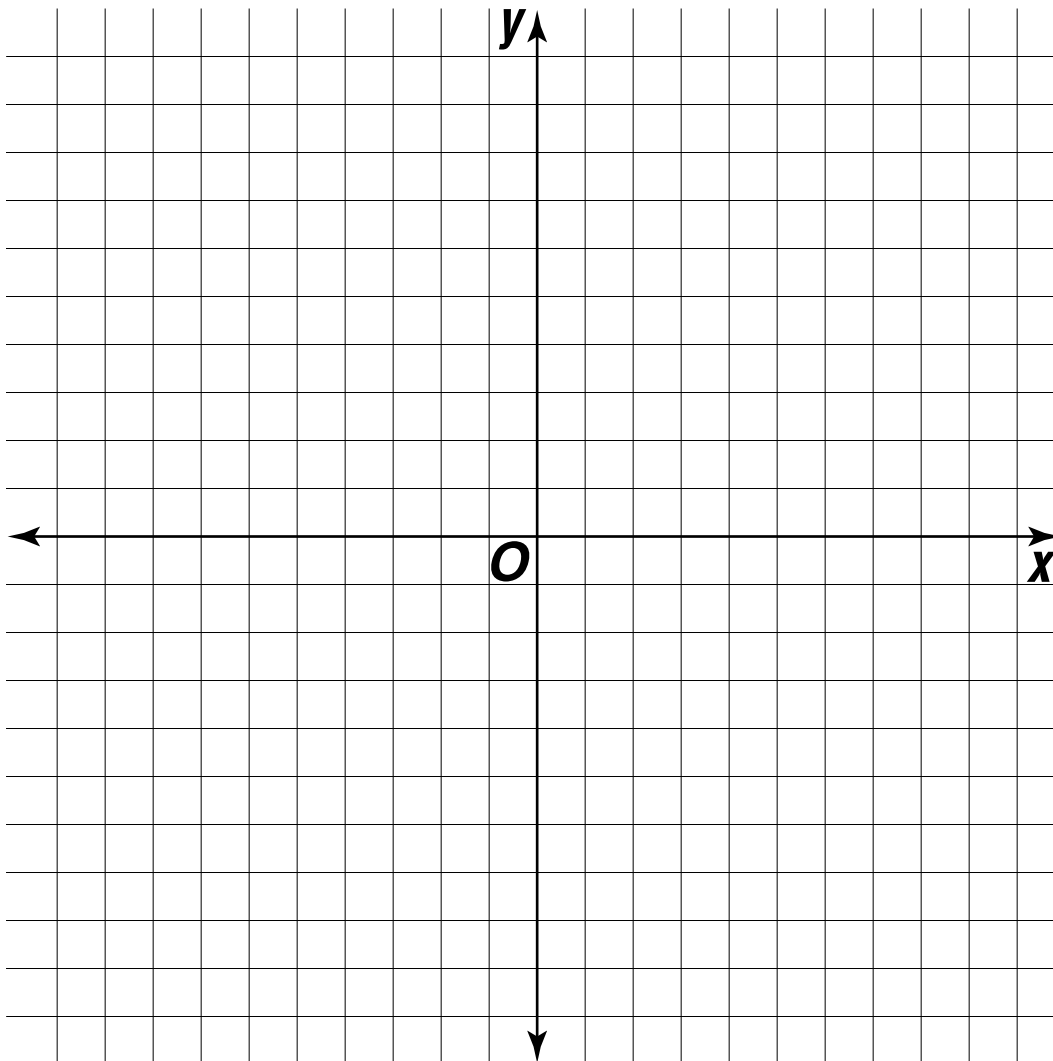
- You can begin play by using only square regions until students become familiar with the rules of the game.
- A team could specify that the boundaries are excluded, although the vertices will still define the rectangle.
- Teams can use regions that are not rectangular, such as regions in the shape of triangles, trapezoids, parallelograms, hexagons, or octagons.

In-Class Game

Find the Region (Lesson 11-5)

Work with your team.

- One team draws a rectangular region on their grid with the vertices at points that can be identified with whole-number ordered pairs. The team names the region; for example, "rectangular region, area X."
- Each team chooses a spokesperson. The spokesperson on the opposing team calls out ordered pairs, while the spokesperson on the team that is answering calls out "inside," "outside," or "on the boundary" in response. A tally is kept of the number of guesses.
- The region is located when the opposing team has named all four vertices.







In-Class Game

Number Crunching (Lesson 1-2)

● Get Ready!

Separate the students into pairs.

- Number Crunching master, p. 2
- Number Crunching Cube masters, pp. 3–4
- 10 counters per student (5 of one color, 5 of another color) 
- scissors 
- tape  or glue 

● Get Set!

Make a copy of the Number Crunching master on page 2 for each student in the class. Make a copy of the Number Crunching Cube masters on pages 3 and 4 for each student in the class. Have students cut out each cube, fold, and tape or glue the ends. Give each student 5 counters of each color.

● Go!

- A player rolls both cubes and follows the directions on Cube B using the number shown on Cube A.

Cube A	Cube B	Action
3	square	Since $3^2 = 9$, cover the square with 9 in it.
2	cube	Since $2^3 = 8$, cover the square with 8 in it.
1	times 3	Since $1 \times 3 = 3$, cover the square with 3 in it.
4	divided by 2	Since $4 \div 2 = 2$, cover the square with 2 in it.
5	square minus number	Since $5^2 - 5 = 25 - 5$ or 20, cover the square with 20 in it.
6	half of 3 times number	Since $\frac{1}{2} \times 3 \times 6 = 1\frac{1}{2} \times 6$ or 9, cover the square with 9 in it.

Even if there is more than one answer, the player covers only one square. If all of the possible squares are already covered, the player loses a turn.

- The players alternate turns until the first player to get three in a row horizontally, vertically, or diagonally wins.

Name _____ Date _____

In-Class Game**Number Crunching** (Lesson 1-2)**Work with a partner.**

- A player rolls both cubes and follows the directions on Cube B using the number shown on Cube A. Even if there is more than one answer, cover only one square. If all of the possible squares are already covered, you lose a turn.
- Alternate turns until the first player to get three in a row horizontally, vertically, or diagonally wins.

10	18	6	15	$7\frac{1}{2}$
$1\frac{1}{2}$	1	36	27	20
30	4	25	64	8
3	9	16	$\frac{1}{2}$	40
0	$4\frac{1}{2}$	12	216	2

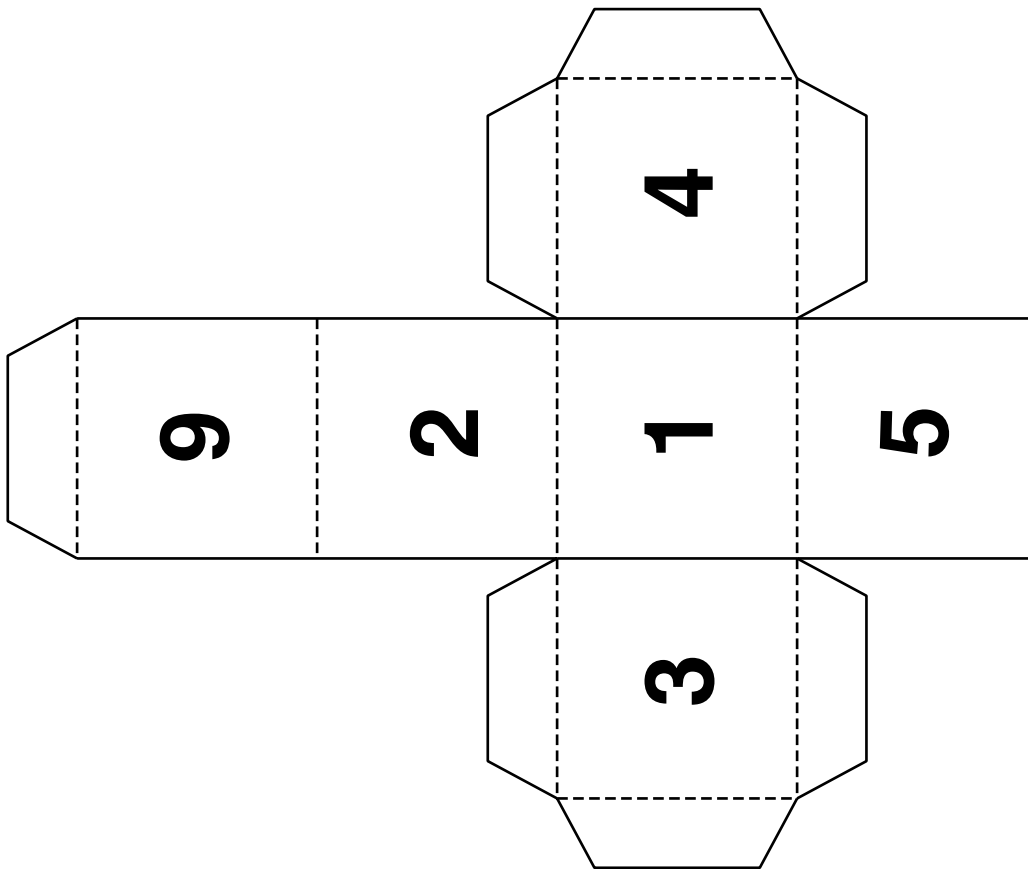
In-Class Game

Number Crunching Cube A (Lesson 1-2)

Cut along the solid black lines.

Fold along the dashed lines.

Tape or glue tabs.



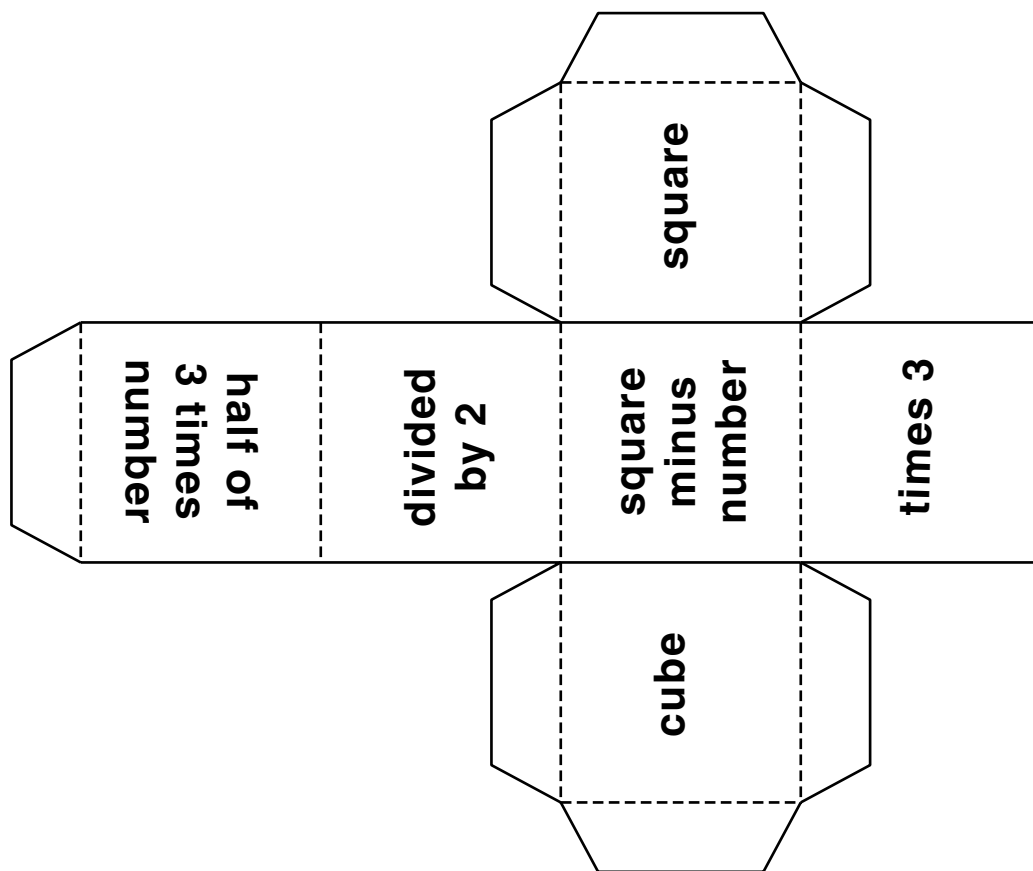
In-Class Game

Number Crunching Cube B (Lesson 1-2)

Cut along the solid black lines.

Fold along the dashed lines.

Tape or glue tabs.



In-Class Game

Luck of the Draw (Lesson 2-4)

● **Get Ready!** _____

Separate the class into groups of four.

- Luck of the Draw master, p. 6
- 1 deck of playing cards per group

● **Get Set!** _____

Make a copy of the Luck of the Draw master on page 6 for each student in the class. Give each group one deck of cards, minus the jacks, queens, and kings. Let each ace represent 1.

● **Go!** _____

- Shuffle the cards and deal 10 cards to each player.
- Each team plays five rounds. For each round, each player finds and states his or her range, mode, median, mean, or outlier.
 - On the first round, the player with the greatest range wins 10 points.
 - On the second round, the player with the greatest mode wins 10 points.
 - On the third round, the player with the greatest median wins 10 points.
 - On the fourth round, the player with the greatest mean wins 10 points.
 - On the fifth round, players with outliers win 5 points. Players must agree that a hand contains an outlier.
- If there is a tie, players split the 10 points. At the end of the game, the player with the most points wins.

In-Class Game

End-of-Year Crossword (Lesson 12-7)

● Get Ready!

Separate the class into groups of two or four.

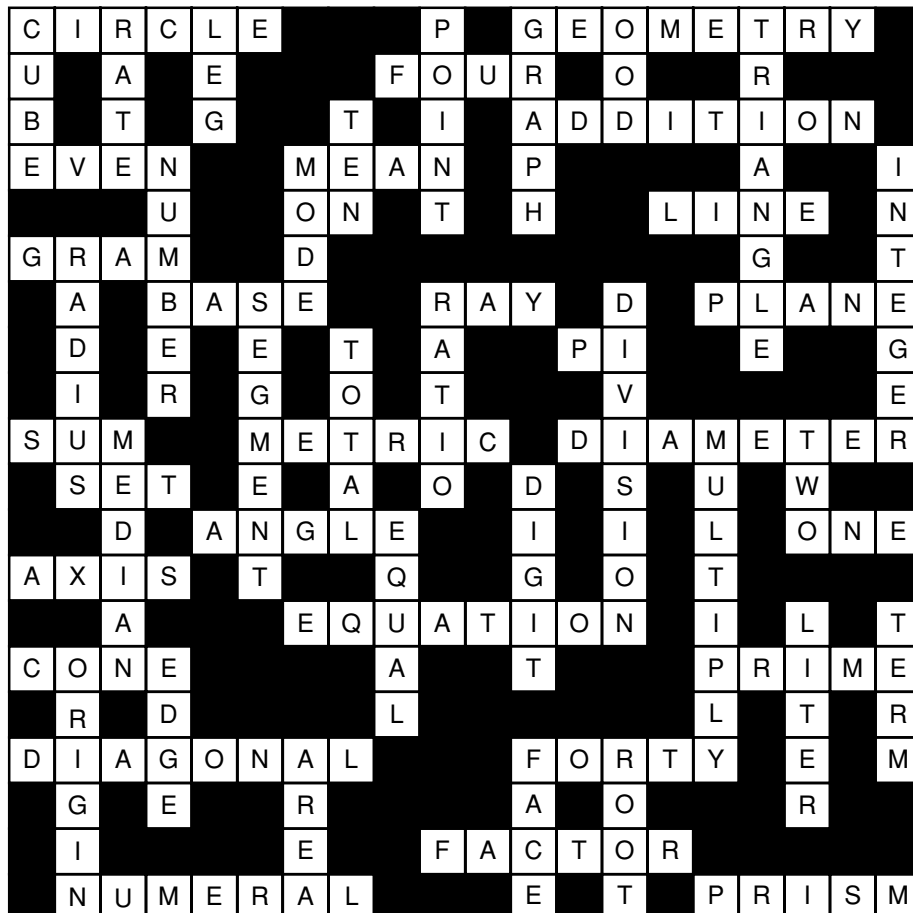
- End-of-Year Crossword masters, pp. 40–41

● Get Set!

Make a copy of the End-of-Year Crossword masters on pages 40 and 41 for each student in the class.

● Go!

- Answer each clue and complete the crossword puzzle.
- The solution is shown below.



In-Class Game**End-of-Year Crossword** (Lesson 12-7)**Work with your partner(s).**

Answer each clue and complete the crossword puzzle.

ACROSS

1. It has an infinite number of lines of symmetry.
5. It's the branch of mathematics in which we learn about triangles.
8. It's the square of 2.
10. With 22 down, they are two of the four operations.
11. 4, 12, and 66 are this kind of numbers.
13. the most commonly used measure of central tendency
15. Points _____ either of the axes are *not* in a quadrant.
16. The graph of a linear function is a _____.
17. the metric unit of mass
19. You multiply the measure of this times the measure of the height of a parallelogram to find its area.
21. Angles are made of two of these.
23. The coordinate *system* is sometimes called the coordinate _____.
25. 3.1415926 . . .
26. the result of an addition problem
28. This system of measurement is not widely used in the United States.
29. the distance across a circle
32. When you solve an inequality, your result is called the solution _____.
34. Three kinds are acute, obtuse, and right.
36. the multiplication identity
37. Each _____ separates the coordinate system into quadrants.
38. $x + 2 = 6$ is one.

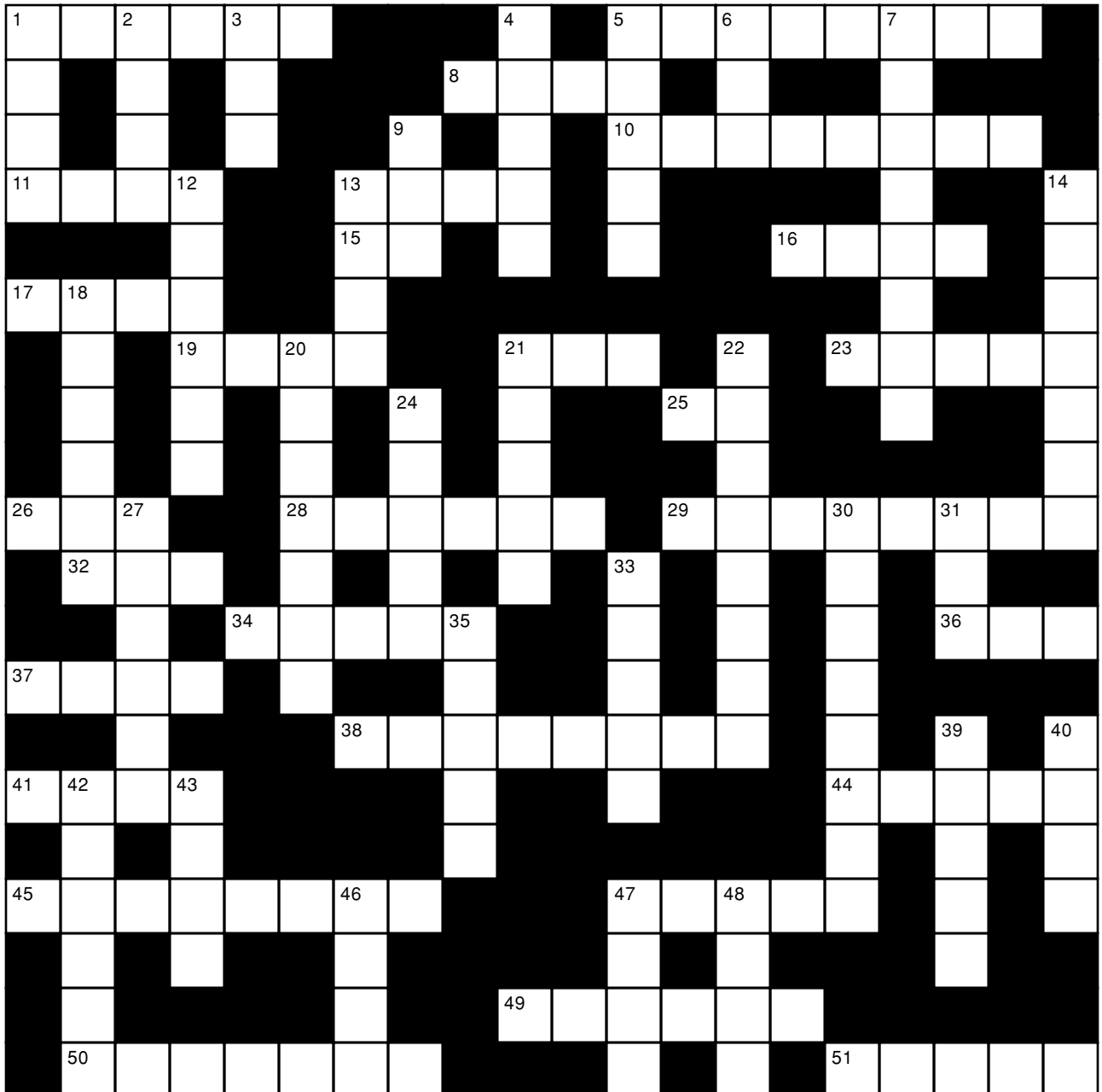
41. Ice cream goes in this 3-dimensional figure.
44. not composite, but _____, numbers
45. The line segment that goes from the upper left-hand corner of a rectangle to the lower right-hand corner.
47. The solution of $3y + 80 = 200$.
49. Each of 1, 2, 3, and 6 is a _____ of 6.
50. C is the Roman _____ for 100.
51. a 3-dimensional figure with two bases in the shape of polygons

DOWN

1. a rectangular prism with six congruent sides
2. This compares two measurements with different units.
3. a side of a right triangle that is not the hypotenuse
4. An ordered pair describes the location of this.
5. To draw lines on a coordinate system is to _____ the lines.
6. 17, 53, and 91 are this kind of numbers.
7. a 3-sided closed figure
9. Our numbering system is called a *decimal* system because it is based on _____.
12. 5 is both an integer and a whole _____.
13. This item of data appears most often.
14. -3 is an _____.
18. half of 29 across
20. Part of a line is called a line _____.
21. a comparison of two numbers by division
22. See 10 across.

(continued on the next page)

24. It's what the salesclerk gives you before you give him or her the money.
27. This item of data is in the middle.
30. It's what you do to find the area.
31. The powers of _____ include 8, 64, and 128.
33. 1,698 is a 4-_____ number.
35. 12 and 57 _____ 69.
39. the metric unit of capacity
40. A polynomial consists of operations like + and -, and these.
42. This is the center of the coordinate system.
43. This is where two faces of a prism meet.
46. Square inches is a unit of this.
47. This is one side of a prism.
48. 16 is the square _____ of 256.






In-Class Game

The Great Fraction Race (Lesson 2-6)

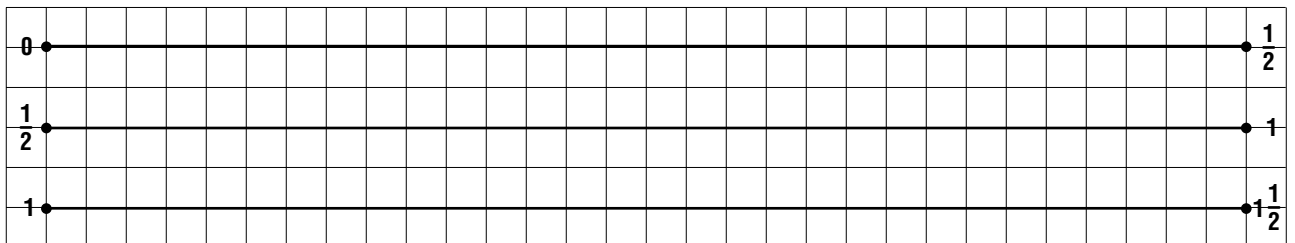
● Get Ready!

Separate the class into groups of four.

- The Great Fraction Race master, p. 6
- grid paper 
- 1 red number cube and 1 white number cube 
- small colored candies 

● Get Set!

Make a copy of The Great Fraction Race master on page 6 for each student in the class. Make a game board for each group. To create the game board, take a sheet of grid paper and mark as shown below until you reach 10.



Make sure that each student has a small colored candy piece to use as a marker. Give each group two number cubes.

● Go!

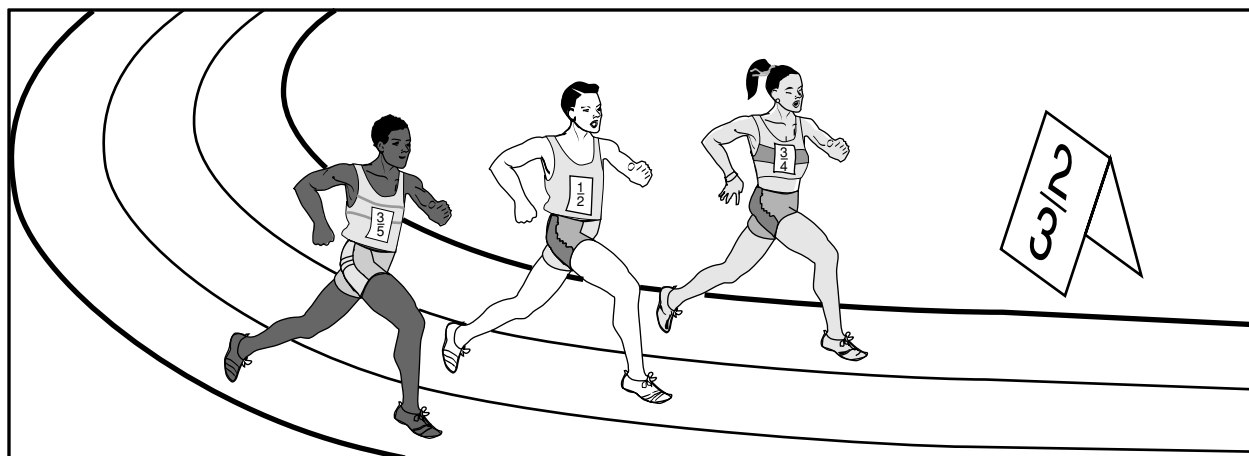
- The number on the white number cube represents the numerator of the fraction, and the number on the red number cube represents the denominator. So, a white 6 and a red 5 represent $\frac{6}{5}$.
- Each square on the racetrack counts as $\frac{1}{60}$.
- Each player rolls both number cubes and places his or her marker on the spot represented by the fraction that was rolled. For example, if Player A rolls white 1, red 2, he or she places a marker on the spot 30 squares from 0 (because $\frac{1}{2} = \frac{30}{60}$). All plays should be from left to right; at the end of one line, begin at the left end of the next line.
- The first player to reach the finish line is the winner.

In-Class Game

The Great Fraction Race (Lesson 2-6)

Work in groups of four.

- In this game, the number on the white number cube represents the numerator of the fraction, and the number on the red number cube represents the denominator of the fraction. So, a white 6 and a red 5 represents $\frac{6}{5}$.
- The least common denominator of the six numbers on a number cube is 60. Thus, each square on the racetrack counts as $\frac{1}{60}$.
- A player rolls both number cubes and places his or her marker on the spot represented by the fraction that was rolled. For example, if Player A rolls white 1, red 2, he or she places a marker on the spot 30 squares from 0 (because $\frac{1}{2} = \frac{30}{60}$). Each player then rolls and places their marker appropriately. All plays should be from left to right; at the end of one line, begin at the left end of the next line. If, on the next turn, Player A rolls white 3, red 2, he or she moves the marker an additional 90 squares (because $\frac{3}{2} = \frac{90}{60}$). If, on the next turn, Player A rolls white 3, red 2, he or she moves the marker an additional 90 squares (because $\frac{3}{2} = \frac{90}{60}$).
- It is possible for more than one marker to occupy the same square. The first player to reach the finish line is the winner.









In-Class Game

The Pythagorean Theorem Game (Lesson 3-4)

● Get Ready!

Separate the class into groups of four.

- The Pythagorean Theorem Game master, p. 8
- The Pythagorean Theorem Game Board master, p. 9
- The Pythagorean Theorem Game Cards masters, pp. 10–11
- index cards 
- scissors 
- tape  or glue 
- 2 number cubes per group 
- 4 different colored counters per group 

● Get Set!

Make a copy of The Pythagorean Theorem Game master on page 8 for each student in the class. Photocopy The Pythagorean Theorem Game Board master on page 9 onto card stock for each group. Make a copy of The Pythagorean Theorem Game Cards masters on pages 10 and 11 for each group. Have students cut out the game cards, tape or glue them to the index cards, and draw a “?” on the reverse side.

● Go!

- A player rolls both number cubes and substitutes the numbers into the Pythagorean Theorem for the lengths of the legs. Then the player moves around the board a distance that is closest to the value of c . For example, if a player rolls a 1 and a 2, he or she would determine how many spaces to move as follows.

$$1^2 + 2^2 = c^2$$

$$1 + 4 = c^2$$

$$5 = c^2$$

$$\sqrt{5} \approx 2.236 \text{ or } 2 \quad \text{Always round to the nearest whole number.}$$

- When a player lands on a space with a question mark, a question card is read to the player whose turn it is. If the player answers correctly, he or she can roll one number cube and advance that number of spaces. If the player answers incorrectly, the turn moves to the next player.
- To finish the game, the players must answer a question card correctly. If answered incorrectly, the player must go back to the space from which he or she started that turn. The first player around the board wins.

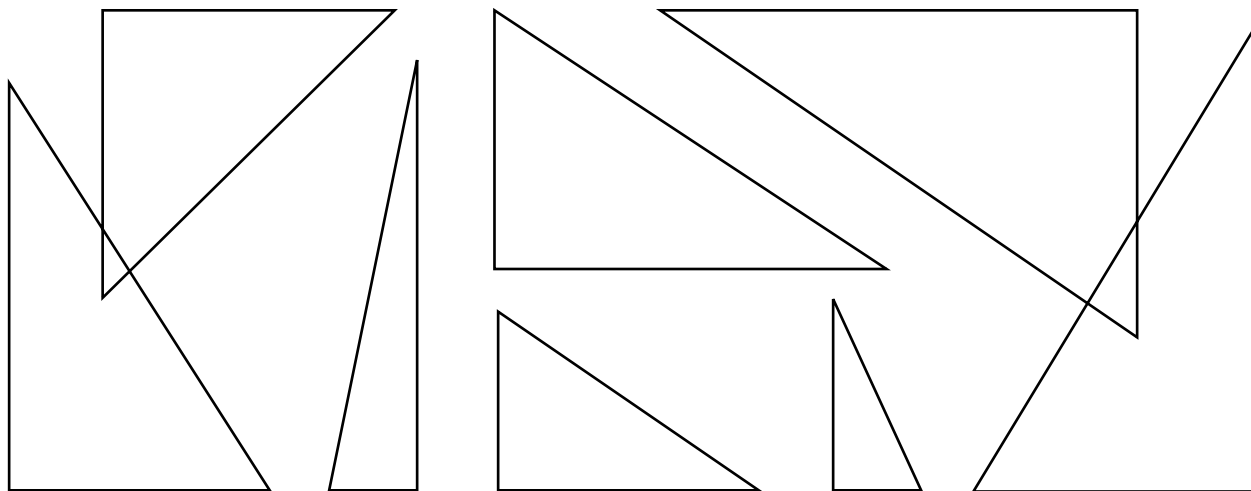
In-Class Game***The Pythagorean Theorem Game*** (Lesson 3-4)**Work in groups of four.**

- A player rolls both number cubes and substitutes the numbers on the number cubes into the Pythagorean Theorem for the lengths of the legs to find the value of the length of the hypotenuse. Then the player moves around the board a distance that is closest to the value of c . For example, if a player rolls a 1 and a 2, he or she would determine how many spaces to move as follows.

$$\begin{aligned} 1^2 + 2^2 &= c^2 \\ 1 + 4 &= c^2 \\ 5 &= c^2 \\ \sqrt{5} &\approx 2.236 \end{aligned}$$

Always round to the nearest whole number. Since 2.236 rounded to the nearest whole number is 2, the player would move 2 spaces.

- When a player lands on a space with a question mark, a question card is drawn. Another player reads the question to the player whose turn it is. If the player answers the question correctly, he or she can roll one number cube and advance the resulting number of spaces. If the player answers incorrectly, the turn moves to the next player.
- To finish the game, the players must answer a question card correctly. If the card is answered incorrectly, the player must go back to the space from which he or she started that turn. The first player around the board wins.

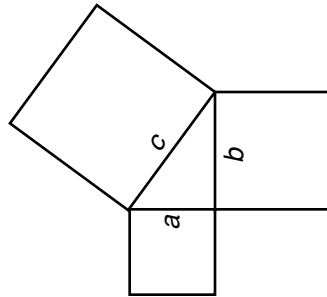


In-Class Game

The Pythagorean Theorem Game Board (Lesson 3-4)

PYTHAGOREAN THEOREM

$$a^2 + b^2 = c^2$$



In-Class Game

The Pythagorean Theorem Game Cards

(Lesson 3-4)

<p>Find the missing member of the Pythagorean triple (7, _____, 25).</p> <p>Answer: 24</p>	<p>What is the length of the legs in a 45°-45° right triangle with a hypotenuse of length $\sqrt{2}$?</p> <p>Answer: 1</p>	<p>True or false? The Egyptians used the right triangle for land measurement.</p> <p>Answer: true</p>
<p>Is (8, 15, 17) a Pythagorean triple?</p> <p>Answer: yes</p>	<p>Find the length of the hypotenuse of a right triangle if the legs have lengths 1 and 2.</p> <p>Answer: $\sqrt{5}$</p>	<p>Solve the equation $a^2 + b^2 = c^2$ for c.</p> <p>Answer: $c = \sqrt{a^2 + b^2}$</p>
<p>What is the measure of the two nonright angles in an isosceles right triangle?</p> <p>Answer: 45° and 45°</p>	<p>Using $a^2 + b^2 = c^2$, find b if $c = 10$ and $a = 6$.</p> <p>Answer: $b = 8$</p>	<p>A number that is the square of a whole number is called a _____ square.</p> <p>Answer: perfect</p>
<p>Solve the equation $a^2 + b^2 = c^2$ for a.</p> <p>Answer: $a = \sqrt{c^2 - b^2}$</p>	<p>What is the length of the diagonal of a rectangle with sides of lengths 5 and 12?</p> <p>Answer: 13</p>	<p>Is it true that if $a^2 + b^2 = c^2$, then $\frac{a^2}{c^2} + \frac{b^2}{c^2} = 1$?</p> <p>Answer: yes</p>
<p>True or false: Pythagoras lived about 500 A.D.</p> <p>Answer: false (500 B.C.)</p>	<p>Have the person to your left pick two whole numbers for the measures of the legs of a right triangle. Then compute the measure of the hypotenuse.</p>	<p>Is (16, 20, 35) a Pythagorean triple?</p> <p>Answer: no</p>

In-Class Game

The Pythagorean Theorem Game Cards

(Lesson 3-4)


<p>Can an isosceles triangle be a right triangle?</p> <p>Answer: yes</p>	<p>Pythagoras was of what nationality?</p> <p>Answer: Greek</p>	<p>Explain to the rest of the players how a right triangle can be found in a rectangle, a square, and a regular triangle.</p>
<p>Is (7, 8, 11) a Pythagorean triple?</p> <p>Answer: no</p>	<p>How do you spell Pythagoras?</p>	<p>The Pythagorean Theorem is applicable for what type of triangle?</p> <p>Answer: a right triangle</p>
<p>What are the lengths of the legs of a 30°–60° right triangle with a hypotenuse of length 10?</p> <p>Answer: 5 and $5\sqrt{3}$</p>	<p>If you hiked 3 km west and then 4 km north, how far are you from your starting point?</p> <p>Answer: 5 km</p>	<p>The length of the hypotenuse of a 45°–45° right triangle is $10\sqrt{2}$. What are the lengths of the legs?</p> <p>Answer: 10</p>
<p>The square of the _____ of a right triangle equals the sum of the squares of the lengths of the two legs.</p> <p>Answer: hypotenuse</p>	<p>If the lengths of the legs of a 30°–60° right triangle are 8 and $8\sqrt{3}$, what is the length of the hypotenuse?</p> <p>Answer: 16</p>	<p>If the lengths of a leg and the hypotenuse of a right triangle are 5 and 10, respectively, what is the length of the other leg?</p> <p>Answer: $5\sqrt{3}$</p>
<p>Find the length of the diagonal of a square to the nearest hundredth if the square's area is 81 cm^2.</p> <p>Answer: 12.72 cm</p>	<p>If the lengths of the legs of a 45°–45° right triangle are 5, what is the length of the hypotenuse?</p> <p>Answer: $5\sqrt{2}$</p>	<p>If the diagonal of a square has length 8, what is the length of a side?</p> <p>Answer: $4\sqrt{2}$</p>

In-Class Game

Map Sense (Lesson 4-6)

● **Get Ready!** _____

Separate the class into groups of two.

- Map Sense master, p. 15
- Map master, p. 16
- ruler 
- Other maps with a distance scale

● **Get Set!** _____

Make a copy of the Map Sense master on page 15 for each student. Provide each group with a copy of the Map Sense map on page 16 or provide other maps that include a distance scale.

● **Go!** _____

- One player chooses a map and two locations on the map.
- The second player estimates the actual distance.
- Both players write and solve a proportion using the map scale and the map distance between the two chosen locations. If the difference between the actual distance and the estimated distance is less than 10% of the actual distance, the player who made the estimate earns a point.
- Players exchange roles.
- Repeat until each player has 4 turns at each role.
- The player with the most points wins the game.

Name _____ Date _____

In-Class Game**Map Sense Distance Key** (Lesson 4-6)

	Atlanta, GA	Charleston, SC	Cheyenne, WY	Chicago, IL	Denver, CO	Indianapolis, IN	Jackson, MS	Jacksonville, FL	Little Rock, AR	Los Angeles, CA	Mobile, AL	Norfolk, VA	Portland, OR	Raleigh, NC	St. Louis, MO	Washington, D.C.
Atlanta, GA		320	1,449	716	1,416	531	383	346	531	2,211	335	555	2,606	387	555	632
Charleston, SC	320		1,752	913	1,719	1,110	703	239	893	2,573	638	431	1,069	278	858	525
Cheyenne, WY	1,449	1,752		970	100	1,115	1,318	1,795	1,059	1,102	1,508	1,811	1,158	1,723	894	1,662
Chicago, IL	716	913	970		1,011	185	749	1,062	655	2,034	923	902	2,127	822	297	715
Denver, CO	1,416	1,719	100	1,011		1,101	1,223	1,762	964	1,023	1,413	1,778	1,236	1,690	861	1,700
Indianapolis, IN	531	1,110	1,115	185	1,101		685	877	591	2,088	738	725	2,272	685	246	599
Jackson, MS	383	703	1,318	749	1,223	685		593	261	1,856	190	938	2,454	770	498	1,820
Jacksonville, FL	346	239	1,795	1,062	1,762	877	593		850	2,437	403	608	2,952	455	901	702
Little Rock, AR	531	893	1,059	655	964	591	261	850		1,686	451	1,036	2,195	884	351	1,009
Los Angeles, CA	2,211	2,573	1,102	2,034	1,023	2,088	1,856	2,437	1,686		2,034	2,716	967	2,564	1,842	2,689
Mobile, AL	335	638	1,508	923	1,413	738	190	403	451	2,034		890	2,644	735	684	967
Norfolk, VA	555	431	1,811	902	1,778	725	938	608	1,036	2,716	890		2,968	175	917	195
Portland, OR	2,606	1,069	1,158	2,127	1,236	2,272	2,454	2,952	2,195	967	2,644	2,968		2,880	2,051	2,819
Raleigh, NC	387	278	1,723	822	1,690	685	770	455	884	2,564	735	175	2,880		829	254
St. Louis, MO	555	858	894	297	861	246	498	901	351	1,842	684	917	2,051	829		845
Washington, D.C.	632	525	1,662	715	1,700	599	1,820	702	1,009	2,689	967	195	2,819	254	845	

Name _____ Date _____

In-Class Game

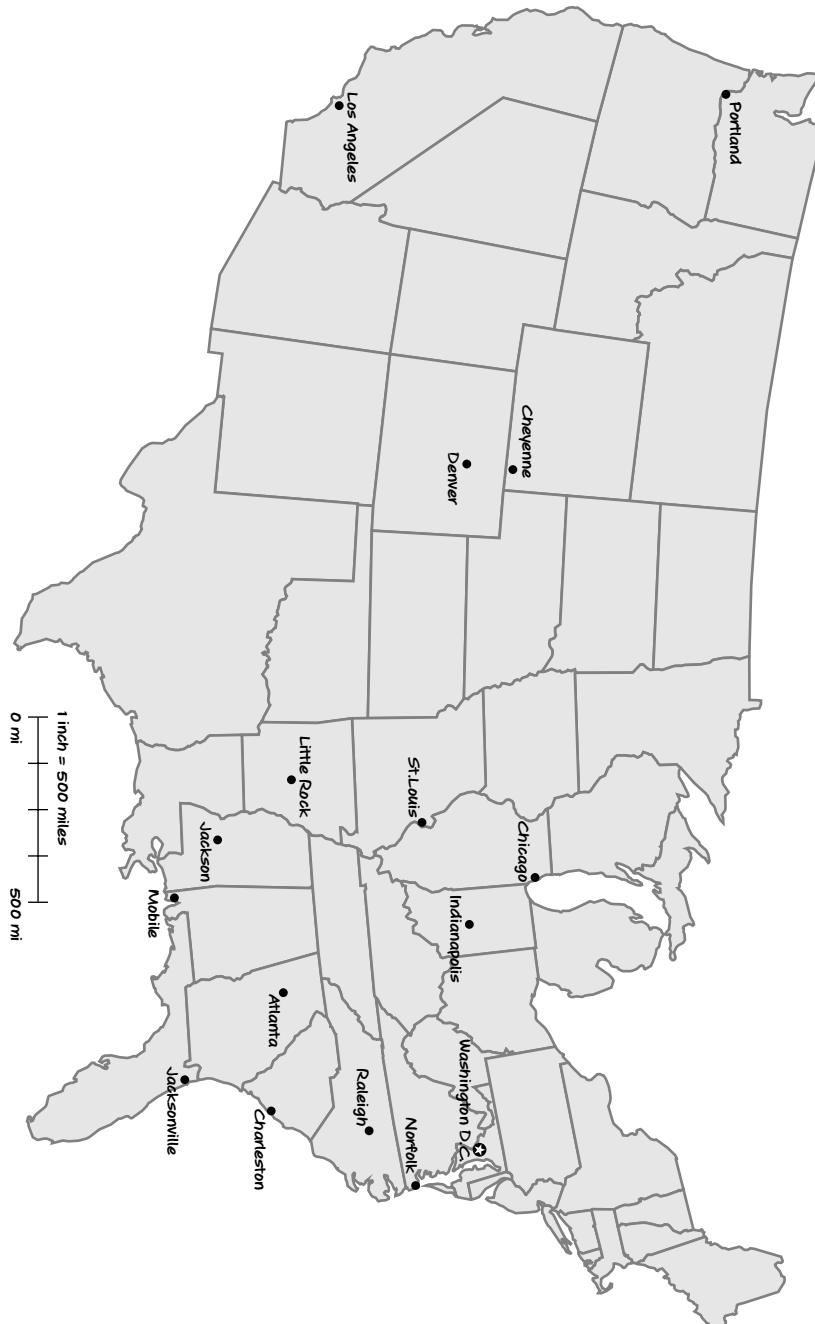
Map Sense (Lesson 4-6)

Work in groups of two.

- One player chooses a map and two locations on the map.
- The second player estimates the actual distance.
- Both players write and solve a proportion using the map scale and the map distance between the two chosen locations. If the difference between the actual distance and the estimated distance is less than 10% of the actual distance, the player who made the estimate earns a point.
- Players exchange roles.
- Repeat until each player has 4 turns at each role.
- The player with the most points wins the game.

In-Class Game

Map Sense Map (Lesson 4-6)




In-Class Game

The Match Game (Lesson 5-2)

● Get Ready!

Separate the class into groups of four.

- The Match Game master, p. 18
- The Match Game Cards master, p. 19
- scissors 

● Get Set!

Make a copy of The Match Game master on page 18 for each student in the class. Photocopy The Match Game Cards master on page 19 onto card stock. Give each student one copy and have them cut out the 25 cards.

● Go!

- A player shuffles the 100 cards, deals three cards to each player, and places the remaining cards facedown in the middle of the table. The goal is to fit the cards in your hand together so that all of the sides that touch are equal.
- In turn, each player takes a card from the pile and tries to match it with one of his or her cards. Whether the player is successful or not, play moves to the next player. Your arrangement may change as you get more cards or you may be able to make more than one group. Play continues until all of the cards are used.
- For each group of cards, the player squares the number of cards in the group and then adds the squares for a total score. For example, if a player has a group of 3 cards and a group of 4 cards, the hand would be scored as follows.

$$3^2 = 9 \text{ and } 4^2 = 16, \text{ so the score is } 9 + 16 = 25.$$

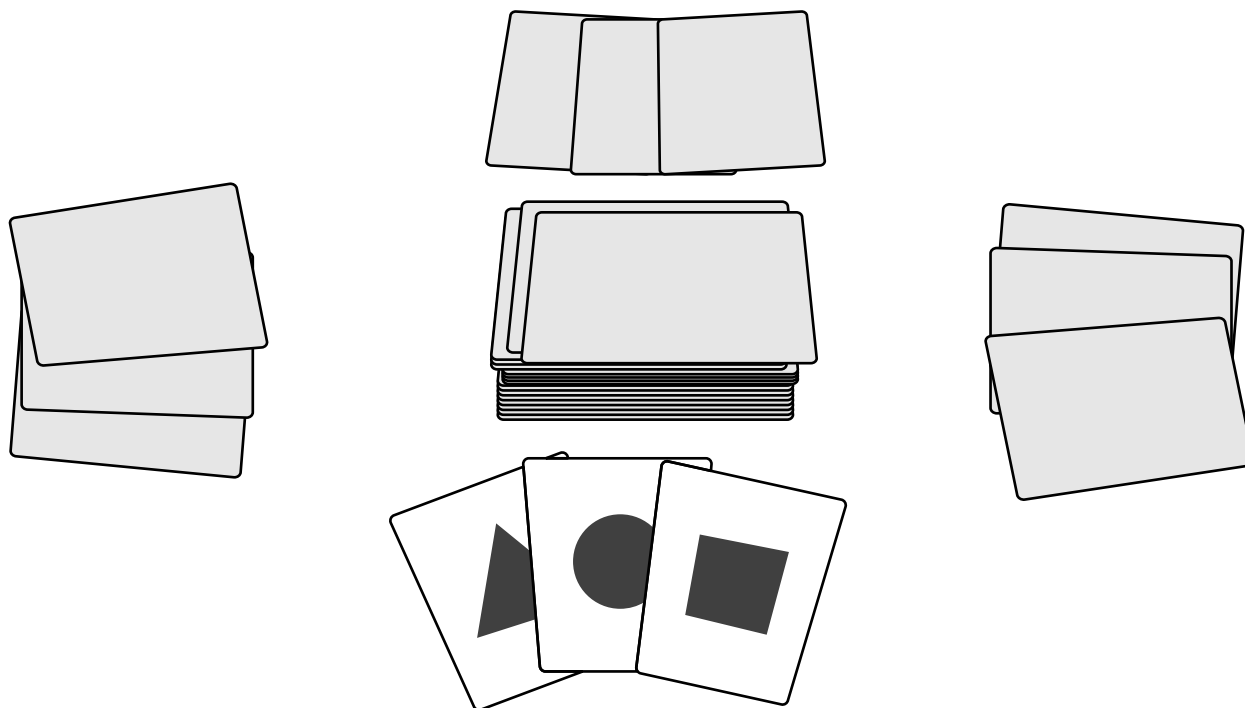
The player with the highest score wins.

In-Class Game**The Match Game** (Lesson 5-2)**Work in groups of four.**

- A player shuffles the 100 cards, deals three cards to each player, and places the remaining cards facedown in the middle of the table. The goal is to fit the cards in your hand together so that all of the sides that touch are equal.
- In turn, each player takes a card from the pile and tries to match it with one of his or her cards. Whether the player is successful or not, play moves to the next player. Your arrangement may change as you get more cards or you may be able to make more than one group. Play continues until all of the cards are used.
- For each group of cards, square the number of cards in the group and then add the squares for a total score. For example, if you have a group of 3 cards and a group of 4 cards, the hand would be scored as follows.

$$3^2 = 9 \text{ and } 4^2 = 16, \text{ so the score is } 9 + 16 = 25.$$

The player with the highest score wins.



In-Class Game

The Match Game Cards (Lesson 5-2)





42% $\frac{11}{25}$ $\frac{1}{9}$ 70%	$\frac{12}{25}$ $\frac{9}{20}$ $\frac{5}{6}$ 98%	$\frac{2}{25}$ $\frac{17}{20}$ $\frac{3}{5}$ 0.5	65% 0.125 96% $\frac{16}{25}$	$\frac{17}{25}$ $\frac{24}{25}$ 85% $\frac{4}{5}$
$\frac{49}{50}$ 75% $\frac{7}{8}$ $\frac{1}{20}$	35% $\frac{3}{10}$ 44% 0.9	0.625 $\frac{14}{25}$ $\frac{27}{50}$ 0.666 ...	36% $\frac{6}{25}$ $\frac{1}{5}$ 0.166 ...	55% 25% 0.3 $\frac{1}{10}$
$\frac{21}{50}$ $\frac{3}{4}$ $\frac{8}{25}$ 48%	88% 60% $\frac{5}{8}$ 0.111 ...	90% 54% 18% 76%	$\frac{1}{2}$ 72% $\frac{7}{25}$ $\frac{13}{20}$	16% 0.375 $\frac{3}{25}$ $\frac{11}{50}$
0.7 28% 24% 0.875	15% $\frac{9}{50}$ 68% $\frac{4}{25}$	$\frac{19}{25}$ 84% $\frac{3}{8}$ 0.333 ...	56% $\frac{5}{8}$ $\frac{21}{25}$ $\frac{1}{3}$	45% $\frac{2}{3}$ $\frac{9}{25}$ 0.833 ...
5% 22% $\frac{1}{8}$ $\frac{22}{25}$	0.2 32% $\frac{1}{4}$ $\frac{1}{25}$	64% $\frac{1}{6}$ 4% $\frac{11}{20}$	12% $\frac{5}{8}$ 0.1 $\frac{3}{20}$	80% 8% $\frac{18}{25}$ $\frac{7}{20}$

In-Class Game

The Transformation Game (Lesson 6-9)

● Get Ready!

Separate the class into groups of four.

- The Transformation Game master, p. 22
- The Transformation Game Board master, p. 23
- The Transformation Game Pieces master, p. 24
- The Transformation Game Cards masters, pp. 25–26
- 30 index cards per group 
- scissors 
- tape  or glue 

● Get Set!

Make a copy of The Transformation Game master on page 22 for each student in the class. Photocopy The Transformation Game Board master on page 23 onto card stock for each group. Photocopy The Transformation Game Pieces master on page 24 onto a clear transparency. Cut out the game pieces and give each group four different game pieces. Make a copy of The Transformation Game Cards masters on pages 25 and 26 for each group. Have students cut out the game cards, tape or glue them to the index cards, and draw a “?” on the reverse side.

● Go!

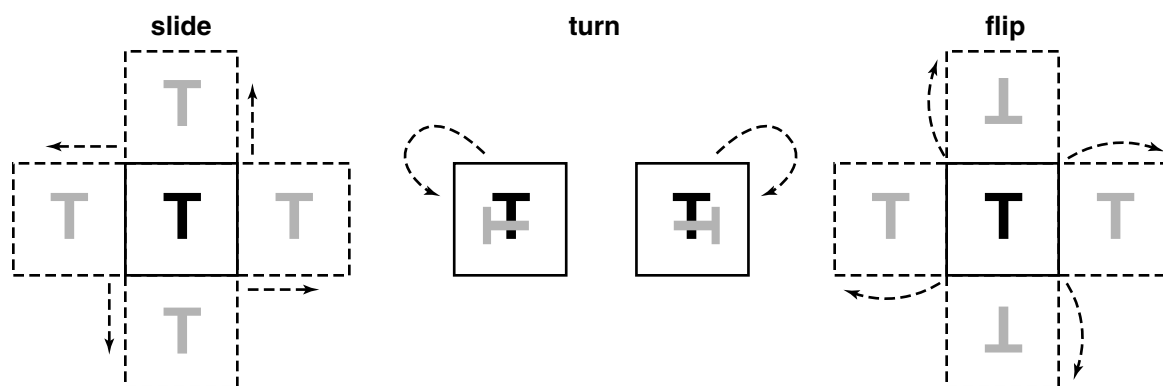
- Choose the corner square that matches your game piece. Place your game piece so that it matches the T on your corner square. The goal is to reach the square that is diagonally opposite from your starting square.
- A player chooses a card from the card pile, follows the instructions, and places it faceup in a discard pile. A playing piece may be moved following the instructions on the card if and only if the T can be made to match the T on the *final square* on which it lands. Two or more players may occupy the same square. Diagonal moves are not permitted.
- Free spaces do not have a T on them. Playing pieces may land on free spaces facing any direction. However, if a player lands on an occupied free space, his or her piece must match the piece that is already there.
- A player loses his or her chance to move only if it is impossible to follow the instructions on the card. The first player to move into his or her diagonally opposite corner square is the winner.

In-Class Game

The Transformation Game (Lesson 6-9)

Work in groups of four.

- Place the card pile in the middle of the table. Choose the corner square that matches your game piece. Place your game piece so that it matches the T on your corner square. The goal is to reach the square that is diagonally opposite from your starting square.
- A player chooses a card from the card pile, follows the instructions, and places it faceup in a discard pile. A playing piece may be moved following the instructions on the card if and only if the T can be made to match the T on the final square on which it lands. Intermediate steps need not match, but all steps must be carried out in the exact order in which they appear on the card. Therefore, the T on the playing piece must always match the T on the game board space on which it sits. Two or more players may occupy the same square. Diagonal moves are not permitted.
- There are three types of moves: slides, turns, and flips.

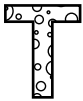






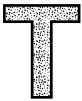




































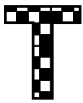






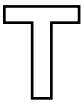


- Free spaces do not have a T on them. Playing pieces may land on free spaces facing any direction. However, if a player lands on an occupied free space, his or her piece must match the piece that is already there.
- If a player can move, he or she must move, no matter what. A player loses his or her chance to move only if it is impossible to follow the instructions on the card. The first player to move into his or her diagonally opposite corner square is the winner.

In-Class Game

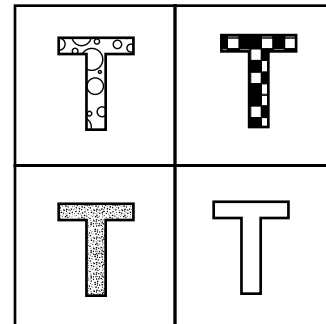
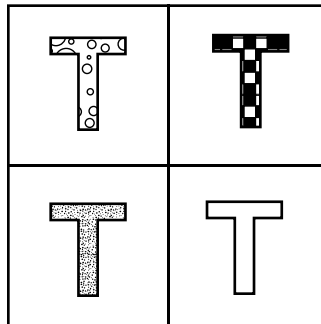
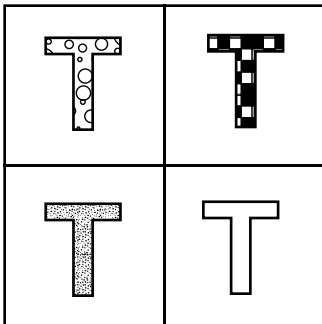
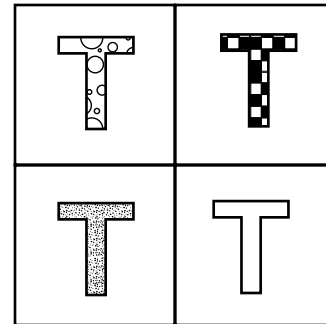
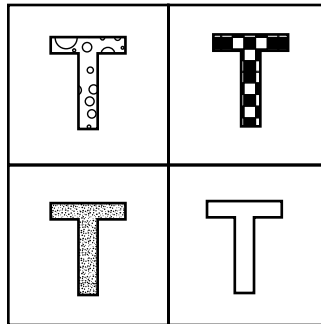
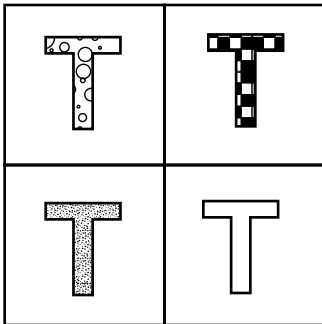
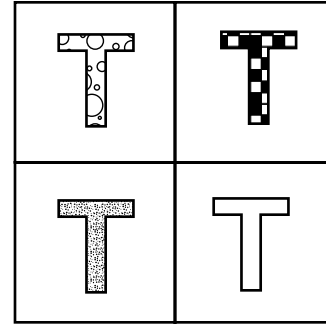
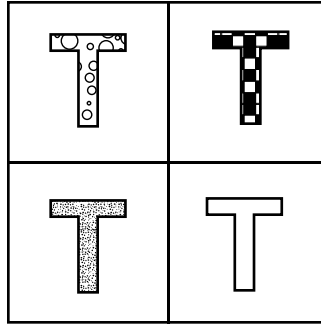
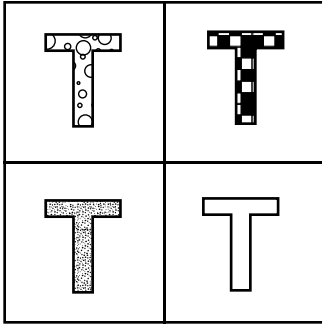
The Transformation Game Board

(Lesson 6-9)

In-Class Game

The Transformation Game Pieces (Lesson 6-9)



In-Class Game***The Transformation Game Cards*** (Lesson 6-9)

SLIDE	SLIDE and TURN	SLIDE and TURN
FLIP, SLIDE, and TURN	TURN, SLIDE, and FLIP	SLIDE, TURN, and FLIP
FLIP, SLIDE, and TURN	TURN, SLIDE, and FLIP	SLIDE, TURN, and FLIP
TURN, FLIP, and SLIDE	SLIDE, FLIP, and TURN	FLIP, TURN, and SLIDE
TURN, FLIP, and SLIDE	SLIDE, FLIP, and TURN	FLIP, TURN, and SLIDE

In-Class Game***The Transformation Game Cards*** (Lesson 6-9)





FLIP	FLIP and TURN	TURN and FLIP
FLIP	FLIP and TURN	TURN and FLIP
TURN	FLIP and SLIDE	SLIDE and FLIP
TURN	FLIP and SLIDE	SLIDE and FLIP
SLIDE	TURN and SLIDE	TURN and SLIDE

In-Class Game

3-D Rummy (Lesson 7-4)

● Get Ready!

Separate the class into groups of four.

- 3-D Rummy master, p. 28
- 3-D Rummy Cards master, p. 29
- 54 index cards per group 
- scissors 
- tape  or glue 

● Get Set!

Make a copy of the 3-D Rummy master on page 28 for each student. Make six copies of the 3-D Rummy Cards master on page 29 for each group. Have students cut out the images and tape or glue them onto index cards.

● Go!

- The dealer shuffles and gives seven cards to each player. The dealer then places four cards faceup and the remaining deck facedown on the table. If a wild card is one of the cards shown faceup, it should be placed in the middle of the deck and replaced with a card from the top of the deck.
- The first player draws a card from the top of the deck and then does one of three things.
 1. Adds a card from his or her hand to one of the four stacks to begin “building” a prism, pyramid, or cylinder. (To build a solid figure, you add a card that represents one of the surfaces.)
 2. Adds one or more cards from his or her hand to one of the four stacks to complete a prism, pyramid, or cylinder.
 3. Passes, if no play can be made.

A wild card can be used in place of any card. However, a player who plays a wild card must explain what the wild card represents.

- A player can work on only one stack at a time. The player who completes the figure gets one point for each card in the stack. Then the cards are placed in a discard pile and a new card is placed faceup.
- The game is over when a player has played all of the cards in his or her hand. This player gets one point for each card left in the other players’ hands. The winner has the greatest number of points at the end of the game.

In-Class Game

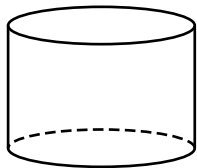
3-D Rummy (Lesson 7-4)

Work in groups of four.

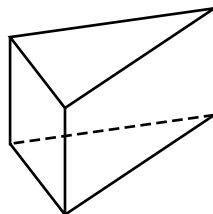
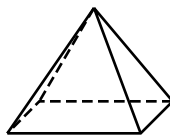
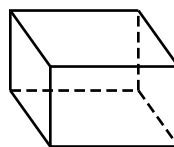
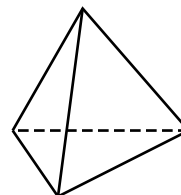
- The dealer shuffles the 54 cards and gives seven cards to each player. The dealer then places four cards faceup on the table and places the remaining deck facedown on the table. If a wild card is one of the cards shown faceup, it should be placed in the middle of the deck and replaced with a card from the top of the deck.
- The first player draws a card from the top of the deck and then does one of three things.
 - Adds a card from his or her hand to one of the four stacks to begin "building" a prism, pyramid, or cylinder. (To build a solid figure, you add a card that represents one of the surfaces.)
 - Adds one or more cards from his or her hand to one of the four stacks to complete a prism, pyramid, or cylinder.
 - Passes, if no play can be made.

A wild card can be used in place of any card. However, a player who plays a wild card must explain what the wild card represents.

- A player can work on only one stack at a time. Neither the order nor the size of the symbols on the cards matter. The player who completes the figure gets one point for each card in the stack. Then the cards are placed in a discard pile and a new card is placed faceup.
- The game is over when a player has played all of the cards in his or her hand. This player gets one point for each card left in the other players' hands. The winner is the player with the greatest number of points at the end of the game.
- Here are some examples of 3-dimensional figures you can build.

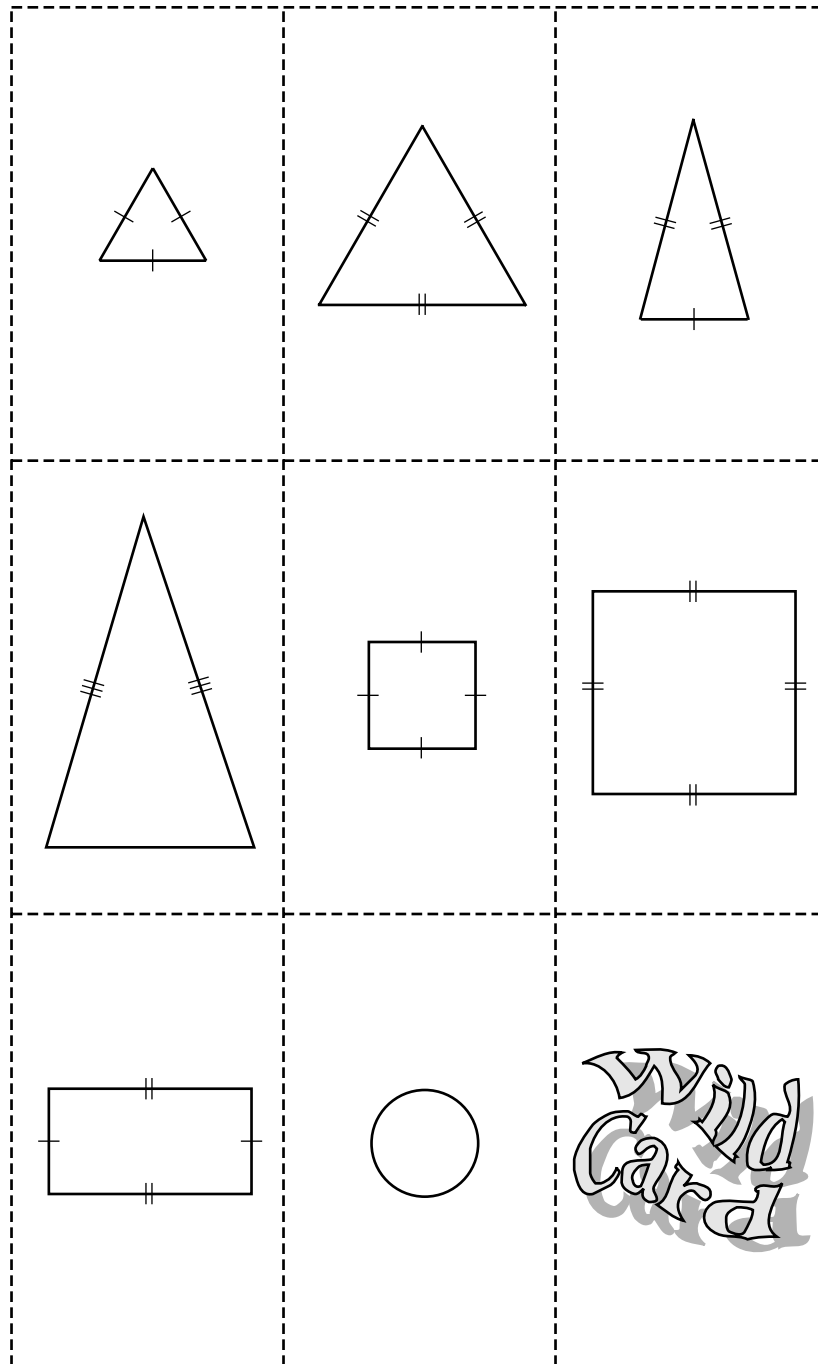


cylinder

triangular
prismrectangular
pyramidrectangular
prismtriangular
prism

In-Class Game

3-D Rummy Cards (Lesson 7-4)



Outside-of-Class Game

Probability Scavenger Hunt (Lesson 8-7)

● **Get Ready!** _____

Separate the class into four teams.

- Probability Scavenger Hunt master, p. 32

● **Get Set!** _____

Make a copy of the Probability Scavenger Hunt master on page 32 for each student in the class.

● **Go!** _____

- Students try to collect as many of the items on the list as possible.
- The number of points they receive for each item is listed next to the item on the Probability Scavenger Hunt master.
- Give students a specified amount of time to collect the items. A suggested time is 1–2 weeks. Require students to bring the items to class at the end of the time period. You may wish to ask students to explain and/or justify their findings.
- The team with the most points wins.

Outside-of-Class Game

Probability Scavenger Hunt (Lesson 8-7)

- Find and bring in as many items on this list as you can find. Be prepared to identify or explain your findings.
- The points you will receive for each item are listed next to the item.
- You have until _____ to bring in the items.
- The team with the most points wins.

1. Items from home

- a) an item that you can use to illustrate probability (10)
- b) something that indicates how probability or counting can be used at home (10)
- c) a premade spinner (10)
- d) a description of a game that is not fair (15)

2. Items from school

- a) a description of how the physical education department uses probability or counting (10)
- b) a description of how the science department uses probability or counting (*Do not* describe Punnett squares.) (10)
- c) a description of choices in everyday life that you can illustrate with a tree diagram, and the tree diagram you made (15)
- d) a signed statement from a nonmathematics teacher saying that he or she has used probability during the past week (20)

3. Items from newspapers, magazines, books, or the Internet

- a) an article that describes arrangements or choices that you can quantify with permutations or combinations (15)
- b) an article about how someone uses probability in his or her job (15)
- c) a nonmathematics book that uses probability to explain a concept (10)
- d) a cartoon about probability (10)
- e) a web site that discusses probability (15)

4. Items from the community




- a) a library book that describes Pascal's Triangle and a one-paragraph description of a "fun fact" about Pascal's Triangle that you learned from the book (15)
- b) an item that describes the use of sampling in research (15)
- c) a game that illustrates the probability of compound events (15)
- d) an adult willing to visit your class to describe how he or she uses probability in his or her job (25)

Outside-of-Class Game

Statistics Charades (Lesson 9-6)

● Get Ready!

Separate the class into two teams.

- Statistics Charades master, p. 34
- large bowl  or paper bag 
- stopwatch or egg timer 

● Get Set!

Make a copy of the Statistics Charades master on page 34 for each student in the class. Write the terms listed below on small slips of paper and place in the bowl or paper bag. Because the teams will shout out answers, you may want to play this game outside or in a large room, like a gymnasium.

● Go!

- On the first turn, a member of Team 1 chooses a term from the bowl. The player who drew the term may ask anywhere from 0 to 4 members of his or her team to help act out the term. The actors are given 30 seconds to prepare. Props are allowed, but actors must not make any sound. Encourage teams to act out the true meaning of each term, as opposed to using charades hints like “sounds like” or “first word.”
- Team 1 is given 60 seconds to guess the term. If they are unable to guess the term, Team 2 gets 60 seconds to guess.
- If the members of Team 1 correctly guess the term, Team 1 gets 10 points. If the turn is passed to Team 2 and they correctly guess the term, Team 2 wins 5 points.
- Teams alternate turns, no matter who wins each round. After playing for a specified period of time, the team with the most points wins.

Statistical Terms		
bar graph	circle graph	histogram
interquartile range	line plot	mean
median	mode	negative relationship
outlier	positive relationship	quartile
range	scatter plot	tally

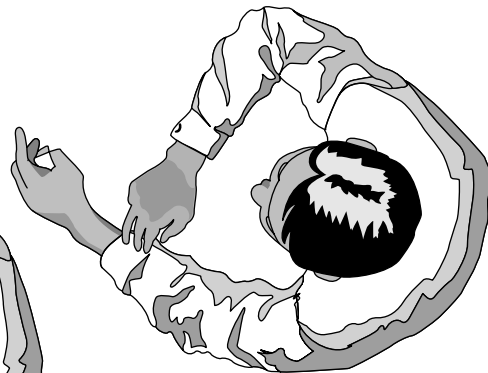
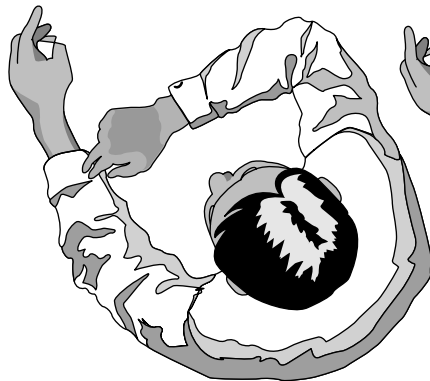
Outside-of-Class Game

Statistics Charades (Lesson 9-6)

Work with your team.

- On the first turn, a member of Team 1 chooses a term from the bowl. The player who drew the term may ask anywhere from 0 to 4 members of his or her team to help act out the term. The actors are given 30 seconds to prepare. Props are allowed, but actors must not make any sound. Try to act out the true meaning of each term, as opposed to using charades hints like “sounds like” or “first word.”
- Team 1 is given 60 seconds to guess each term. If they are unable to guess the term, Team 2 gets 60 seconds to guess.
- If the members of Team 1 correctly guess the term, Team 1 gets 10 points. If the turn is passed to Team 2 and they correctly guess the term, Team 2 wins 5 points.
- Teams alternate turns, no matter who wins each round. After playing for a specified period of time, the team with the most points wins.

Statistical Terms		
bar graph	circle graph	histogram
interquartile range	line plot	mean
median	mode	negative relationship
outlier	positive relationship	quartile
range	scatter plot	tally





In-Class Game

Equation Parade (Lesson 10-2)

● Get Ready!

Separate the class into groups of four.

- Equation Parade master, p. 36
- 10 index cards per group 
- scissors 

● Get Set!

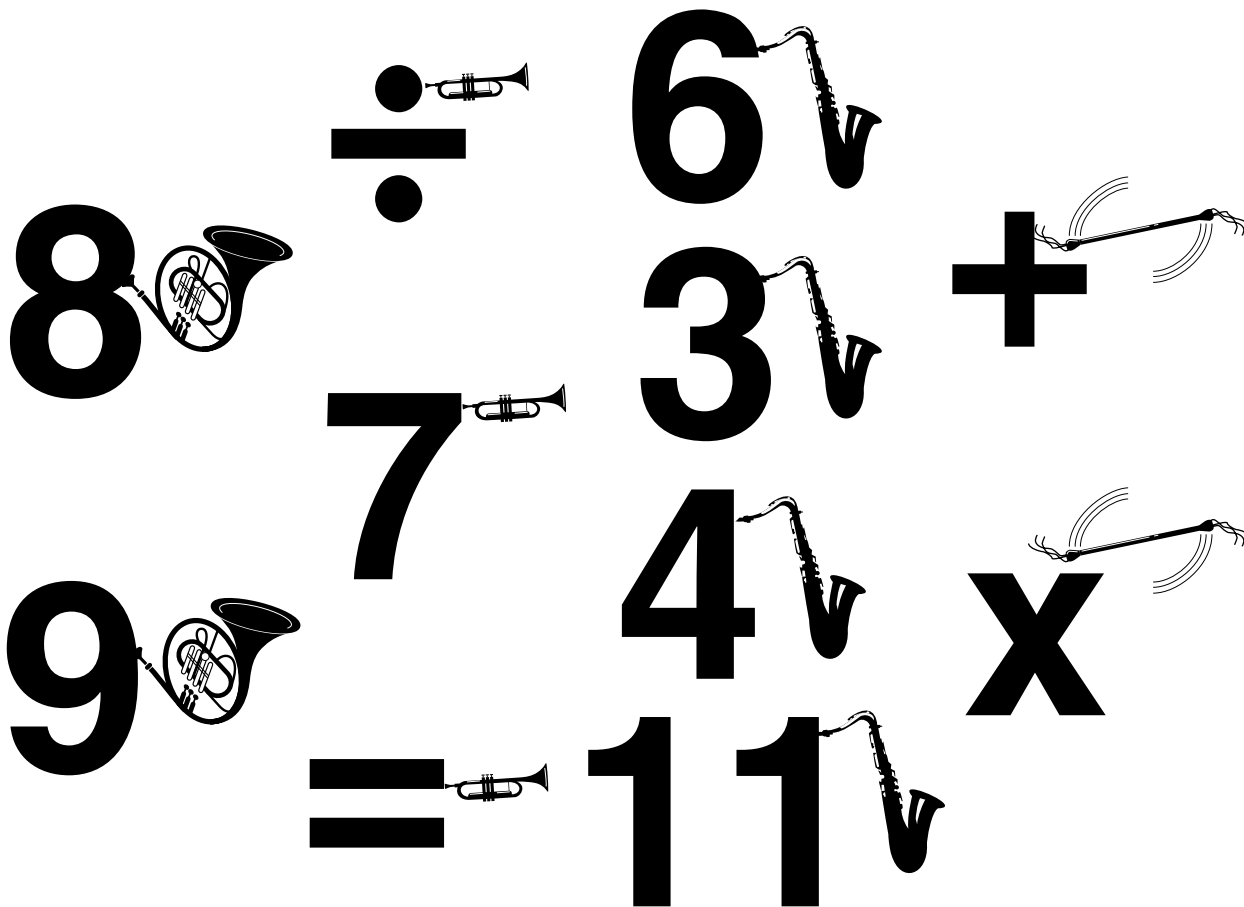
Make a copy of the Equation Parade master on page 36 for each student in the class. Cut the index cards in half. Then write each of the numbers 1 through 10 on two cards for each group.

● Go!

- Shuffle the cards. The first player draws three cards and shows two of the cards for the rest of the players to see. For example, say a player draws a 3, a 4, and a 7 and shows the 3 and the 4. The player then makes up and states an algebraic equation with one of the shown cards on the side by itself, the other shown card as the coefficient of x , and a solution of the number on the remaining card. For example, " $3x - 17 = 4$; What is my other number?"
- The first player to solve the equation raises his or her hand and offers a solution. If that player is correct, he or she scores 1 point and it is that player's turn to draw two cards, and so on. If that player is incorrect, he or she loses 1 point and play continues until someone gives the correct answer.
- The first player to score 10 points wins.

In-Class Game**Equation Parade** (Lesson 10-2)**Work in groups of four.**

- Shuffle the cards. The first player draws three cards and shows two of the cards for the rest of the players to see. For example, say a player draws a 3, a 4, and a 7 and shows the 3 and the 4. The player then makes up and states an algebraic equation with one of the shown cards on the side by itself, the other shown card as the coefficient of x , and a solution of the number on the remaining card. For example, " $3x - 17 = 4$; What is my other number?"
- The first player to solve the equation raises his or her hand and offers a solution. If that player is correct, he or she scores 1 point and it is that player's turn to draw two cards, and so on. If that player is incorrect, he or she loses 1 point and play continues until someone gives the correct answer.
- The first player to score 10 points wins.



In-Class Game

Guess My Rule (Lesson 11-2)

● Get Ready!

Separate the class into groups of two.

- Guess My Rule master, p. 38

● Get Set!

Make a copy of the Guess My Rule master on page 38 for each student.

● Go!

- Make a function table like the one at the right. Player A creates a function and secretly writes its equation on a piece of scrap paper.
- Player B writes a value for n in the function table. Then Player A writes the corresponding value for $f(n)$ in the table.
- Player B may guess the function rule at any time. If the guess is correct, the round ends and Player B receives 10 points. If the guess is incorrect, Player A receives 5 points and Player B may guess again immediately or continue writing values of n .
- After Player B correctly guesses the function, Player A receives one point for each value of n Player B wrote.
- Exchange positions for the next round.
- The winner is the player with the most points after four rounds.

n	$f(n)$

Name _____ Date _____

In-Class Game

Guess My Rule (Lesson 11-2)

Work in pairs.

- Make a function table like the one at the right. Player A creates a function and secretly writes its equation on a piece of scrap paper.
- Player B writes a value for n in the function table. Then Player A writes the corresponding value for $f(n)$ in the table.
- Player B may guess the function rule at any time. If the guess is correct, the round ends and Player B receives 10 points. If the guess is incorrect, Player A receives 5 points and Player B may guess again immediately or continue writing values of n .
- After Player B correctly guesses the function, Player A receives one point for each value of n Player B wrote.
- Exchange positions for the next round.
- The winner is the player with the most points after four rounds.



n	$f(n)$

In-Class Game

The Dozens Game (Lesson 1-6)

● Get Ready!

Separate the class into groups of four.

- The Dozens Game master, p. 2
- The Dozens Game Card masters, pp. 3–4
- 12 index cards per student 
- scissors 

● Get Set!

Make a copy of The Dozens Game master on page 2 for each student in the class. Have each student label a set of 12 index cards with the numbers 1 to 12. This is their deck. For each group, photocopy The Dozens Game Card master on page 3 onto blue card stock and cut out the cards. Photocopy The Dozens Game Card master on page 4 onto red or pink card stock and cut out the cards.

● Go!

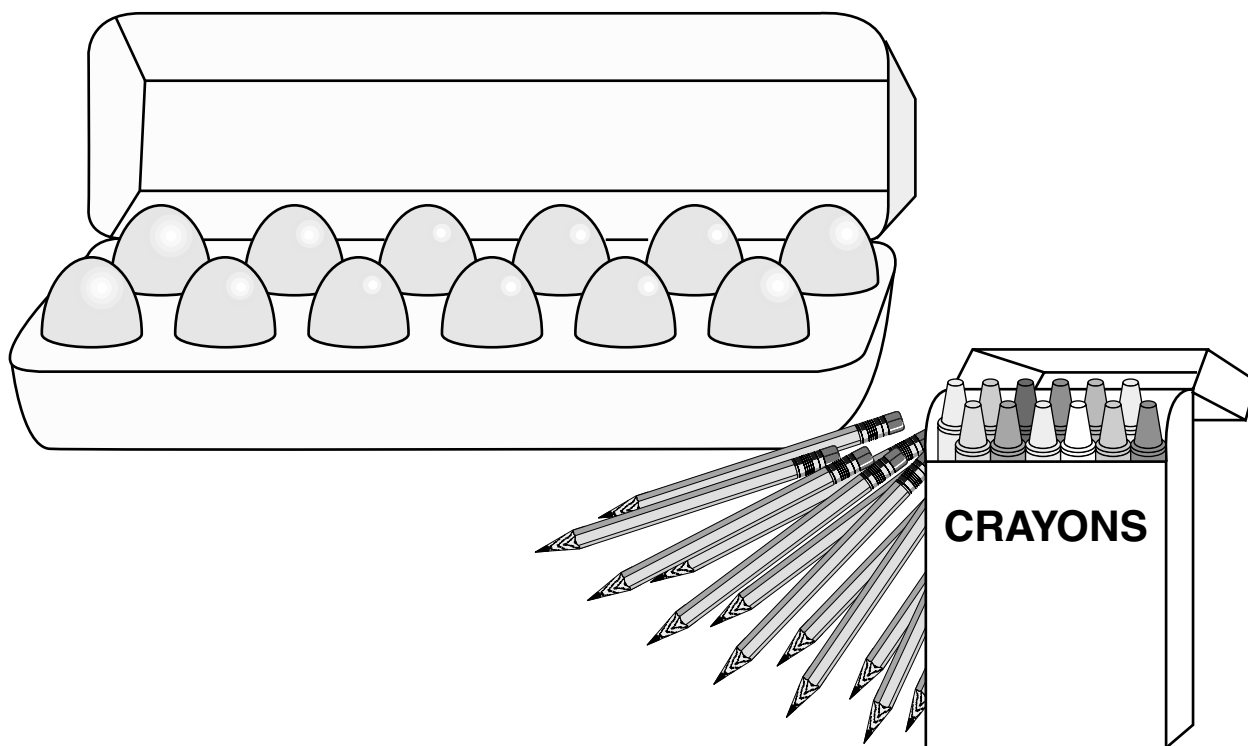
- Shuffle the red cards and the blue cards separately and place them facedown in two piles in the middle of the table. To begin the round, someone turns over a red card and a blue card. Each player selects an index card that matches the red card and places his or her chosen card facedown on the table. When everyone has placed a card down, the cards are turned over and the blue card is won by the player who played the best *nonduplicated* card. For example, suppose the red card is *highest giveaway* and the blue card is -20 . The player who plays the highest card is allowed to give the -20 card away to a player of his or her choice. If the red card is *lowest* and the blue card is *double your score*, the player who plays the lowest card doubles his or her score.
- No cards can be played more than once, and any scores that are not whole numbers should be rounded to the next whole number.
- Each player begins the game with 20 points. The winner is the first player to reach or pass 100 points.

In-Class Game

The Dozens Game (Lesson 1-6)

Work in groups of four.

- Shuffle the red cards and the blue cards separately and place them facedown in two piles in the middle of the table. To begin the round, someone turns over a red card and a blue card. Each player selects an index card that matches the red card and places his or her chosen card facedown on the table. When everyone has placed a card down, the cards are turned over and the blue card is won by the player who played the best *nonduplicated* card. For example, suppose the red card is *highest giveaway* and the blue card is -20 . The player who plays the highest card is allowed to give the -20 card away to a player of his or her choice. If the red card is *lowest* and the blue card is *double your score*, the player who plays the lowest card doubles his or her score.
- No cards can be played more than once, and any scores that are not whole numbers should be rounded to the next whole number.
- Each player begins the game with 20 points. The winner is the first player to reach or pass 100 points.



In-Class Game***The Dozens Game Blue Cards*** (Lesson 1-6)

+10	+10	+20	+20
+30	-10	-20	-30
double your score	cut your score in half	divide your score by 3	change sign

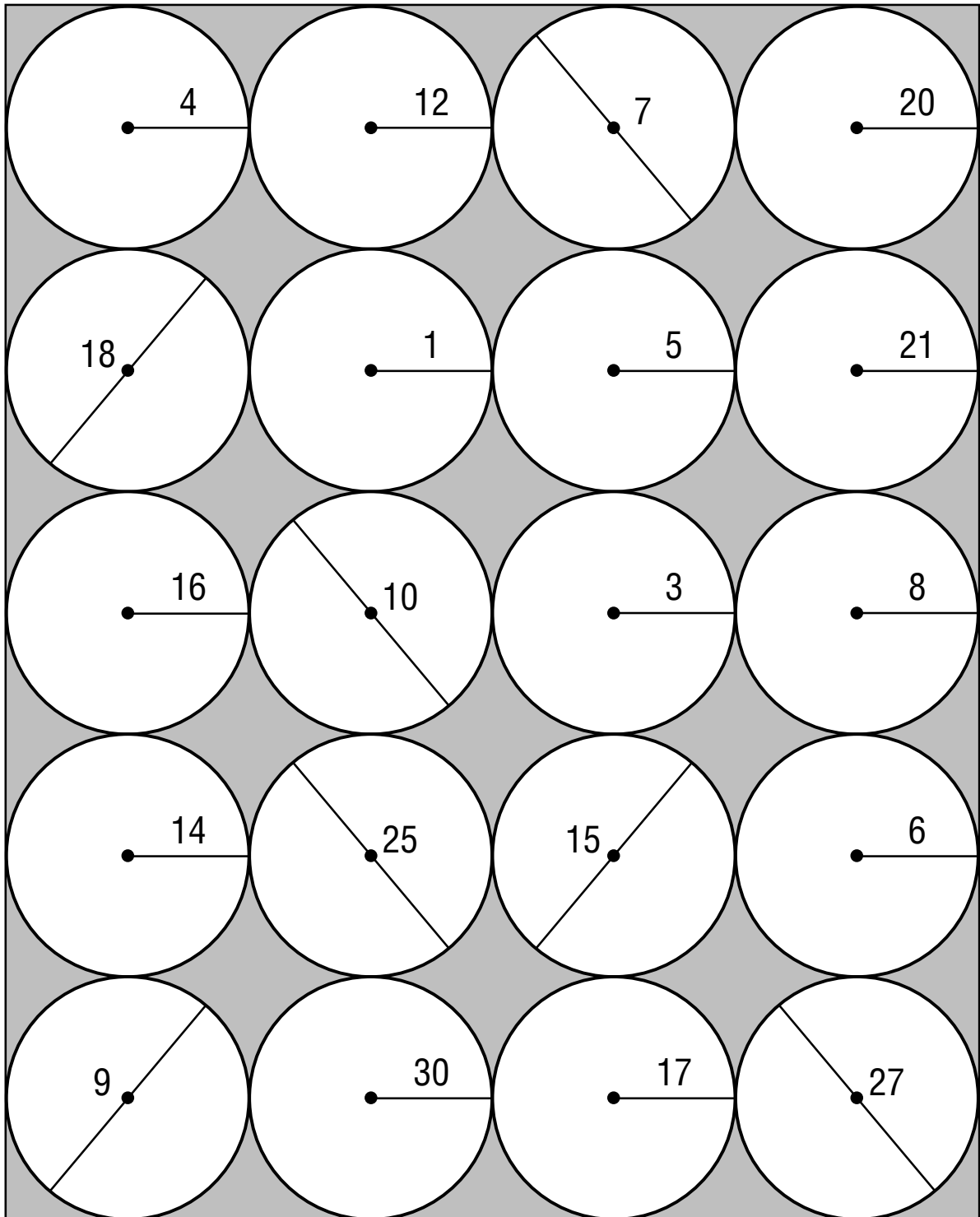
In-Class Game***The Dozens Game Red Cards*** (Lesson 1-6)

highest	highest	highest	lowest
lowest	lowest	highest giveaway	highest giveaway
lowest giveaway	lowest giveaway	second highest	second lowest

The Game Zone

Student Edition, p. 563

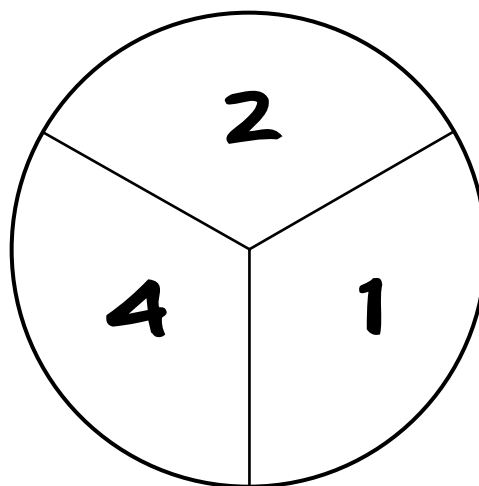
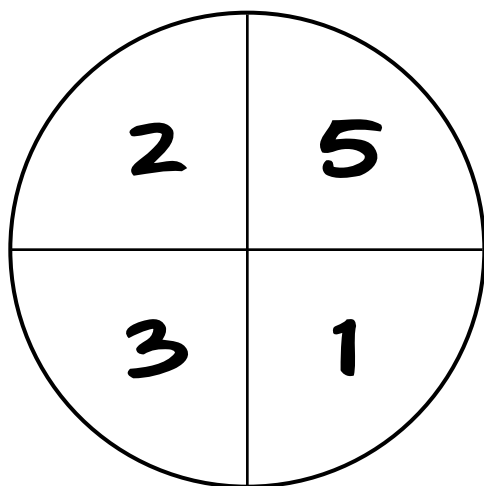
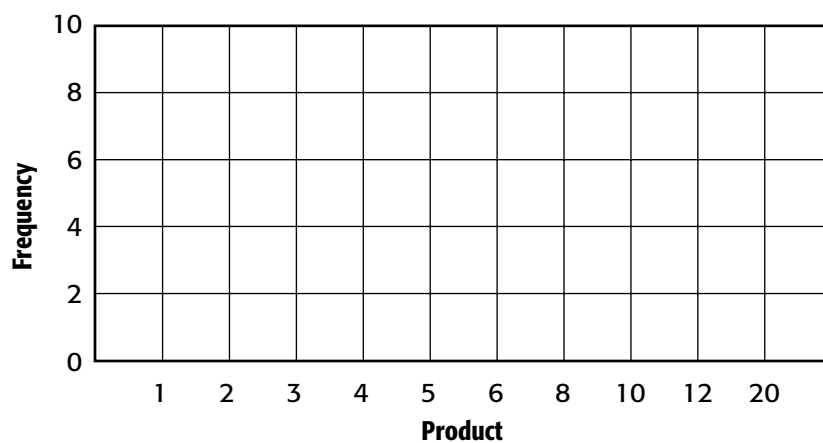
Times Up for Circles



The Game Zone

Student Edition, p. 71

Great Graph Race

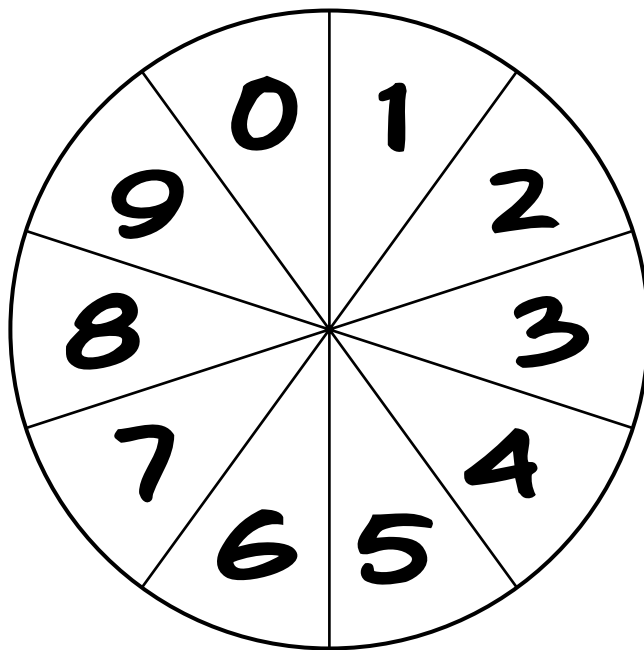


The Game Zone

Student Edition, p. 115

Decimal War

__ . __ __	__ . __ __	__ . __ __	__ . __ __
__ . __ __	__ . __ __	__ . __ __	__ . __ __
__ . __ __	__ . __ __		



The Game Zone

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Decimos

$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$

$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$

$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$

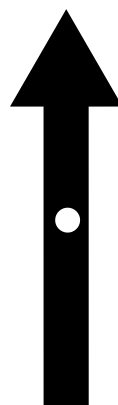
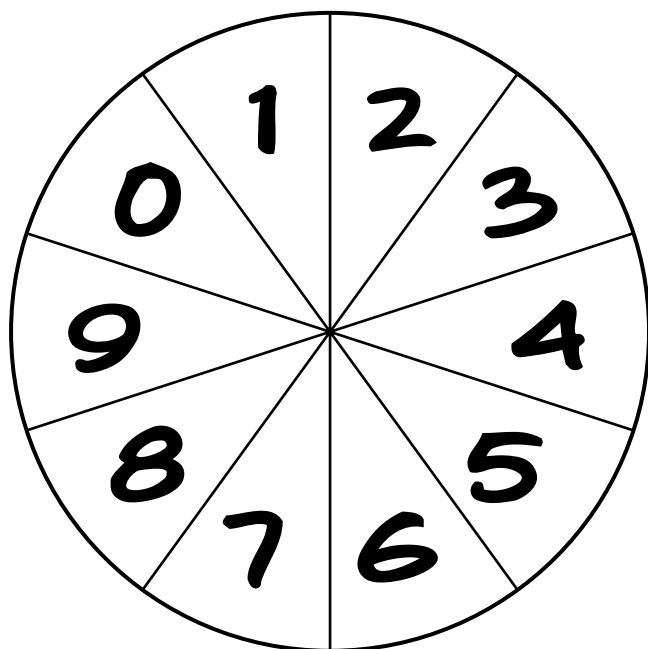
$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$

$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$

$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$

$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$

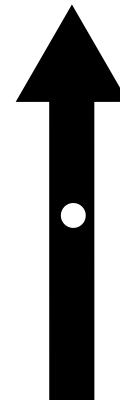
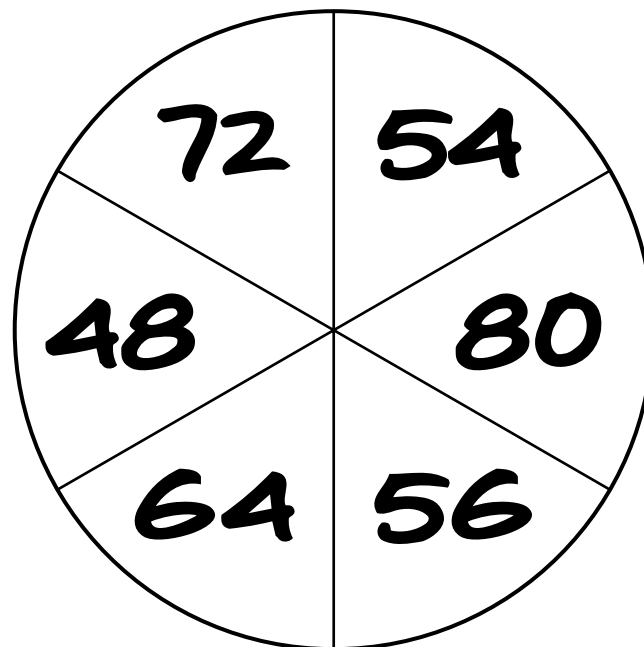
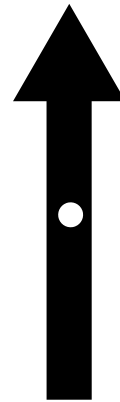
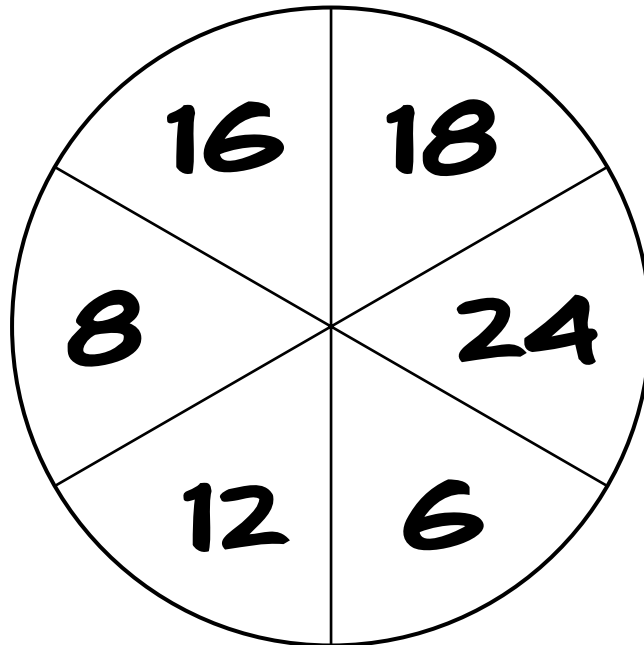
$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$

$$\underline{\quad} \cdot \underline{\quad} \div \underline{\quad}$$


The Game Zone

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GCF Spin-Off



The Game Zone

Student Edition, p. 233

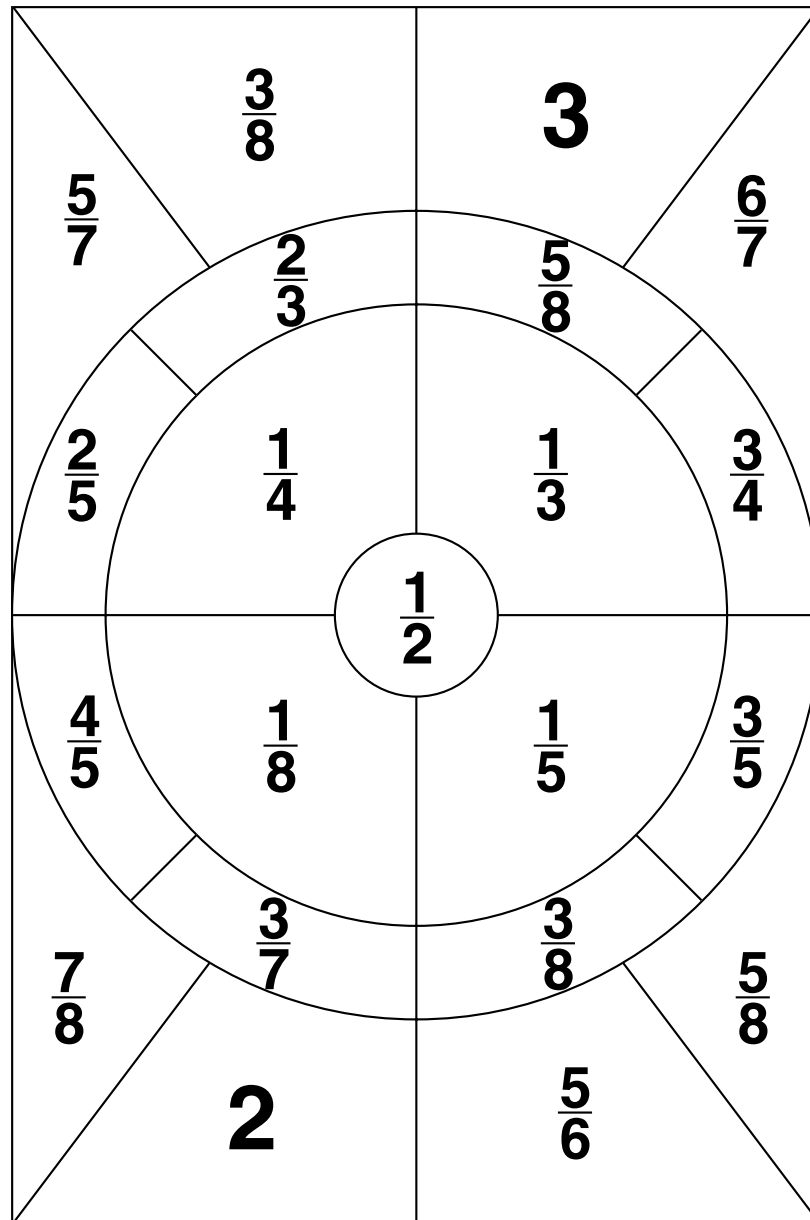
Fraction Rummy

$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{2}{5}$	$\frac{2}{5}$
$\frac{3}{5}$	$\frac{3}{5}$	$\frac{3}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{3}{10}$	$\frac{3}{10}$	$\frac{3}{10}$
$\frac{7}{10}$	$\frac{7}{10}$	$\frac{7}{10}$	$\frac{9}{10}$	$\frac{9}{10}$	$\frac{9}{10}$
$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{5}{12}$	$\frac{5}{12}$	$\frac{5}{12}$
$\frac{7}{12}$	$\frac{7}{12}$	$\frac{7}{12}$	$\frac{11}{12}$	$\frac{11}{12}$	$\frac{11}{12}$

The Game Zone

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Multiplication Chaos



The Game Zone

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Falling Off the Ends

-6
-5
-4
-3
-2
-1

0
1
2
3
4
5
6

The Game Zone

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Four in a Line

$a - 3 = 8$	$a - 4 = 12$	$a - 6 = -2$	$2 = a + 5$	$a + 1 = -8$	$3 = a + (-3)$
$b + 2 = 1$	$3 = b + 6$	$4 + b = 9$	$b - 8 = 2$	$b - 5 = 7$	$-2 = b - 3$
$c - 3 = 5$	$c - (-1) = 3$	$c - 4 = 8$	$4 = c + 1$	$c + 8 = 2$	$5 = c + (-2)$
$6 + d = 7$	$d + (-1) = 2$	$d + 3 = 1$	$d - 2 = -5$	$d - 5 = 3$	$2 = d - (-2)$

a	b	c	d
			FREE
	FREE		

Solutions

a : -9, -3, 4, 6, 11, 16

b : -3, -1, 1, 5, 10, 12

c : -6, 2, 3, 7, 8, 12

d : -3, -2, 0, 1, 3, 8

The Game Zone

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Fishin' for Ratios

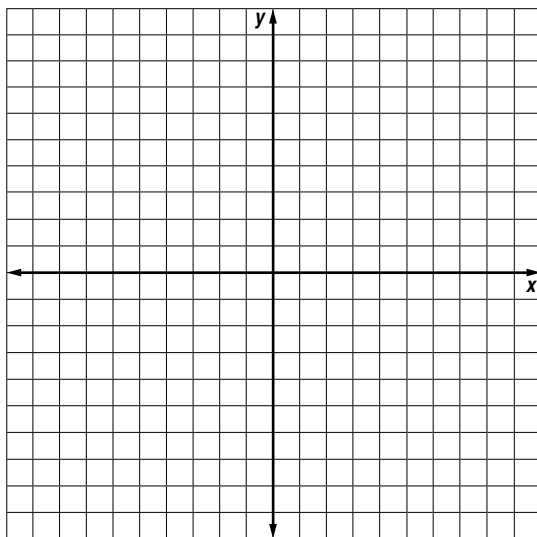
$\frac{1}{2}$	$\frac{1}{4}$	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{3}$
$\frac{2}{5}$	$\frac{3}{7}$	$\frac{1}{5}$	$\frac{4}{5}$	$\frac{3}{5}$	$\frac{5}{8}$
$\frac{5}{7}$	$\frac{5}{9}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{2}{7}$	$\frac{2}{9}$

The Game Zone

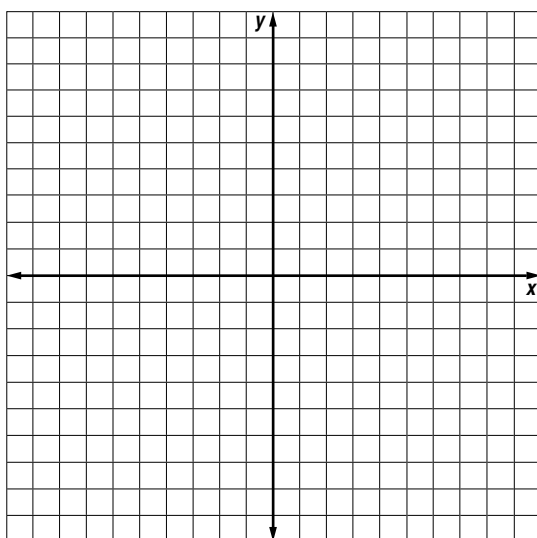
Student Edition, p. 531

It's a Hit

My Graph



My Hits and Misses



The Game Zone

Student Edition, p. 483

Mystery Measurements Answer Key

Object	Measurement

The Game Zone

Student Edition, p. 519

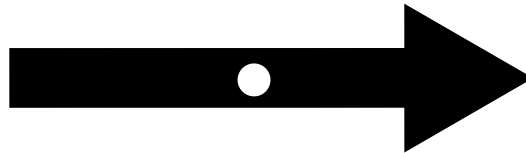
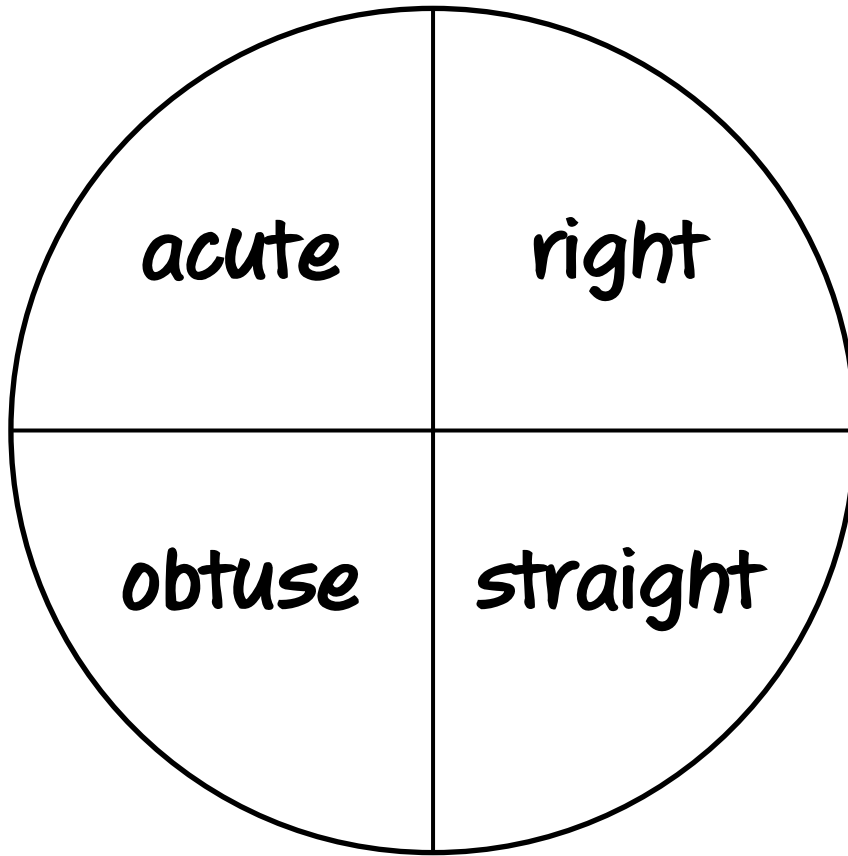
Wild Angles

5°	5°	10°	10°	15°	15°
20°	20°	25°	25°	30°	30°
35°	35°	40°	40°	45°	45°
50°	50°	55°	55°	60°	60°
65°	65°	70°	70°	75°	75°
80°	80°	85°	85°	90°	90°
Wild	Wild	Wild	Wild	Wild	Wild

The Game Zone

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Wild Angles



The Game Zone

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Facto Bingo

Facto Bingo									
			Free Space						

Facto Bingo Numbers									
6	9	10	13	15	18	20	21	24	25
28	32	37	40	43	45	48	50	52	55
59	60	62	64	66	67	69	70	72	74
75	76	79	80	85	88	89	90	96	98

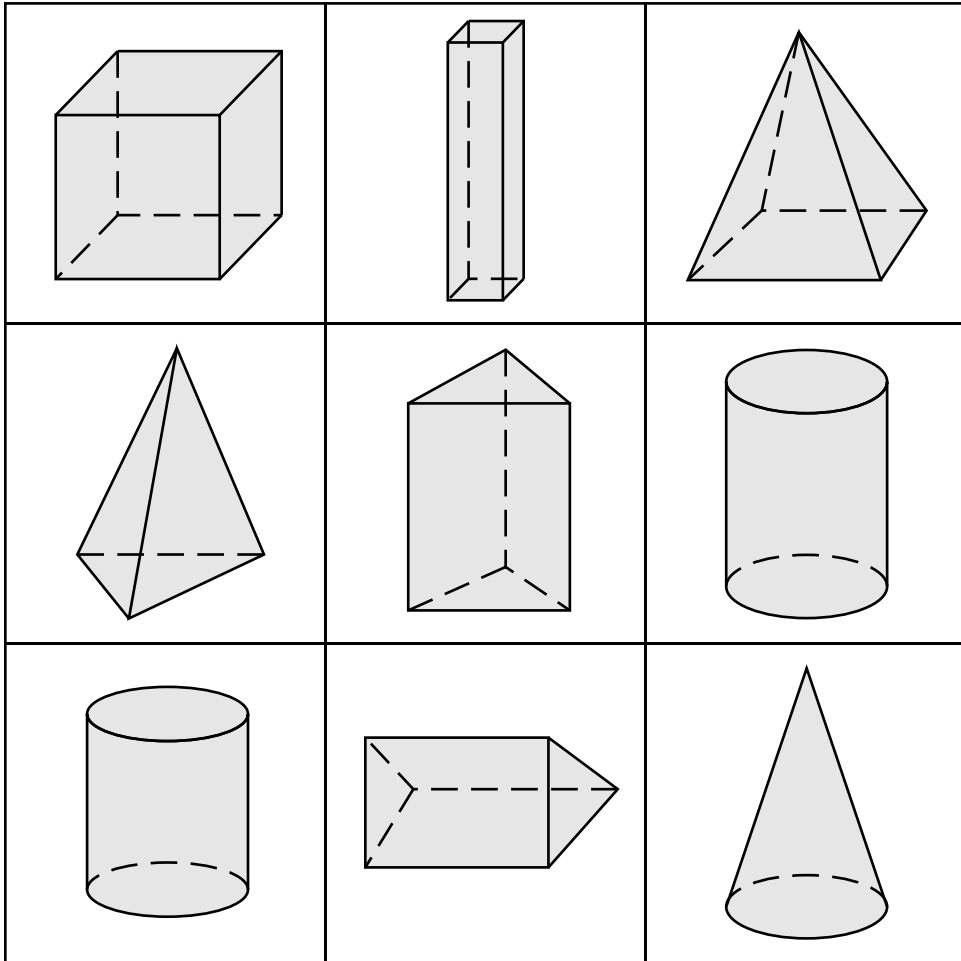
Facto Bingo									
			Free Space						

Facto Bingo Numbers									
6	9	10	13	15	18	20	21	24	25
28	32	37	40	43	45	48	50	52	55
59	60	62	64	66	67	69	70	72	74
75	76	79	80	85	88	89	90	96	98

The Game Zone

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Shape-Tac-Toe



The Game Zone

Student Edition, p. 215

The Factor Fair

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	32	33	34	35	36

The Game Zone

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Totally Mental

$$\frac{\square}{\square} \times \frac{\square}{\square}$$

$$\frac{\square}{\square} \times \frac{\square}{\square}$$

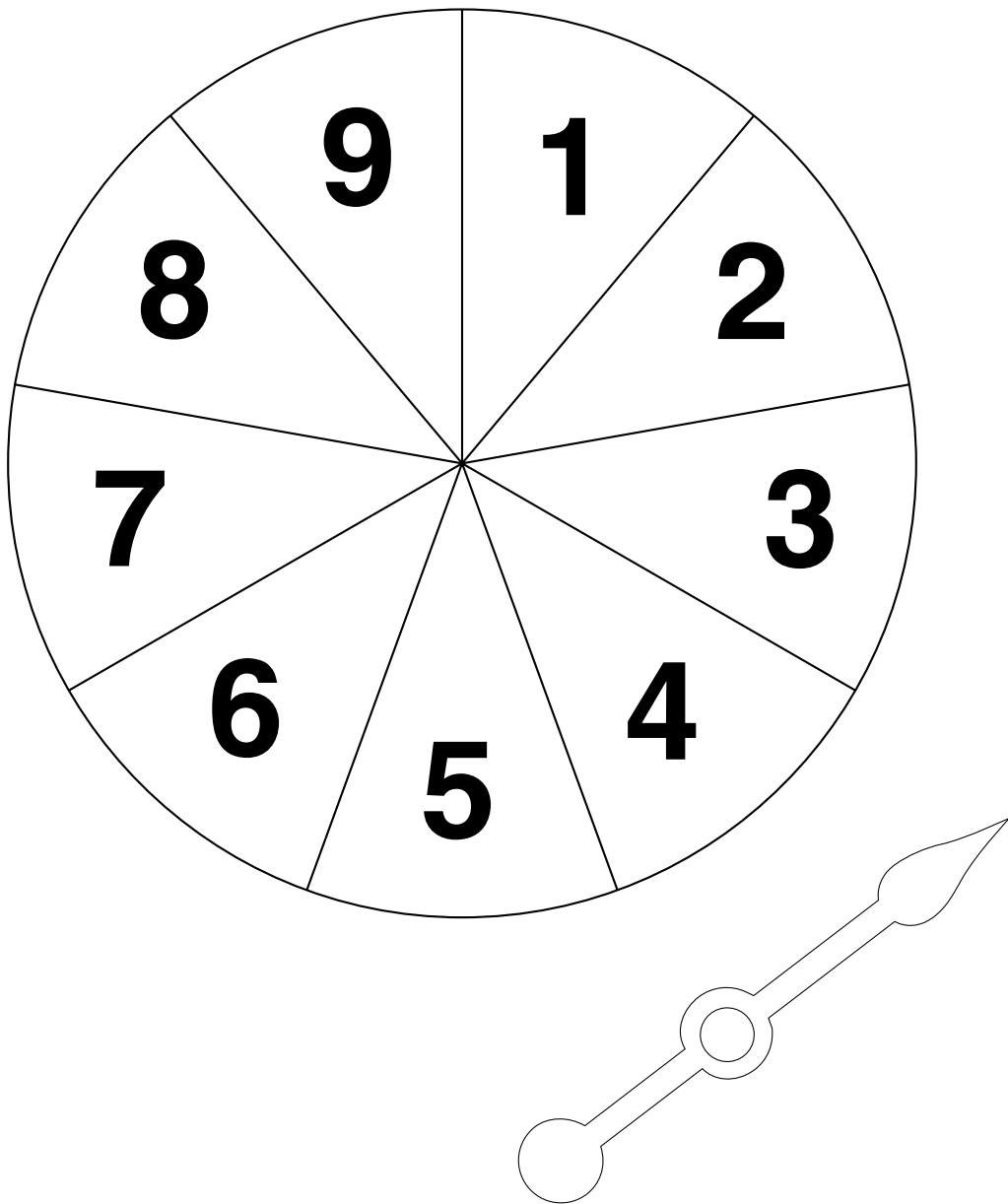
$$\frac{\square}{\square} \times \frac{\square}{\square}$$

$$\frac{\square}{\square} \times \frac{\square}{\square}$$

The Game Zone

Student Edition, p. 263

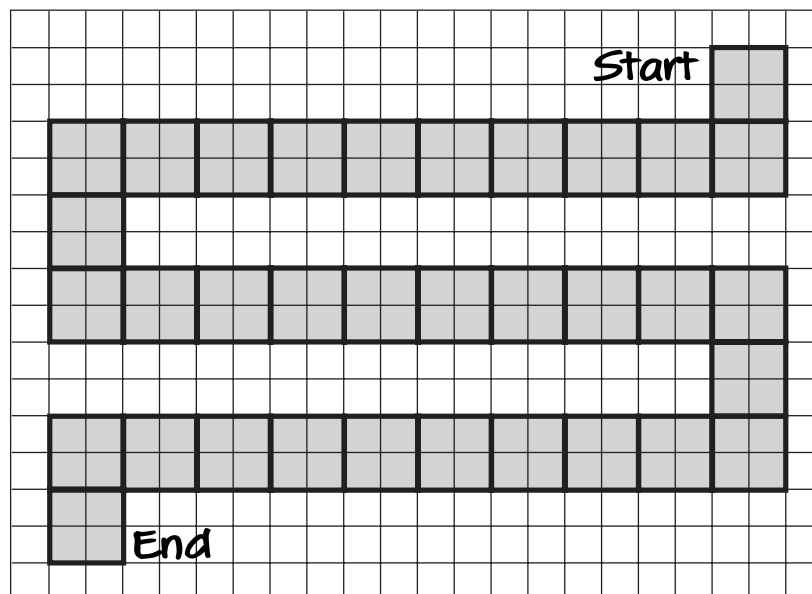
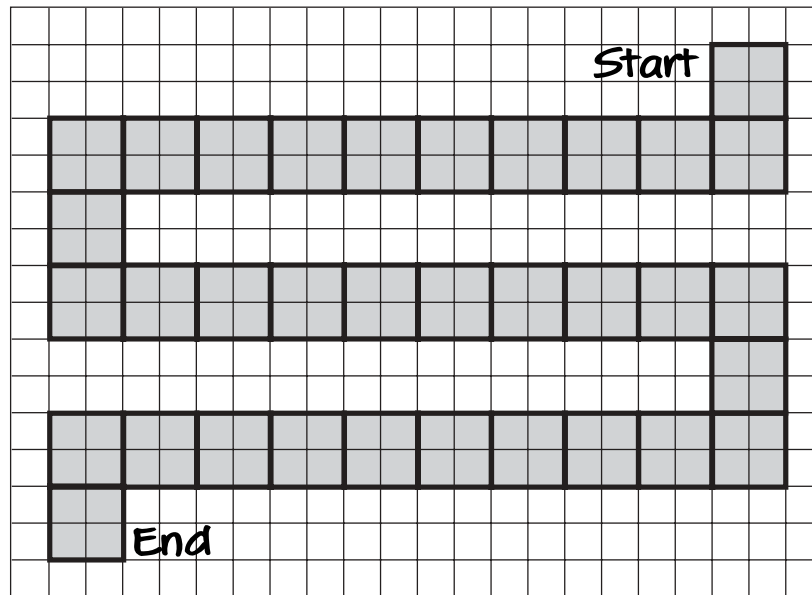
Totally Mental



The Game Zone

Student Edition, p. 311

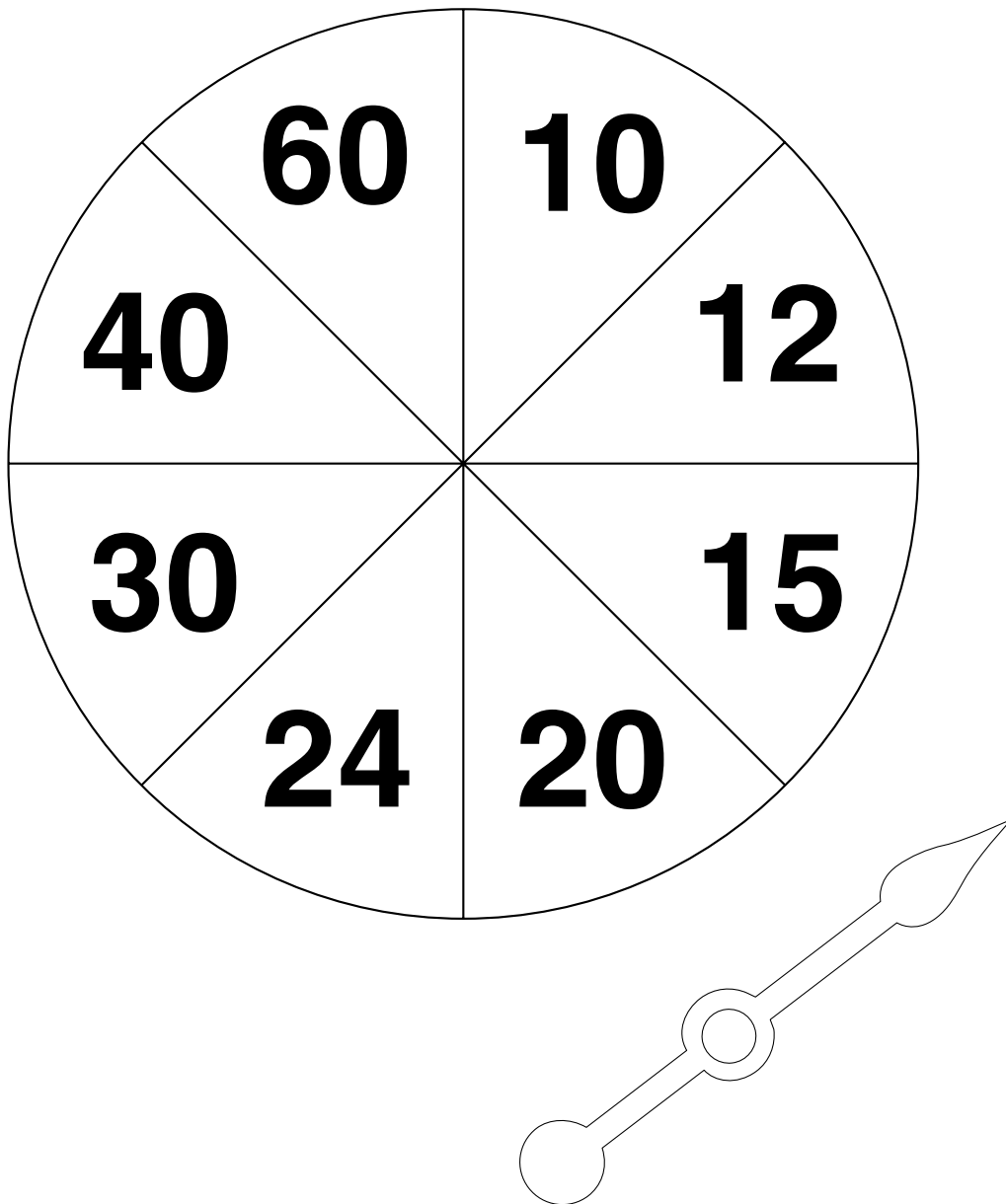
Racing with Proportions



The Game Zone

Student Edition, p. 311

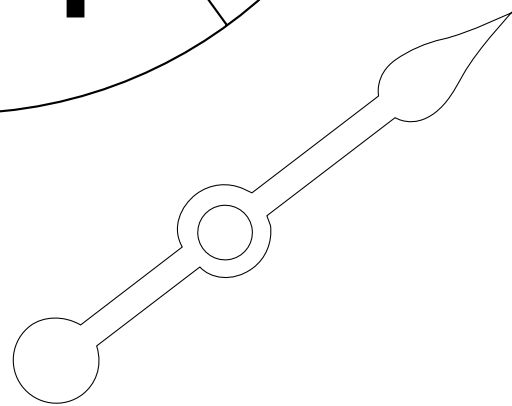
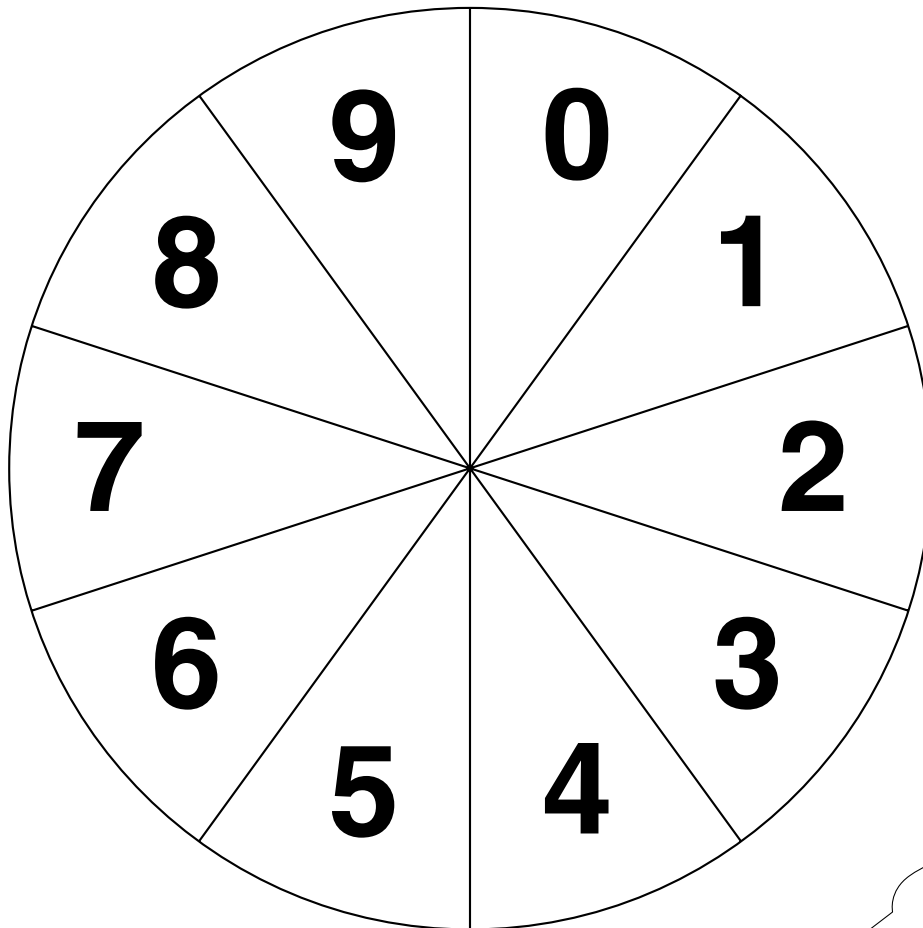
Racing with Proportions



The Game Zone

Student Edition, p. 349

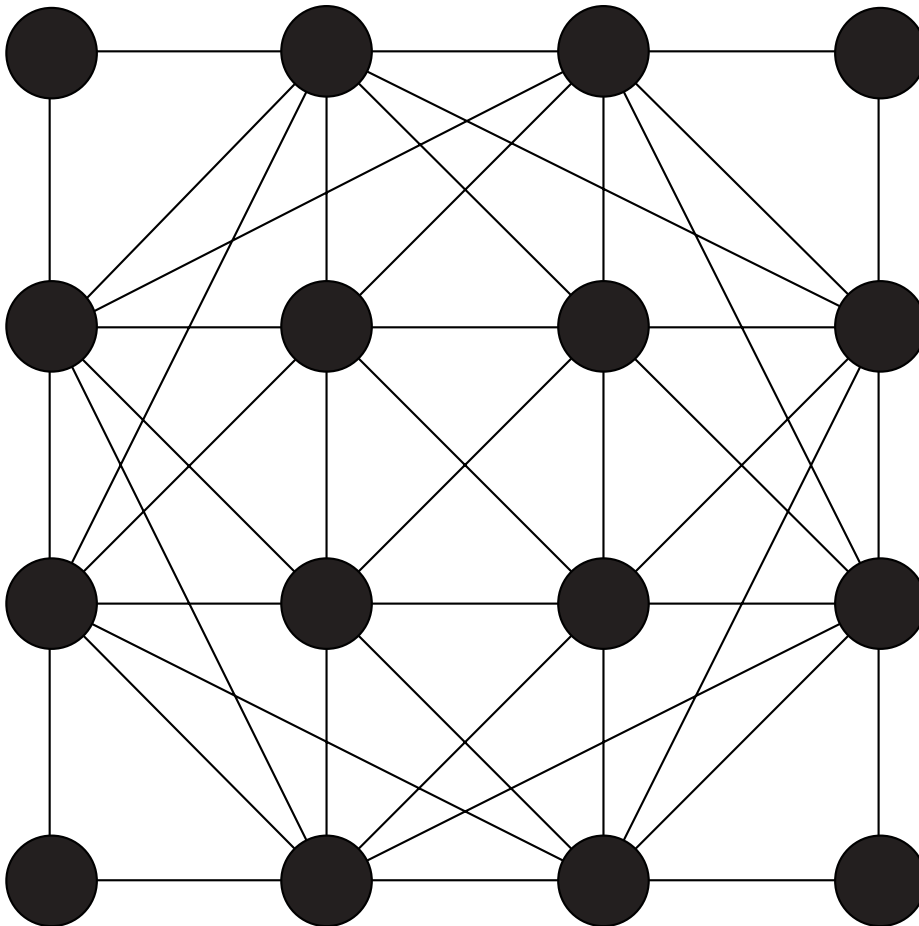
Spinning for Percents



The Game Zone

Student Edition, p. 439

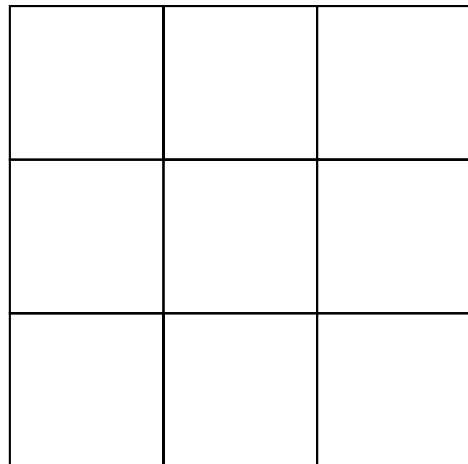
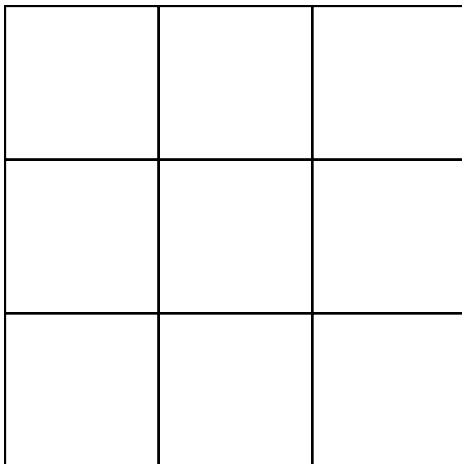
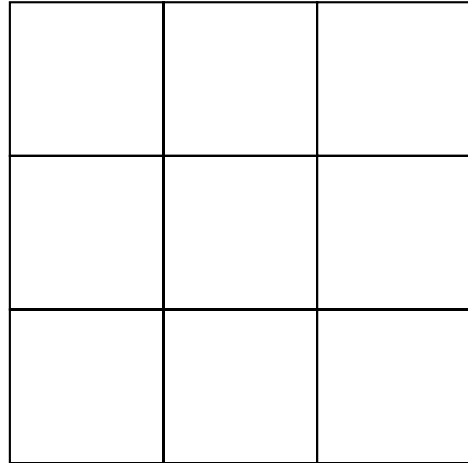
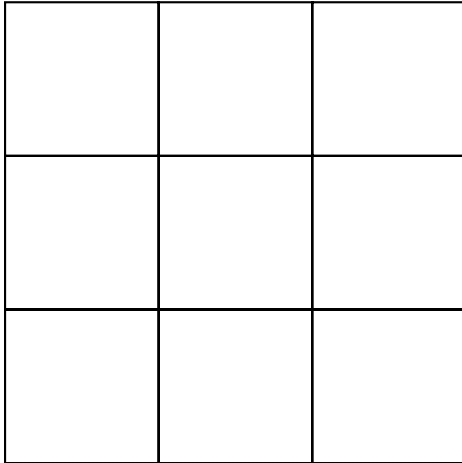
Squares Everywhere!



The Game Zone

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Tic Tac Root



The Game Zone

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Tic Tac Root

$\sqrt{1}$	$\sqrt{4}$	$\sqrt{9}$	$\sqrt{16}$
$\sqrt{25}$	$\sqrt{36}$	$\sqrt{49}$	$\sqrt{64}$
$\sqrt{81}$	$\sqrt{100}$	$\sqrt{121}$	$\sqrt{144}$

The Game Zone

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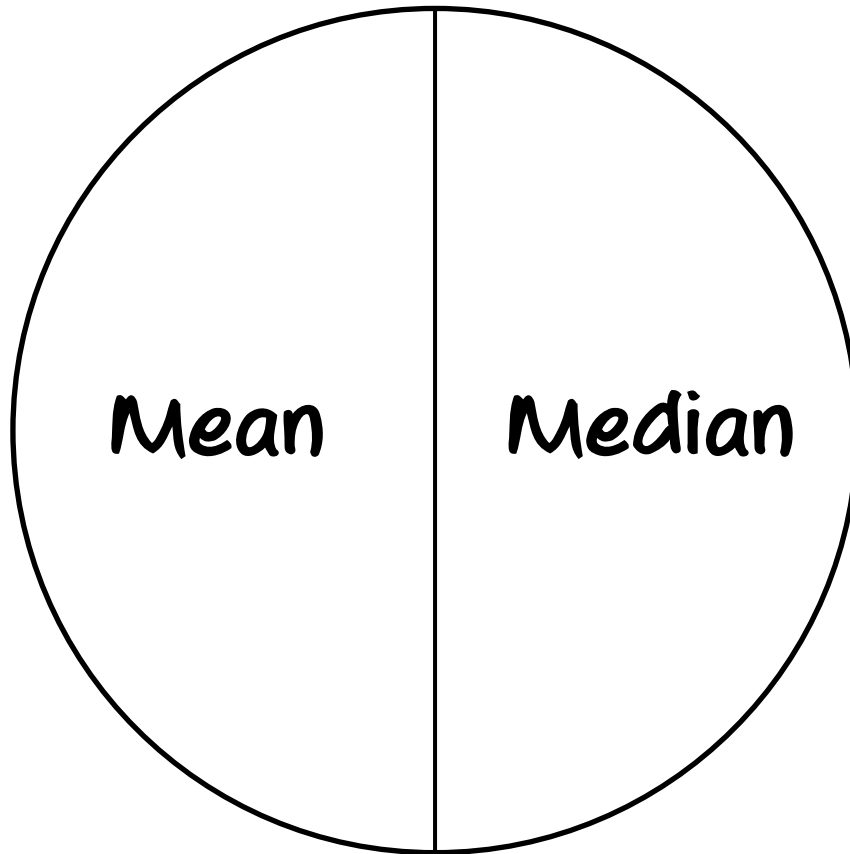
Tic Tac Root

$\sqrt{169}$	$\sqrt{196}$	$\sqrt{225}$	$\sqrt{256}$
$\sqrt{289}$	$\sqrt{324}$	$\sqrt{361}$	$\sqrt{400}$

The Game Zone

Student Edition, p. 441

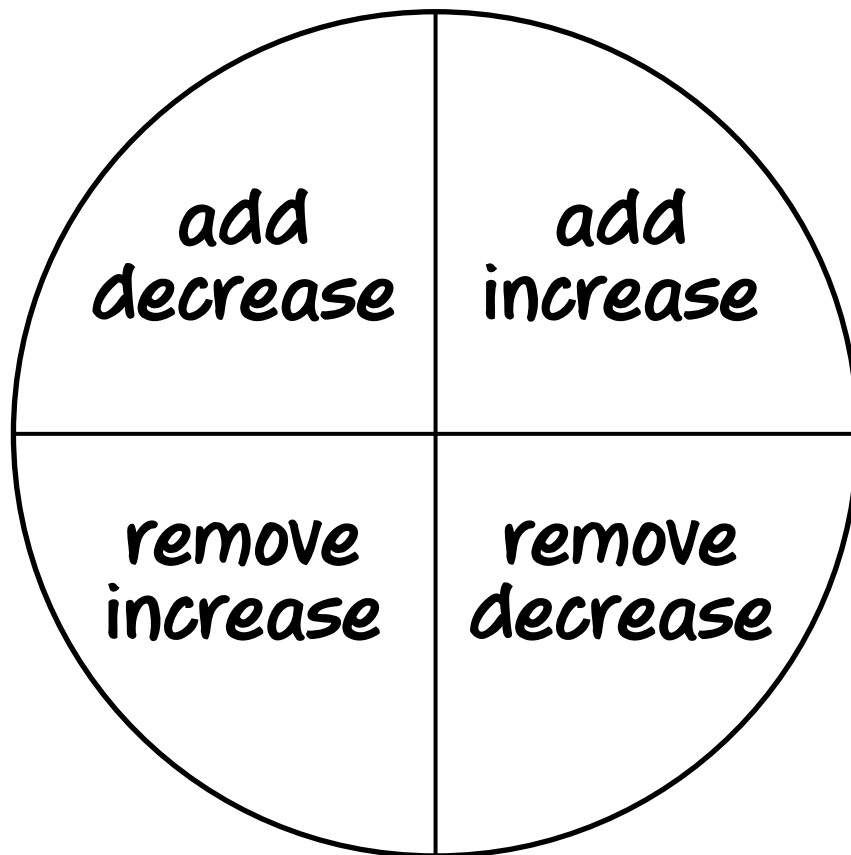
What's the Average?



The Game Zone

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What's the Average?



The Game Zone

Student Edition, p. 175

Criss Cross

1	1	1	1	2	2	2	3
3	3	4	4	4	5	5	5
6	6	6	7	7	7	8	8
8	9	9	9	10	10	11	11
12	12	13	13	14	14	15	15
16	16	18	18	20	22	24	25

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Criss Cross

Criss Cross

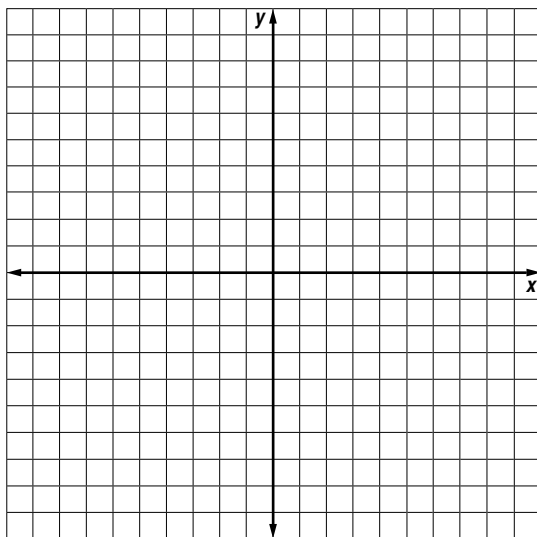
	=	

The Game Zone

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It's a Hit

My Graph



My Hits and Misses

