Math Skills Student Kits – Grade 3 Activities

These activities were selected for use with the Didax® Math Skills Student Kit for Grade 3 (item #211996). You can use the Bookmarks in this PDF file to navigate to the activities.

STUDENT NAME .....

PLACE VALUE

NUMBER AND OPERATIONS

1. Write each amount as numerals; for example, 4 hundreds + 2 tens = 420.

(a) 9 tens + 7 ones =

(b) 2 hundreds + 9 ones =

(c) 5 hundreds + 4 tens + 7 ones =

(d) 9 thousands + 3 hundreds + 5 tens + 8 ones =

(e) 6 thousands + 6 tens =

(f) 1 thousand + 1 one =

2. Write the numbers in expanded form; for example, 423 = (400) + (20) + (3).

(a) 475 _____ + _____ + _____

(b) 1,384 _____ + _____ + _____ + _____

(c) 6,599 _____ + _____ + _____ + _____

(d) 3,642 _____ + _____ + _____ + _____

(e) 2,459 _____ + _____ + _____ + _____

3. Complete the table for the boldface number.

	Number	Place Value	Expanded Form	Meaning
	42	tens	4 × 10	40
(a)	7**5**			
(b)	1**2**6			
(c)	**3**04			
(d)	2,4**9**3			
(e)	5,00**5**			
(f)	**7**,224			
(g)	4,**8**11			

4. Write the missing number.

(a) 200 + 7 = _____ (b) 70 + _____ = 79 (c) _____ + 30 + 2 = 432

(d) 3,000 + 500 = _____ (e) _____ + 8 = 4,008

STUDENT NAME .....

ADDITION

NUMBER AND OPERATIONS

1. (a) 4 + 7 = _____ (b) 8 + 8 = _____ (c) 9 + 7 = _____

(d) 8 + 5 = _____ (e) 9 + 9 = _____ (f) 7 + 6 = _____

(g) 5 + 10 = _____ (h) 20 + 6 = _____

2.

(a)	(b)	(c)	(d)	(e)	(f)
21	62	34	45	73	64
+ 43	+ 35	+ 53	+ 44	+ 25	+ 23
_____	_____	_____	_____	_____	_____

3.

(a)	(b)	(c)	(d)	(e)	(f)
47	59	48	49	84	56
+ 39	+ 37	+ 28	+ 41	+ 7	+ 36
_____	_____	_____	_____	_____	_____

4.

(a)	(b)	(c)	(d)	(e)
510	624	488	509	378
+ 69	+ 136	+ 204	+ 272	+ 408
_____	_____	_____	_____	_____

5.

(a)	(b)	(c)	(d)	(e)
22	31	26	101	210
11	14	26	202	146
+ 23	+ 16	+ 26	+ 314	+ 225
_____	_____	_____	_____	_____

6. Complete the squares so each row, column, and diagonal in each square has the same sum.

(a)

2	7	6
9		
	3	

(b)

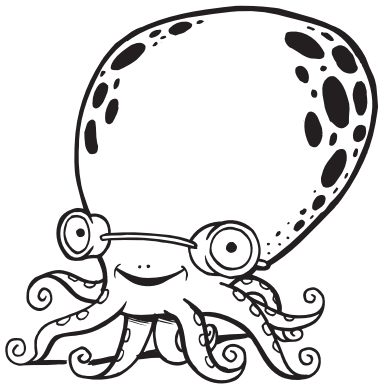
9		
	8	
5	12	7

(c)

	2	7
4		8
		3

(d)

	14	7
8	10	
	6	



STUDENT NAME .....

SUBTRACTION

NUMBER AND OPERATIONS

1. (a) 10 – 8 = _____ (b) 9 – 6 = _____ (c) 12 – 4 = _____

(d) 15 – 10 = _____ (e) 20 – 5 = _____ (f) 17 – 8 = _____

(g) 19 – 11 = _____ (h) 23 – 8 = _____

2.

(a)	(b)	(c)	(d)	(e)	(f)
43	59	38	78	60	87
– 21	– 42	– 18	– 57	– 20	– 52
_____	_____	_____	_____	_____	_____

3.

(a)	(b)	(c)	(d)	(e)
166	387	578	555	694
– 42	– 144	– 265	– 323	– 203
_____	_____	_____	_____	_____

4.

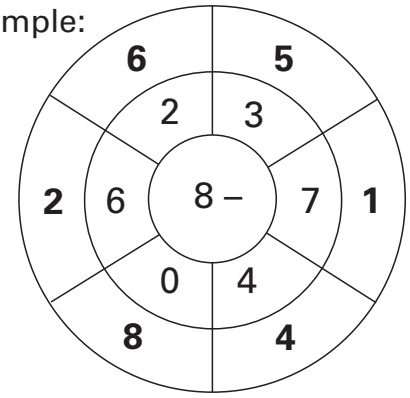
(a)	(b)	(c)	(d)	(e)	(f)
84	62	73	64	81	92
– 56	– 35	– 25	– 59	– 68	– 49
_____	_____	_____	_____	_____	_____

5.

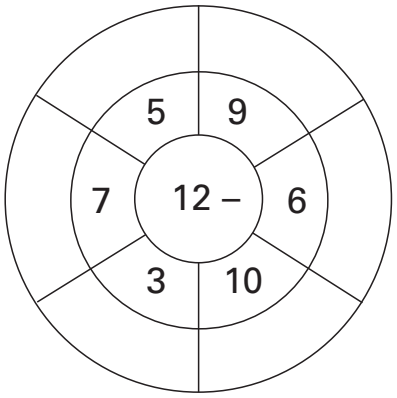
(a)	(b)	(c)	(d)	(e)
384	468	637	340	514
– 167	– 229	– 324	– 125	– 208
_____	_____	_____	_____	_____

6. Complete the subtraction wheels.

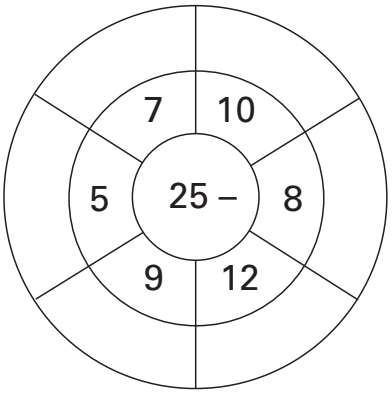
(a) Example:



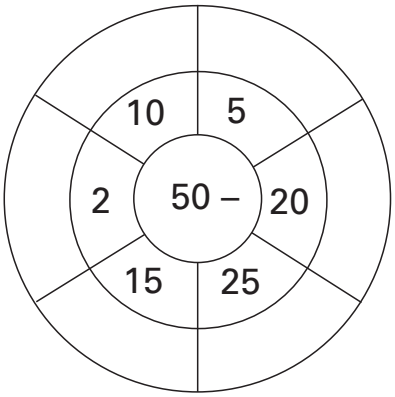
(b)



(c)



(d)



STUDENT NAME .....

MULTIPLICATION PROBLEMS

NUMBER AND OPERATIONS

1. Four softball teams ordered new shirts. If there were nine girls in each team, how many shirts were ordered?

2. Darcy, Malik, and Blake each had 15 DVDs. How many DVDs were there altogether?

3. Four bags of orange slices each have 14 slices. How many slices are there altogether?

4. If there are 12 roses in one bunch, how many are there in five bunches?

5. Three shelves of books each held 28 books. How many books were there altogether?

6. Two magazines each have 134 pages. How many pages do they have altogether?

7. Seven classes each had 31 students. How many students were there altogether?

8. Eighteen rows each have six plants. How many plants are there altogether?

9. How many stickers are there in total if each box contains 225 stickers and there are four boxes altogether?

10. A play had an attendance of 260 people each night over one week. How many people attended in total?

11. Write your own word problems using the numbers given. Write and solve each problem.

(a) 3 × 202

(b) 155 × 2

STUDENT NAME .....

DIVISION

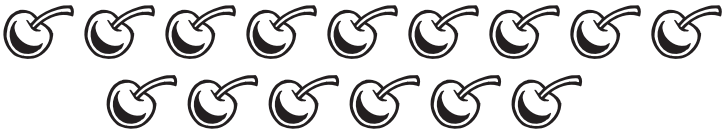
NUMBER AND OPERATIONS

1. Divide the amounts into:

(a) two groups. 

(b) three groups. 

(c) four groups. 

(d) five groups. 

2. (a) $4 \div 2 =$ _____ (b) $12 \div 3 =$ _____ (c) $14 \div 2 =$ _____

(d) $20 \div 4 =$ _____ (e) $28 \div 4 =$ _____ (f) $30 \div 6 =$ _____

(g) $50 \div 5 =$ _____ (h) $49 \div 7 =$ _____

3. (a) $2\overline{)22}$ (b) $3\overline{)36}$ (c) $3\overline{)24}$ (d) $4\overline{)32}$ (e) $5\overline{)55}$

4. Write two division problems for each multiplication problem; for example:

	2 × 5 = 10	**10 ÷ 2 = 5**	**10 ÷ 5 = 2**
(a) $6 \times 3 =$	_____	_____	_____
(b) $4 \times 7 =$	_____	_____	_____
(c) $3 \times 8 =$	_____	_____	_____
(d) $5 \times 9 =$	_____	_____	_____
(e) $7 \times 6 =$	_____	_____	_____

5. Complete each division problem, including the remainder; for example: 7 ÷ 2 = 3 r 1.

(a) $13 \div 3 =$ _____ r _____ (b) $24 \div 5 =$ _____ r _____ (c) $22 \div 3 =$ _____ r _____

(d) $29 \div 5 =$ _____ r _____ (e) $19 \div 4 =$ _____ r _____ (f) $47 \div 7 =$ _____ r _____

6. Complete each division problem, including the remainder; for example: $2\overline{)15}$ $\begin{matrix}7\ \text{r}1\end{matrix}$.

(a) $3\overline{)22}$ (b) $6\overline{)26}$ (c) $4\overline{)39}$ (d) $5\overline{)57}$ (e) $7\overline{)30}$

STUDENT NAME .....

DIVISION PROBLEMS

NUMBER AND OPERATIONS

1. There are 35 pencils to share between seven children. How many pencils will each child get?

2. Alice divided 32 apples among four bags. How many apples were in each bag?

3. Sixty-six students were sitting in six equal rows. How many students were in each row?

4. Two baseball card packs provide 24 cards altogether. How many cards are there each for eight people?

5. Forty-eight students traveled on two buses. How many students were there on each bus?

6. Sixty flowers are shared equally among five vases. How many flowers are there in each vase?

7. Eighty-four books were divided equally among seven shelves. How many books were on each shelf?

8. Four friends shared 30 grapes. How many did each receive? How many were left?

9. If there are 108 biscuits in nine packets, how may biscuits are there in one packet?

10. A book has 63 pages divided into seven equal chapters. How many pages are in each chapter?

11. Write your own word problems using the numbers given. Solve each problem.

(a) 56 ÷ 8

(b) 62 ÷ 6

Directions for Sum Dice Graph Activities

Objectives:

- Practice computing the sum of number combinations 1 through 12
- Practice multiplication facts 2 through 12
- Recognize and reinforce the sequence of multiples
- Practice directionality on an *x*–*y* axis

Introduce the Sum Dice Graphs by demonstrating on an overhead.

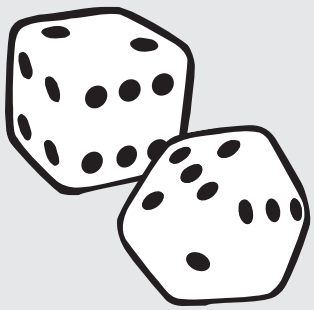
How to Play

- Toss 2 dice. Find the sum. Multiply the sum by the number specified for that activity.
- Multiples of the number are in sequence on the *x*-axis (bottom row) of the graph.
- Find the multiple and write the multiple in the box above it, or write the number sentence that produced the multiple. For example, for 16 write 2 × 8.

Variations

The student tosses the dice, finds the sum, and multiplies the sum by the number specified on the chart, but instead of recording the product, performs any of the following variations:

- Doubles or triples the multiple
- Halves the multiple
- Adds 5 to the multiple and halves the result



- Adds 7, 8, 9, 10, or 11 to the multiple
- Subtracts 7, 8, 9, 10, 11… (It's possible that a negative number will result!)
- Divides the product by 3 (or any number from 2 to 12)

The student then records that computation in the product column.

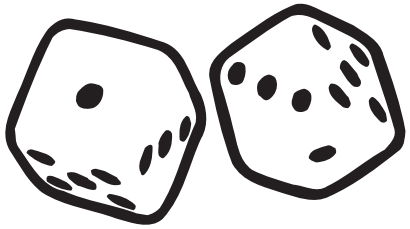
Discussion

- When the students have completed their graphs, call attention to the patterns that have emerged.
- Examine the data on many graphs. What columns are more likely to be filled in? Lead students to look at the distribution of sums when tossing 2 dice. (Probability)
- Some students will not notice that the multiples are in sequence on the *x*-axis and will use repeated addition or recall to arrive at the multiplication fact.
- Some students may need to be led to see how to use the information on the graph as a tool.

2 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by* **2.**
- *Fill in the box above the multiple.*

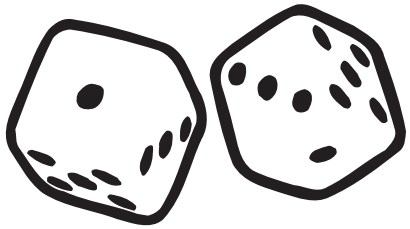


4	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**22**	**24**

3 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by* ***3.***
- *Fill in the box above the multiple.*

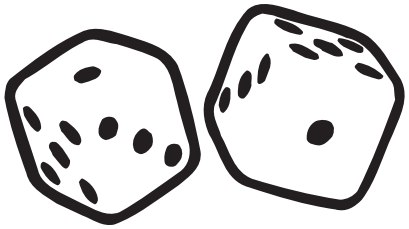


6	**9**	**12**	**15**	**18**	**21**	**24**	**27**	**30**	**33**	**36**

4 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by* ***4.***
- *Fill in the box above the multiple.*

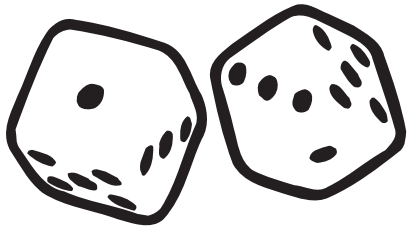


8	**12**	**16**	**20**	**24**	**28**	**32**	**36**	**40**	**44**	**48**

5 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by **5**.*
- *Fill in the box above the multiple.*

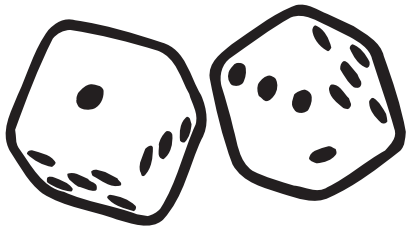


10	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**

6 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by* ***6.***
- *Fill in the box above the multiple.*

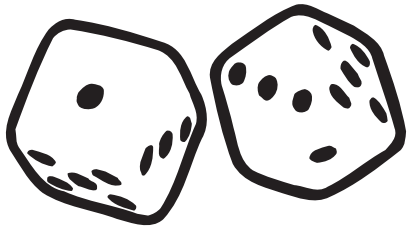


12	**18**	**24**	**30**	**36**	**42**	**48**	**54**	**60**	**66**	**72**

7 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by* **7.**
- *Fill in the box above the multiple.*

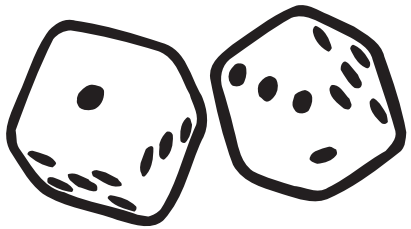


14	**21**	**28**	**35**	**42**	**49**	**56**	**63**	**70**	**77**	**84**

8 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by **8**.*
- *Fill in the box above the multiple.*

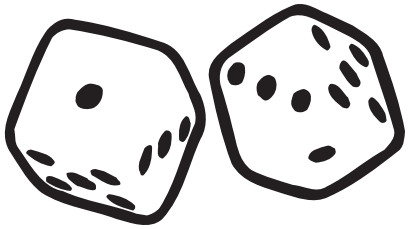


16	**24**	**32**	**40**	**48**	**56**	**64**	**72**	**80**	**88**	**96**

9 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by* ***9.***
- *Fill in the box above the multiple.*

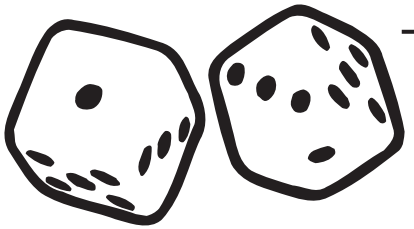


18	**27**	**36**	**45**	**54**	**63**	**72**	**81**	**90**	**99**	**108**

10 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by **10**.*
- *Fill in the box above the multiple.*

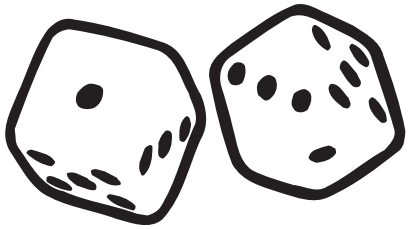


20	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**

11 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by **11**.*
- *Fill in the box above the multiple.*

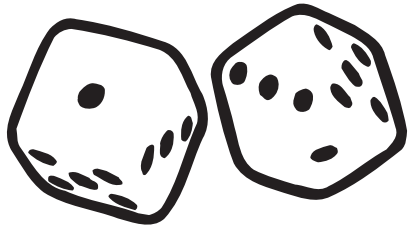


22	**33**	**44**	**55**	**66**	**77**	**88**	**99**	**110**	**121**	**132**

12 × Sum Dice Graph

How to Play

- *Toss 2 dice.*
- *Find the sum.*
- *Multiply by* ***12.***
- *Fill in the box above the multiple.*



24	**36**	**48**	**60**	**72**	**84**	**96**	**108**	**120**	**132**	**144**

2. Lots of Tens

Using base ten blocks to multiply, say 78 by 6, you can take 7 tens 6 times (to get 42 tens) and 8 ones 6 times (to get 48 ones). The purpose of this activity is to help children with the idea that 42 tens is the same as 4 hundreds and 2 tens—in other words, 420.

Number of Players: 2

Materials

- Ordinary 6-sided die
- "Regroup" template (page 118)
- 9 hundreds, 20 tens

What to Do

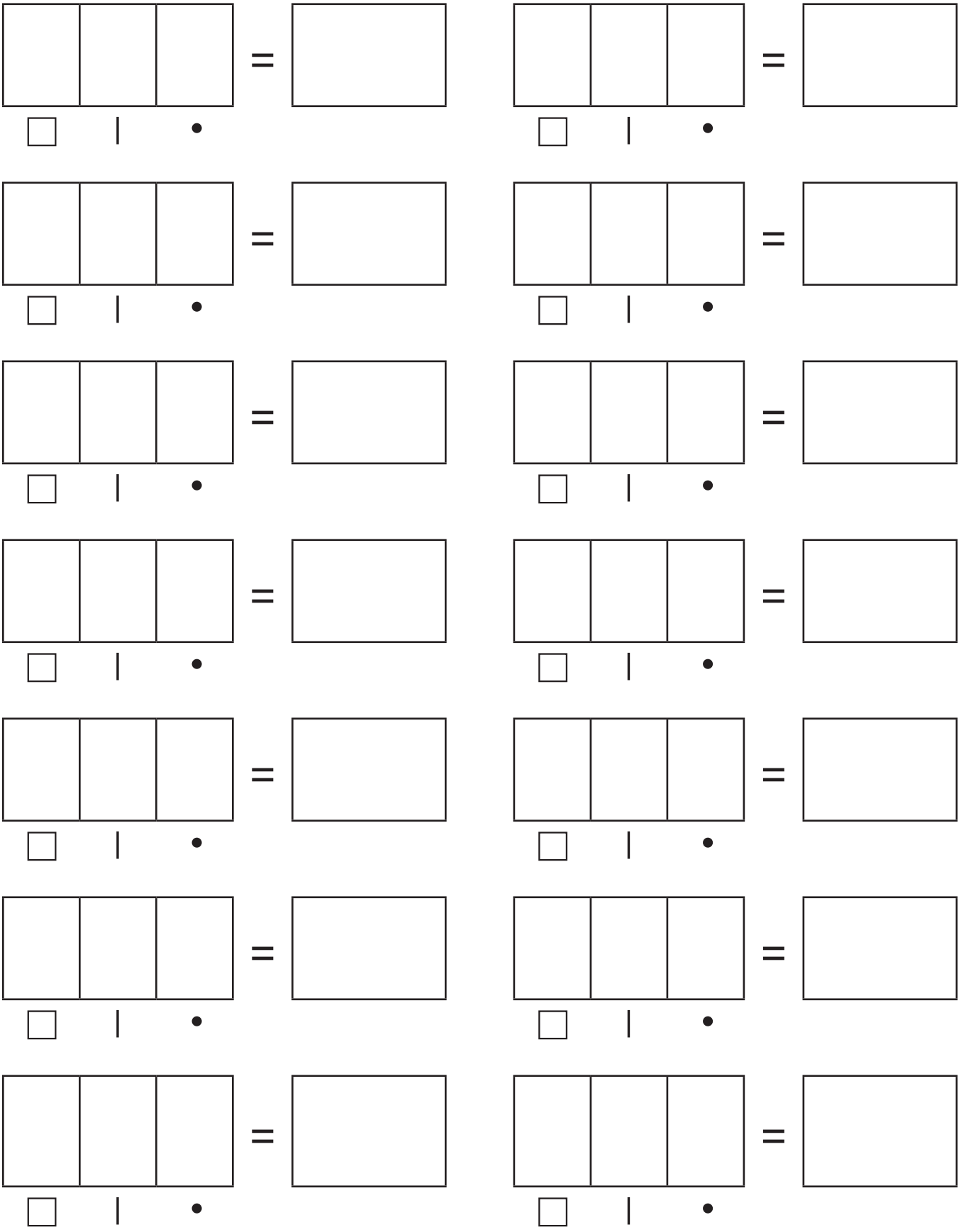
1. The children take turns rolling the die, adding the corresponding number of tens to a collection at the center of the group, trading 10 tens for 1 hundred when necessary, and describing the collection in 2 ways. For example, a collection of 3 hundreds and 5 tens should be described as "thirty-five tens" and as "three hundred and fifty."
2. Each time that a child passes a multiple of 100, he or she gets 1 point. If a child reaches exactly a multiple of 100, he or she gets 2 points. The game ends once the collection reaches, or passes, 9 hundreds. The child with the most points is the winner.

Of course, it is also important for children to know that say 42 hundreds is the same as 4 thousands and 2 hundreds or 4,200. For that purpose, this game can be modified so that children collect hundreds and trade them for thousands.

Use the "Regroup" template on page 118 to make up problems that are related to this game.

Name _____ Date _____

Regroup.



2.5 Number & Operations: **Fraction Names**

Focal Point

Number Sense/Representation – Review relationships among pattern blocks using physical objects as representations. Develop the concept of fractions.

Materials

- Pattern blocks

Instructions

Ask students to recall the "Space Station" activity (page 31) and how many triangles were covered by the hexagon, trapezoid, and blue rhombus.

Reinforce the fraction name of these blocks when the hexagon equals one whole unit.

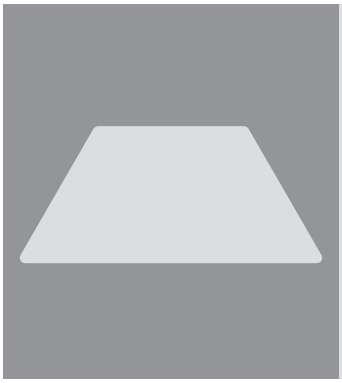
In this activity, students take the pattern blocks indicated by their fraction name (for example, $\frac{2}{3}$) and trace the shape in the space provided.

Guided Learning

Fill in the three blanks at the beginning of Part B together. Ask students to identify the shaded and unshaded areas of the hexagons in Exercises 1–5 using the appropriate fraction name.

Reinforce students' understanding that when the two areas are put together (unshaded and shaded), you have one whole unit.

Ask: In each example, which is greater: the shaded or unshaded fractional part?



Explore More!

Have the students find other fraction names for one whole unit. $\frac{2}{2}$, $\frac{3}{3}$, $\frac{6}{6}$, *and so on*

Have them represent the following fraction names with pattern blocks: $2\frac{1}{3}$, $1\frac{3}{6}$, $1\frac{1}{6}$, $2\frac{2}{3}$, $3\frac{1}{2}$. Then, ask them to arrange these fractions from smallest to greatest. Tell them to justify their answer using pattern blocks.

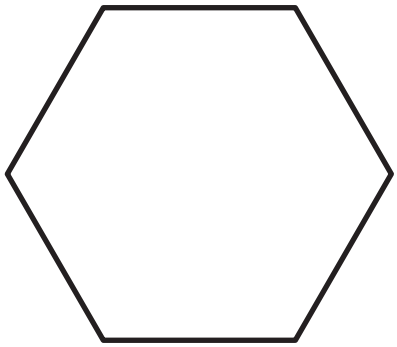
Fraction Names

Name: _____

A. Assume the hexagon has a value of one whole unit. Use pattern blocks to outline the shapes that represent the fraction names below.

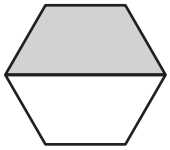
$\frac{2}{3}$ $\frac{4}{6}$

$1\frac{1}{2}$ $\frac{5}{6}$

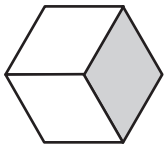


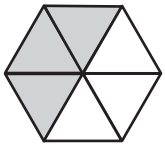
B. Fill in the blanks. As you can see, if the hexagon equals one whole unit, then the trapezoid equals _____, the rhombus equals _____, and the triangle equals _____.

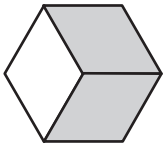
Find the fraction names for the shaded and unshaded areas.

1. EXAMPLE:  $\frac{1}{2}$ shaded $\frac{1}{2}$ unshaded

2.  _____ shaded _____ unshaded

3.  _____ shaded _____ unshaded

4.  _____ shaded _____ unshaded

5.  _____ shaded _____ unshaded

4.1 Measurement: **Puzzling Pentominoes**

Focal Point

Measurement – Develop skills in spatial relationships: arranging, classifying, rotating, and visualizing. Reinforce relationships among area and perimeter.

Materials

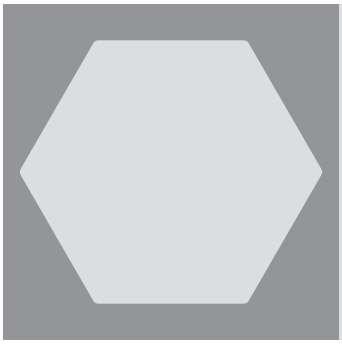
- Pattern blocks
  - orange squares only
- Square grid paper (page 135)

Instructions

Have the students make all the different arrangements possible with 5 square pattern blocks (pentominoes), making sure all the squares touch on at least one side. Have them record the different pentominoes on square grid paper. If a pentomino can be flipped and/or turned to fit on another pentomino, it is not considered to be different.

Guided Learning

1. How many different pentominoes did you find?
2. All the pentominoes have the same area (5 square units). Why? Do they all have the same perimeter? Why or why not?



Explore More!

Which pentominoes do you think can fold up to form an open box? Tell the students to put a B on the square that they think would be the bottom of each box. Then, have them cut out the pentominoes and fold them to check their prediction.

Puzzling Pentominoes

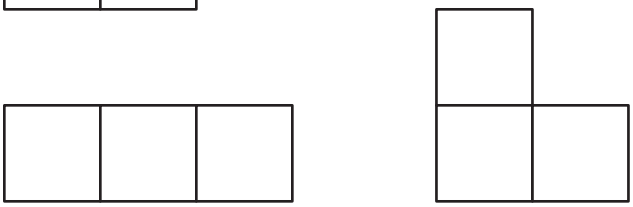
Name: _____

Below are all the possible arrangements of orange squares taken two at a time, three at a time, and four at a time. In every arrangement, the squares touch completely along at least one side.

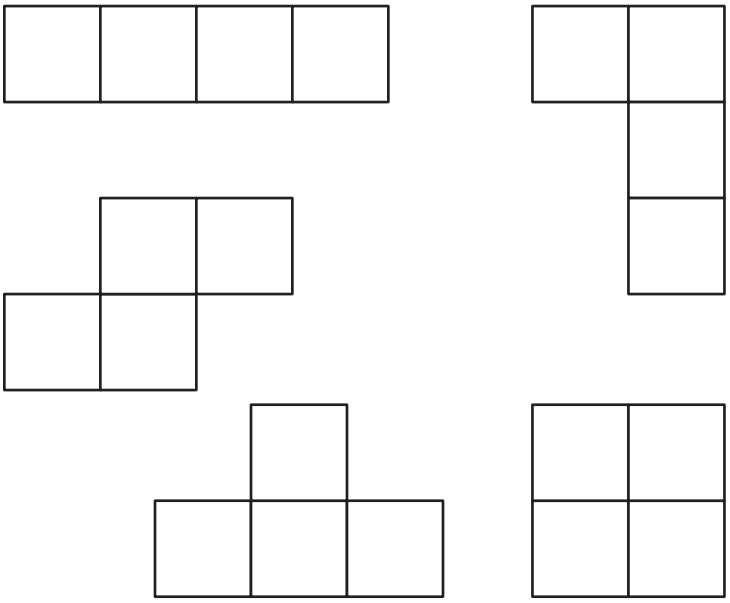
One arrangement of 5 squares is given. Make all the different arrangements possible with 5 squares and record your findings on square grid paper.

1. Dominoes (2 squares)

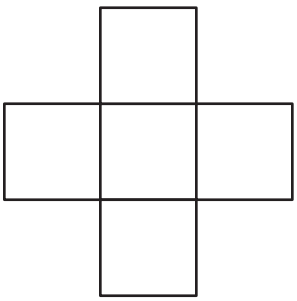
2. Trominoes (3 squares)



3. Tetrominoes (4 squares)



4. Pentominoes (5 squares)



4.2 Measurement: **Green Packages**

Focal Point

Measurement – Explore the idea of conservation of area—that is, the area of a figure doesn't change even when its parts are rearranged.

Materials

- Pattern blocks
  - green triangles only

Instructions

Have students use triangles to cover Package A1 and determine its area, using the area of a triangle as one. Then have them rearrange those triangles into a different shape (A2) that will fit on the given grid (A2).

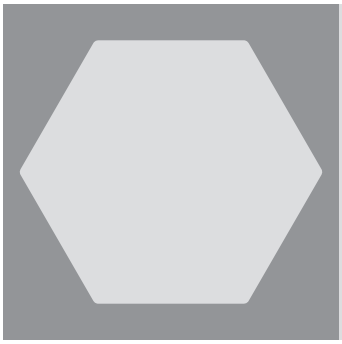
They compare the new area with the original area and sketch the new package on the grid. Have them do the same for Package B1.

Guided Learning

1. Are the areas of the two packages (A1 and A2, B1 and B2) the same? Will this always be true?
2. If the length of one side of a triangle is 1, find the perimeter of the packages. Are the perimeters of each pair the same? Will this always be true?

Double the number of green triangles you just used for Package B1. Make a green package with them.

3. What is the area of the new green package? How does that compare with the area of the original package?
4. What is the new perimeter? How does that compare with the original perimeter?
5. Why does the area of a rearranged package remain the same as the original while the perimeter sometimes changes?



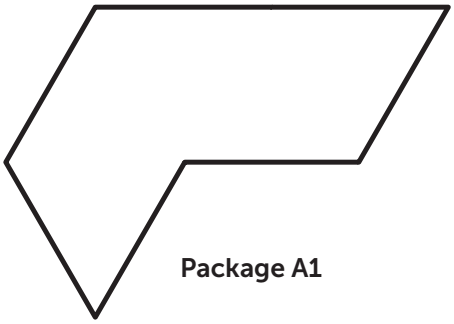
Explore More!

Have the students use triangles to make a package whose perimeter is double that of the original package. What is its area? How does the new area compare to that of the original package. Will this always be true?

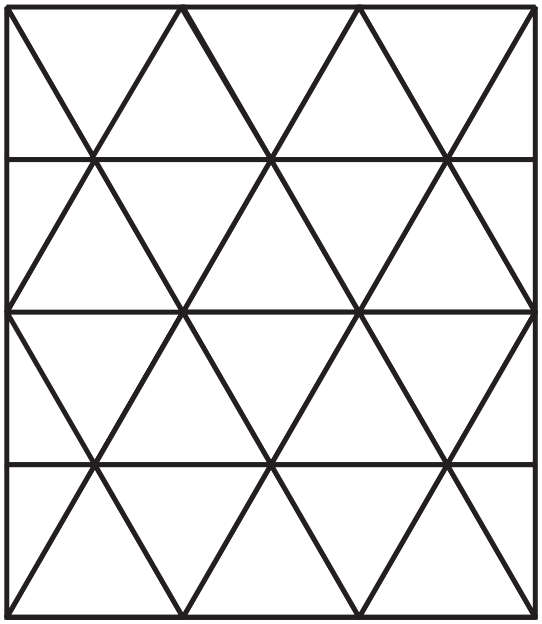
Green Packages

Name: _____

1. Assume the area of the green triangle is 1 unit. Cover Package A1 with green triangles. Record the area of the package in the space provided.
2. Rearrange the same triangles on the grid to make a new package (A2). Sketch Package A2 on the grid and record the area.
3. Compare the areas of Packages A1 and A2. Are they the same or different? Explain why.
4. Do the same for Packages B1 and B2.



Package A1



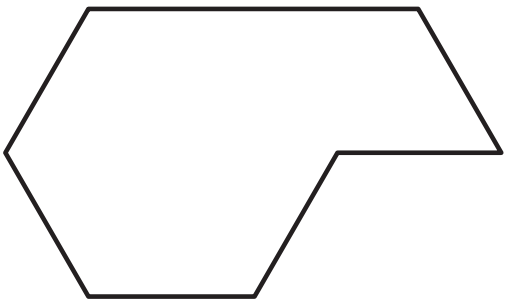
Package A2

A1 area: _____ triangular units

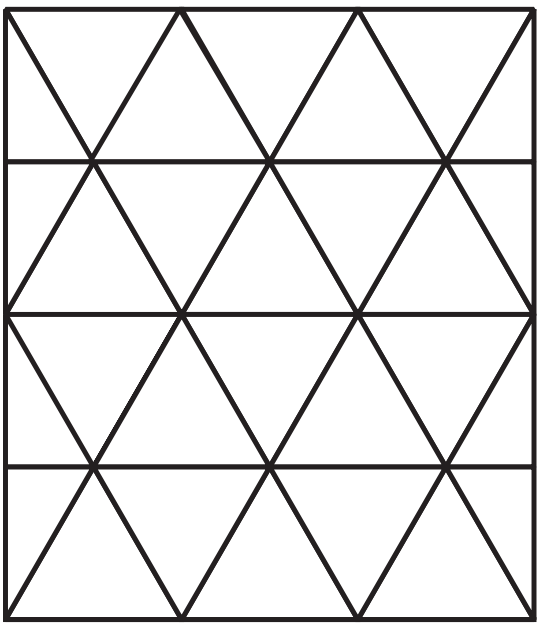
A2 area: _____ triangular units

Are the areas of Packages A1 and A2 the same or different? _____

Why? _____



Package B1



Package B2

B1 area: _____ triangular units

B2 area: _____ triangular units

Are the areas of Packages B1 and B2 the same or different? _____

Why? _____

4.3 Measurement: **Blue Packages**

Focal Point

Measurement – Explore the relationship between area and perimeter.

Materials

- Pattern Blocks
  - blue rhombuses only

Instructions

Remind the students that blue rhombuses have an area value equal to 2 triangles. Have them use blue rhombuses to make a blue package with an area of 10 triangles.

Ask: If the length of one side of a triangle (and a rhombus) is one, what is the perimeter of your package?

Have the students draw their blue package on the grid labeled A.

Next, have them make a new blue package with an area of 10 but with a different perimeter.

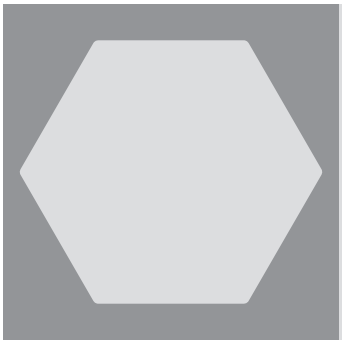
Ask: What is the perimeter of the new package?

Students then draw the package on the grid labeled B.

In the remaining grids, they draw blue packages that match the given information.

Guided Learning

1. Can two figures with the same perimeter have different areas? Give some examples.
2. Can two figures with the same area have different perimeters? Give some examples.



Explore More!

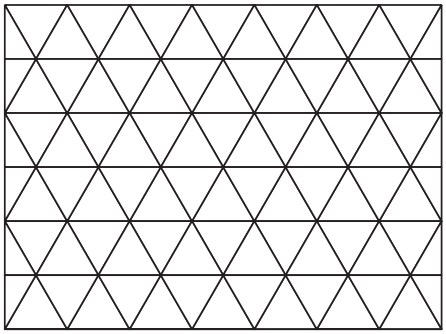
Using blue rhombuses, have the students make a blue package with an area of 8 and a perimeter other than 10. What is the new perimeter? Then, have them make a blue package with a perimeter of 10 and an area other than 8 or 12. What is the area?

Blue Packages

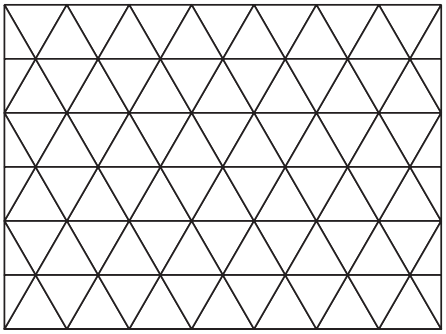
Name: _____

1. Take blue rhombuses and make a blue package with an area of 10. (Remember: 1 blue rhombus has an area equal to 2 triangles.) Draw your blue package on Grid A.
2. Assuming the length of one side of a triangle is 1 unit, find the perimeter of the blue package.
3. Now make another blue package with an area of 10 but with a different perimeter. Draw the package on Grid B.
4. Make and sketch Packages C–F.

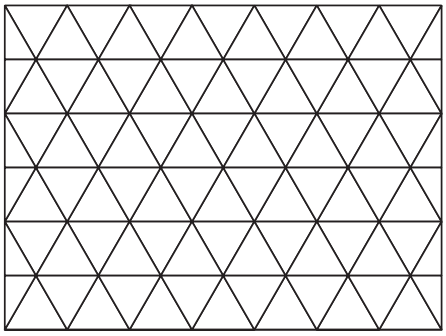
Grid A



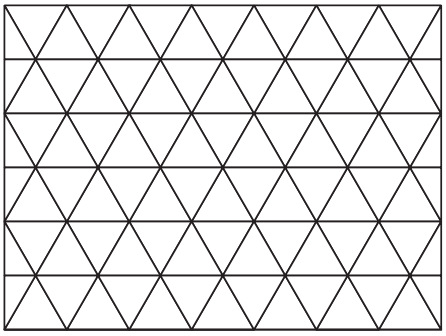
Grid B



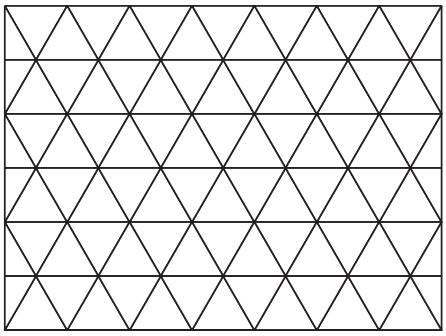
Grid C Area = 8 Perimeter = 10



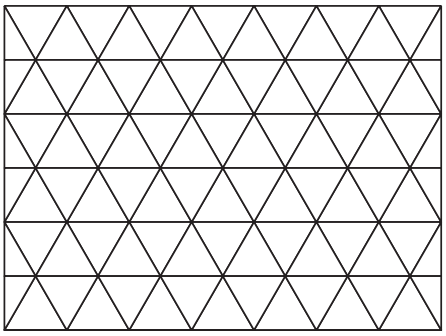
Grid D Area = 6 Perimeter = 8



Grid E Area = 12 Perimeter = 10



Grid F Area = 10 Perimeter = 12



GAME
3–5

Explaining the Game: Putting It All Together

Number of Players: 2

Materials:

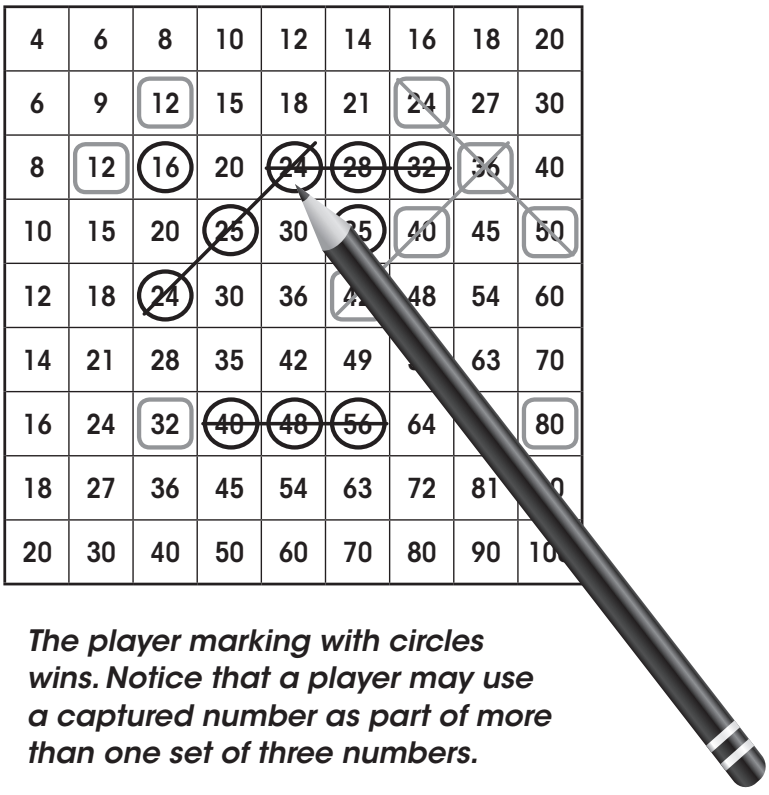
For each pair of students:

- "Putting It All Together" Game Board A (page 91)
- Deck of Number Cards 2–10 (page 107)
- Colored pencils or markers
- "Putting It All Together" Game Board B (optional, page 92)
- Game Rules, if needed, after presentation (page 127)

Object: Multiply two numbers to "capture" a number on the game board. The first player to capture three sets of three adjacent numbers in a row (horizontal, vertical, or diagonal) wins.

How to Play:

1. Deal five cards to each player.
2. Taking turns, players:
   (a) Multiply two of the cards together to "capture" a number on the game board.
   (b) Mark that square with "your" color, and discard those two cards.
   (c) Draw two new cards.
3. Instead of capturing a number, the player whose turn it is may discard all five cards and draw new cards. Then that player's turn is over.
4. The first player to capture three sets of three numbers in a row wins.



4	6	8	10	12	14	16	18	20
6	9	12	15	18	21	24	27	30
8	12	16	20	24	28	32	36	40
10	15	20	25	30	35	40	45	50
12	18	24	30	36	42	48	54	60
14	21	28	35	42	49	56	63	70
16	24	32	40	48	56	64	72	80
18	27	36	45	54	63	72	81	90
20	30	40	50	60	70	80	90	100

The player marking with circles wins. Notice that a player may use a captured number as part of more than one set of three numbers.

(*Note:* To have a record of play, have students record each equation.)

“Putting It All Together” Game Board A

(Game 3-5)

4	6	8	10	12	14	16	18	20
6	9	12	15	18	21	24	27	30
8	12	16	20	24	28	32	36	40
10	15	20	25	30	35	40	45	50
12	18	24	30	36	42	48	54	60
14	21	28	35	42	49	56	63	70
16	24	32	40	48	56	64	72	80
18	27	36	45	54	63	72	81	90
20	30	40	50	60	70	80	90	100

Number Cards 0–10

0	1	2	3
4	5	6	7
8	9	10	

Used in Games 3-1 through 3-10.

Printing half of the decks on a different-color card stock will make cleanup easier.

GAME
3–7

Explaining the Game: Let's Divvy It Up

Number of Players: 2

Materials:

For each pair of students:

- Deck of Number Cards 2–9 (remove the 5), called "divisor cards" (page 107)
- Deck of Product/Dividend Cards, called "dividend cards" (pages 109–110)
- Game Board (page 98)
- Game Rules, if needed, after presentation (page 129)

Object: Collect the most dividend cards by correctly dividing.

How to Play:

1. Place the divisor and dividend card decks on the game board. Place one divisor card faceup.
2. Players take turns dividing the dividend by the divisor, if possible.
3. If the cards can be used to make a division fact (for example, 42 and 6), the player says the fact: "42 divided by 6 equals 7." If correct, the player puts the dividend card in his/her "win pile." Then it is the other player's turn.
4. If the cards cannot be used to make a division fact, the player whose turn it is draws a new divisor card and divides. If the new card cannot be used, the player's turn is over.
5. Play continues until all the dividend cards are used. The winner is the player with the most cards.

Variation

- The same rules as "Let's Divvy It Up," except: A player may collect any dividend card that is a square number at the beginning of his/her turn, even if s/he does not have the divisor card. The player just has to correctly identify its factors. Then that player also takes his/her turn dividing the dividend by the divisor, if possible.

Differentiation

Warm-Up: "Divide By . . ."

More Challenge
(Above grade level)

- Play a divide-with-remainders version: Pick any spinner. Use the divisor cards 2–9. Spin for the dividend. Turn over a card for the divisor. What is the quotient? Is there a remainder?

"Let's Divvy It Up" Game

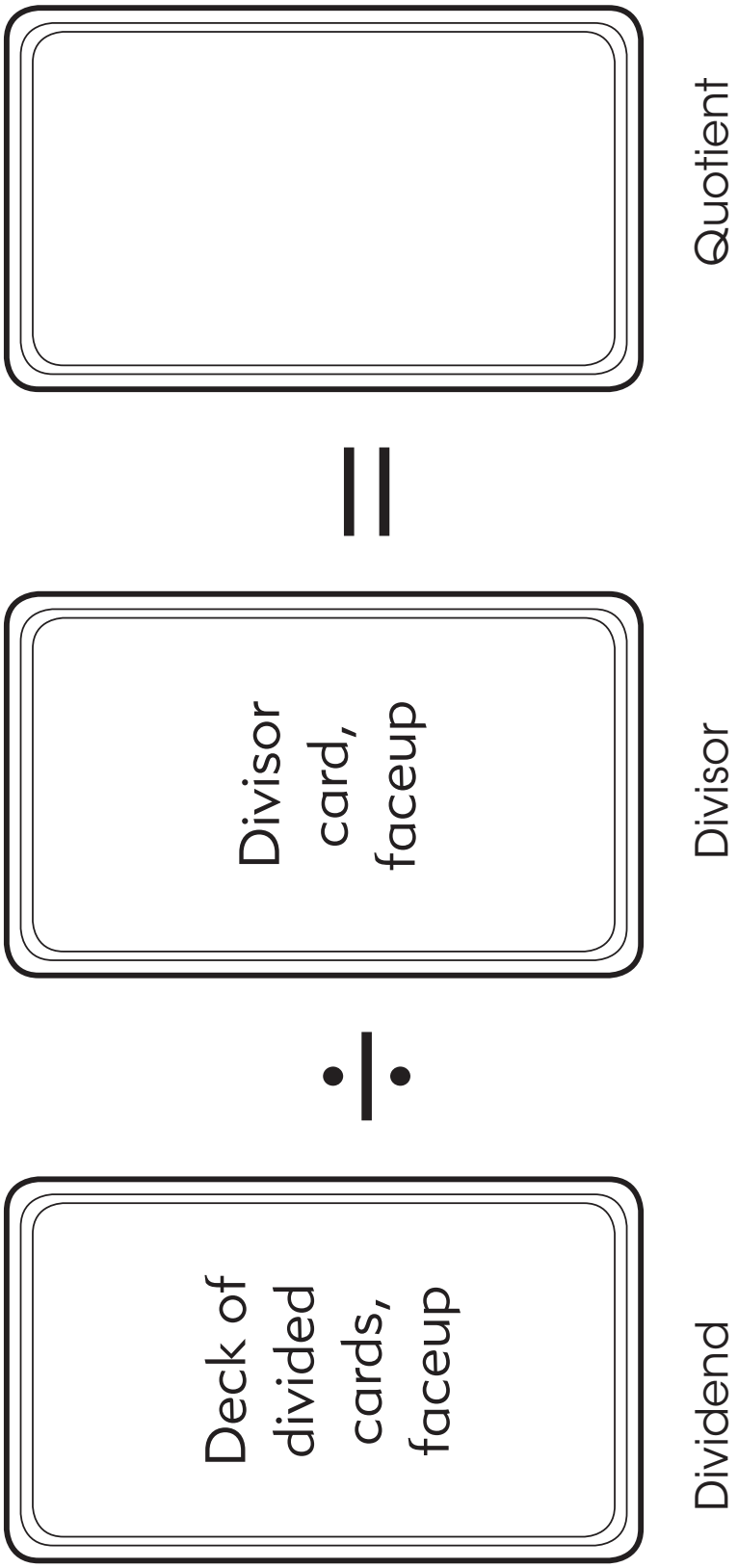
More Support

- Additional time with the Warm-Up exercise can provide an opportunity to develop fluency with each of the divisors.
- Begin by using just the Product/Dividend Cards 12, 14, 16, 18, 21, 24, 27, 28, 32, and 36.
- Have the Multiplication Chart available face down to check answers as needed.

Deepening the Understanding

Ask the class:	Mathematical Practices (CCSSM)
Is it possible to: • Evenly share an odd number of items with an even number of people? • Evenly share an even number of items with an odd number of people? • Evenly share an odd number of items with an odd number of people? • Evenly share an even number of items with an even number of people? • Put an odd number of items evenly into an odd number of groups (for example, 25 items into 5 or 7 groups)? (Sometimes it is; sometimes it isn't.) Give examples for each. Do you agree or disagree? Why?	MP2 Reason abstractly and quantitatively. MP3 Construct viable arguments and critique the reasoning of others.
For a dividend of 24, what are possible divisor/quotient pairs? What are other dividends in the multiplication chart that have more than one divisor/quotient pair?	MP2 Reason abstractly and quantitatively. MP3 Construct viable arguments and critique the reasoning of others.

“Let’s Divvy It Up” Game Board (Game 3-7)



Product/Dividend Cards – 1

Used in Games 3-6 and 3-7. Print one set on card stock for each pair of students.

12	14	16	18
21	24	27	28
32	36	42	48

Product/Dividend Cards – 2

Used in Games 3-6 and 3-7. Print one set on card stock for each pair of students.

49	54	56	63
64	72	81	

GAME
3–9

Explaining the Game: The Multiples of 10

Number of Players: 2

Materials:

For each pair of students:

- "The Multiples of 10" Game Board (page 102)
- Deck of Number Cards 2–9 (page 107)
- Game Rules, if needed, after presentation (page 131)
- "× 10" index card (from the Warm-Up exercise)
- Colored markers

Object: Multiply a one-digit number by a multiple of 10 to capture three sets of three adjacent numbers in a row (horizontal, vertical, or diagonal).

40	60	80	100	120	140	160	180	200
60	90	120	150	180	210	240	270	300
80	120	160	200	240	280	320	360	400
100	150	200	250	300	350	400	450	500
120	180	240	300	360	420	480	540	600
140	210	280	350	420	490	560	630	700
160	240	320	400	480	560	640	720	800
180	270	360	450	540	630	720	810	900
200	300	400	500	600	700	800	900	1000

The player marking with rectangles wins. Notice that a player may use a number as part of more than one set of three captured products.

How to Play:

1. Dealer deals five cards to each player. Taking turns, players:
   - Choose two cards and use the "× 10" card to create a multiplication expression. Say the expression (for example, "4 × 80") and solve it.
   - Mark ("capture") the product on the board.
   - Discard the two number cards and draw two new cards.
2. The first player to capture three sets of three numbers in a row wins.

Differentiation

More Support

- Play cooperatively. Work together to get three sets of five in a row.

More Challenge (Above grade level)

- Play the game with number cards 2–10.

Deepening the Understanding

Ask the class:	Mathematical Practices (CCSSM)
What is a quick way to multiply: $3 \times 60 = ?$ $4 \times 30 = ?$ $60 \times 7 = ?$ What "rule" or strategy works best for you?	MP2 Reason abstractly and quantitatively.
Andrew says this is a true statement: $80 \times 3 = 30 \times 8$. Do you agree or disagree? Why?	MP2 Reason abstractly and quantitatively. MP3 Construct viable arguments and critique the reasoning of others.

"The Multiples of 10" Game Board (Game 3-9)

40	60	80	100	120	140	160	180	200
60	90	120	150	180	210	240	270	300
80	120	160	200	240	280	320	360	400
100	150	200	250	300	350	400	450	500
120	180	240	300	360	420	480	540	600
140	210	280	350	420	490	560	630	700
160	240	320	400	480	560	640	720	800
180	270	360	450	540	630	720	810	900
200	300	400	500	600	700	800	900	1000

GAME
3–11

Explaining the Game: Match the Fractions

Number of Players: 2

Materials:

For each pair of students:

- Deck of Fraction Number Cards (page 111–113) and whole numbers 0 and 1 (Remove 1/6, 5/6, 1/8, 3/8, 5/8, 7/8.)
- Game Rules, if needed, after presentation (page 133)
- Completed Fraction Notes pages (optional) – for reference

Object: Collect pairs of equivalent fractions.

How to Play:

1. Dealer deals three cards to each player.
1. Taking turns, players draw one or more cards from the deck until they can make an equivalent pair. The player whose turn it is says the equation (for example, 1/2 = 2/4) and puts the cards in his/her win pile.
2. Play continues until one player goes out or the deck is used up.
3. Players subtract the number of cards still in their hands from the number of cards in their win piles for their final scores.

Wild Card Variation

- Include two or three wild cards. Players tell which fraction a wild card represents.

Differentiation

"Match the Fraction" Game

More Support

- Begin by playing the game with only the Fraction Picture Cards. Then switch to using the Fraction Number Cards.
- Begin by limiting the deck to halves, 4ths, and 8ths.

More Challenge (Above grade level)

- Have students create additional fraction cards (2/10, 4/10, 5/10, 6/10, 8/10, and 2/12, 3/12, 4/12, 6/12, 8/12, 9/12, and 10/12) and use them in the game.

Deepening the Understanding

Ask the class:	Mathematical Practices (CCSSM)
Dale says: 3/4 and 6/8 name the same amount. Chip says: That's impossible. 6/8 is twice as much as 3/4. Who is correct? Explain your thinking.	MP2 Reason abstractly and quantitatively. MP3 Construct viable arguments and critique the reasoning of others.
Alana says that 1/4 of an hour and 4/12 of an hour are the same. Ben says they are not. Use a clock to show who is right.	MP2 Reason abstractly and quantitatively. MP3 Construct viable arguments and critique the reasoning of others.
Rudy says that 6/12 of a foot and 1/2 of a foot are not the same distance. Suzy says they are the same distance. Use a ruler to show who is right.	MP2 Reason abstractly and quantitatively. MP3 Construct viable arguments and critique the reasoning of others.

Fraction Number Cards

Used in Games 3-11 and 3-12. Print 1 copy of this page on card stock for each deck.

$\frac{0}{2}$	$\frac{1}{2}$	$\frac{2}{2}$	$\frac{0}{4}$
$\frac{1}{4}$	$\frac{2}{4}$	$\frac{3}{4}$	$\frac{4}{4}$
$\frac{0}{3}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{3}$

Fraction Number Cards

Used in Games 3-11 and 3-12. Print 1 copy of this page on card stock for each deck.

$\frac{0}{6}$	$\frac{1}{6}$	$\frac{2}{6}$	$\frac{3}{6}$
$\frac{4}{6}$	$\frac{5}{6}$	$\frac{6}{6}$	$\frac{0}{8}$
$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$

Fraction Number Cards

Used in Games 3-11 and 3-12. Print 1 copy of this page on card stock for each deck.

$\frac{5}{8}$	$\frac{6}{8}$	$\frac{7}{8}$	$\frac{8}{8}$
0	1	Wild Card	Wild Card
Wild Card	Wild Card	Wild Card	Wild Card

How a Fraction Gets Its Name

NAME: _____ DATE: _____

1. Look at this fraction:

Write this fraction as a numeral: $\frac{\square}{\square}$

Circle the name of this fraction:

one-third
one-fourth
three-fourths
two-thirds

2. Look at this fraction:

Write this fraction as a numeral: $\frac{\square}{\square}$

Circle the name of this fraction:

three-fifths
five-eighths
three-fourths
three-eighths

3. Look at this fraction:

Write this fraction as a numeral: $\frac{\square}{\square}$

Circle the name of this fraction:

one-third
one-fourth
two-thirds
two-fourths

4. Look at this fraction:

Write this fraction as a numeral: $\frac{\square}{\square}$

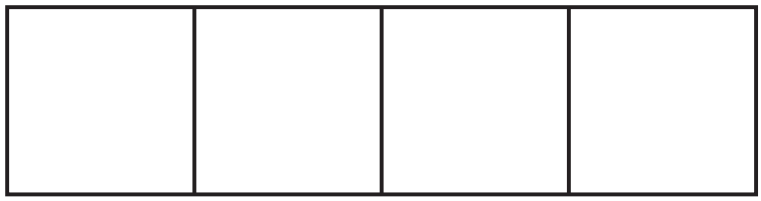
Circle the name of this fraction:

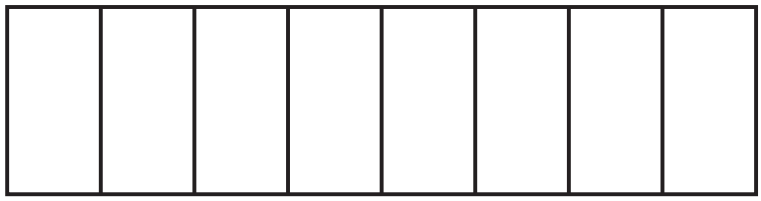
one-eighth
one-sixth
one-fifth
five-sixths

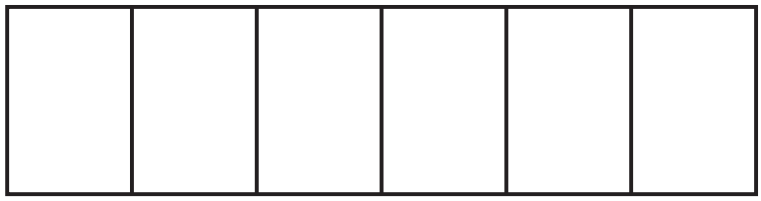
How a Fraction Gets Its Name

NAME: _____ DATE: _____

Color or shade each rectangle to show the fraction named.

$\frac{3}{4}$ 

$\frac{5}{8}$ 

$\frac{1}{6}$ 

$\frac{2}{3}$ 

Explain how you knew what to do for the last fraction.

_____

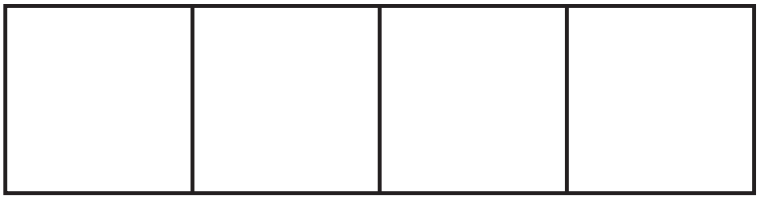
_____

How a Fraction Gets Its Name

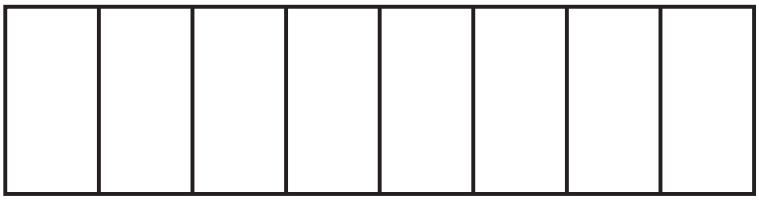
NAME: _____ DATE: _____

Color or shade each rectangle to show the fraction named.

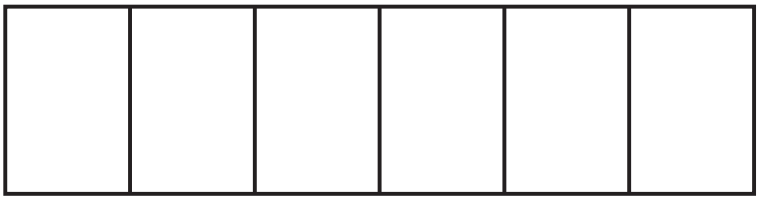
$\frac{1}{4}$



$\frac{7}{8}$



$\frac{5}{6}$



$\frac{3}{3}$

Explain how you knew what to do for the last fraction.

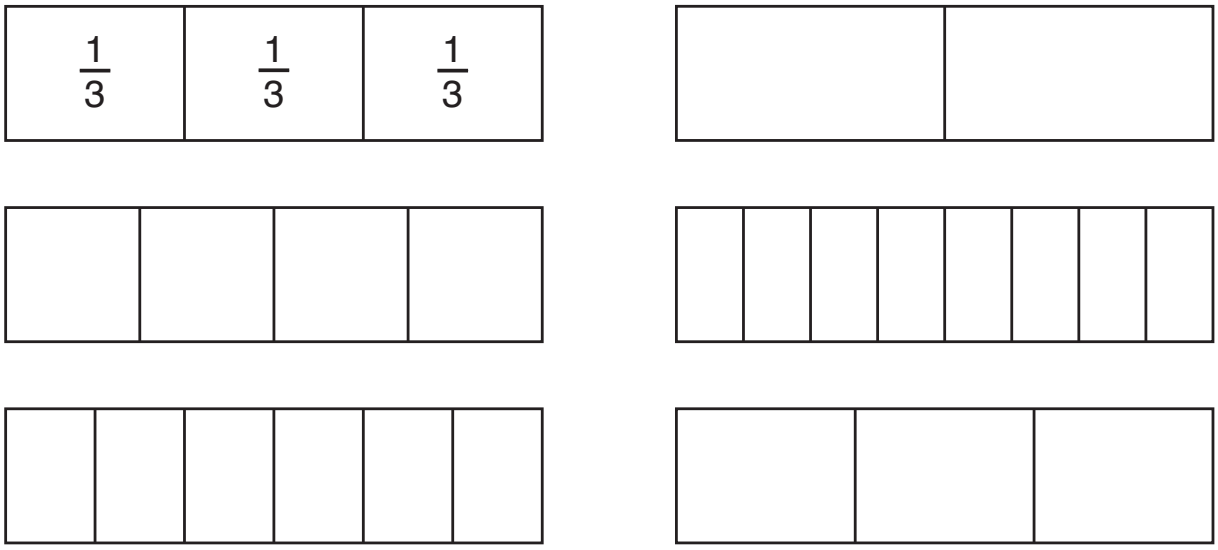
_____

_____

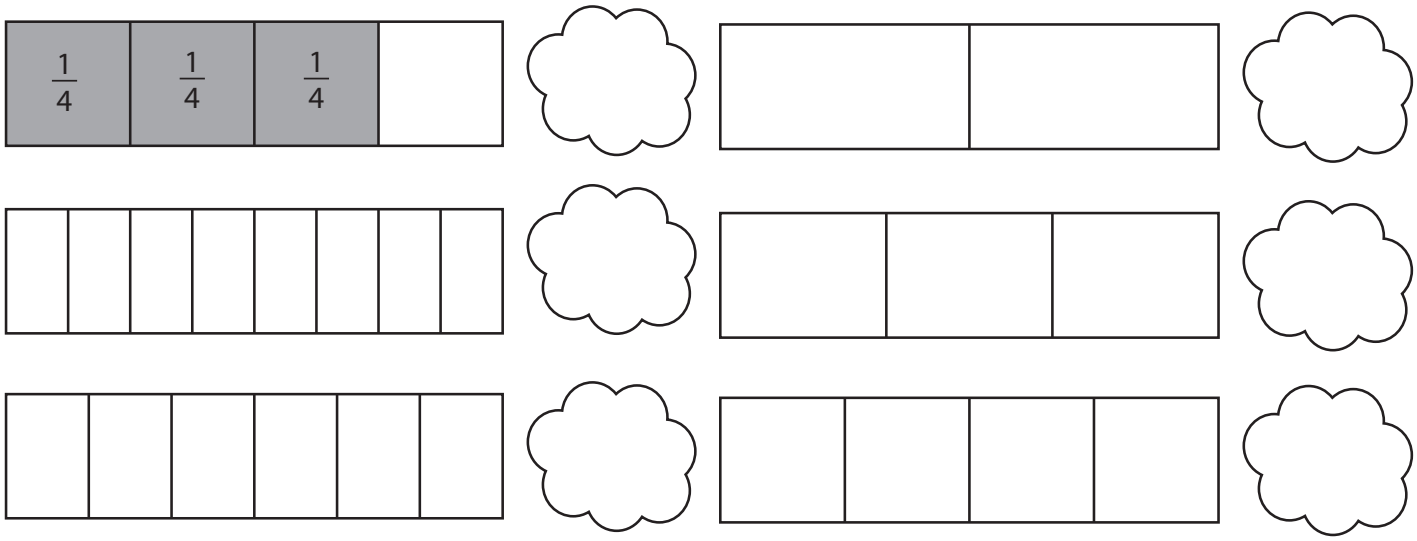
The Unit Fraction

NAME: _____ DATE: _____

Label each unit fraction. The first one has been done for you.



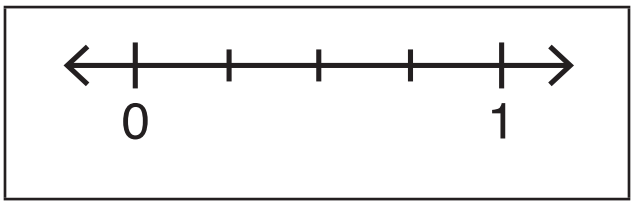
Shade in **two** unit fractions on each rectangle. Label the shaded unit fractions. Write the fraction for the shaded part in the cloud. The first one has been done for you.



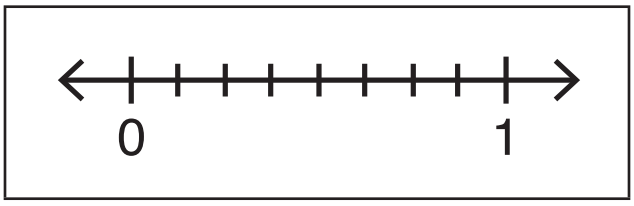
More About Fractions on the Number Line

NAME: _____ DATE: _____

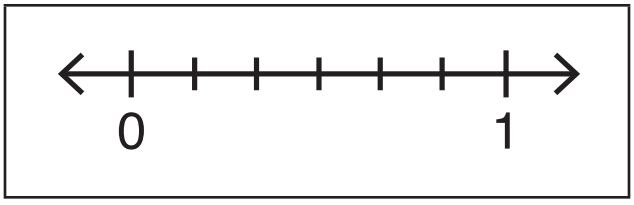
Which number line should you use? Match the correct number line to each denominator.



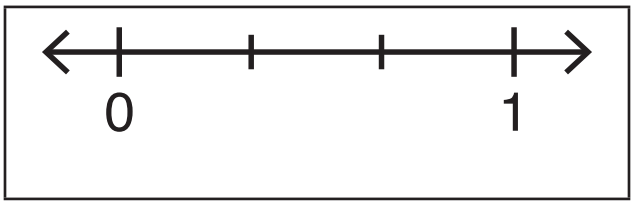
sixths



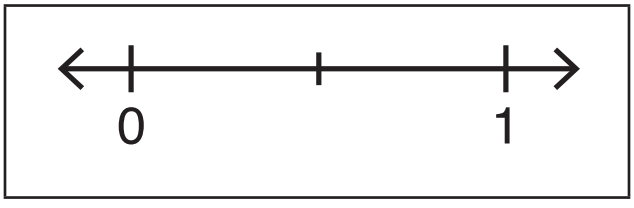
thirds



fourths



halves



eighths

More About Fractions on the Number Line

NAME: _____ DATE: _____

1. Look at the fraction.

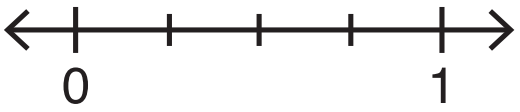
What is the numerator? _____

What is the denominator? _____

What is the unit fraction? _____

Show the fraction on the number line.

$\frac{3}{4}$



2. Look at the fraction.

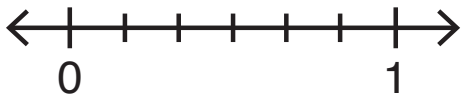
What is the numerator? _____

What is the denominator? _____

What is the unit fraction? _____

Show the fraction on the number line.

$\frac{4}{6}$



3. Look at the fraction.

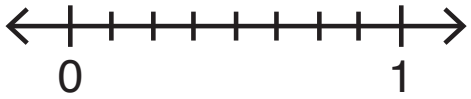
What is the numerator? _____

What is the denominator? _____

What is the unit fraction? _____

Show the fraction on the number line.

$\frac{6}{8}$



4. Look at the fraction.

What is the numerator? _____

What is the denominator? _____

What is the unit fraction? _____

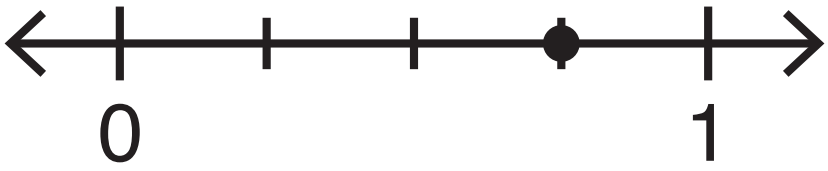
Show the fraction on the number line.

$\frac{2}{3}$

More About Fractions on the Number Line

NAME: _____ DATE: _____

1.



a) What is the unit fraction? _____

b) What is the fraction that ends at the dot? _____

c) How many unit fractions are there between zero and the dot? _____

d) Label the fraction that ends at the dot.

2.

a) What is the unit fraction? _____

b) What is the fraction that ends at the dot? _____

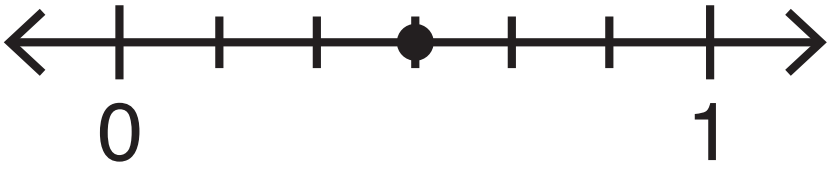
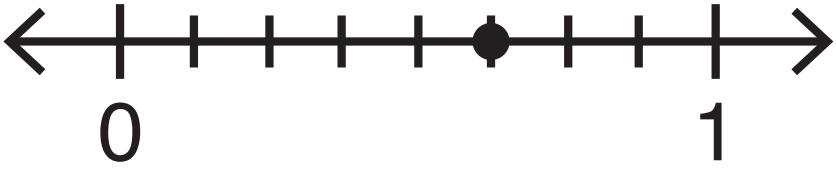
c) How many unit fractions are there between zero and the dot? _____

d) Label the fraction that ends at the dot.

More About Fractions on the Number Line

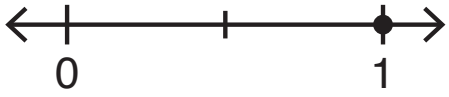
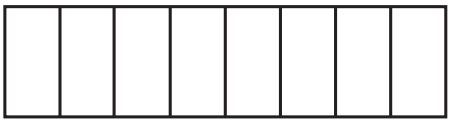
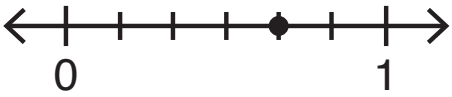
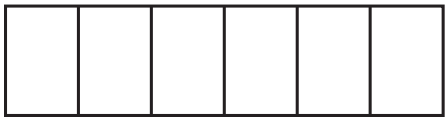
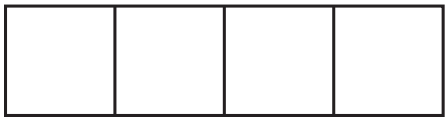
NAME: _____ DATE: _____

Look at the fraction. Fill in the missing number. Show the fraction on the number line.

$\frac{3}{\square}$	
$\frac{\square}{6}$	
$\frac{\square}{\square}$	
$\frac{2}{\square}$	
$\frac{\square}{\square}$	

More About Fractions on the Number Line

NAME: _____ DATE: _____

Look at the number line.	Write the fraction.	Shade the rectangle to show the fraction.
	$\frac{\square}{\square}$	
	$\frac{\square}{\square}$	
	$\frac{\square}{\square}$	
	$\frac{\square}{\square}$	
	$\frac{\square}{\square}$	

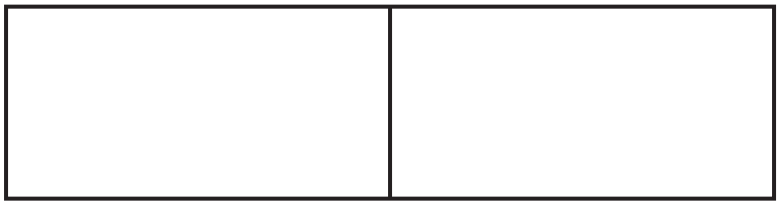
Equivalent Fractions with Fraction Rectangles

NAME: _____ DATE: _____

Shade or color to show equivalent fractions.

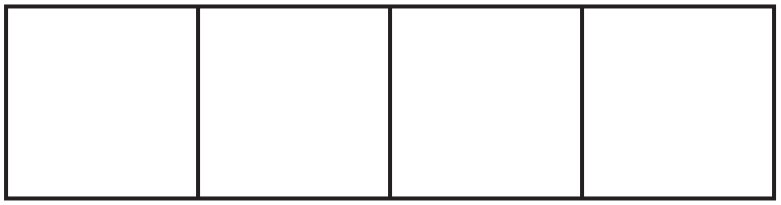
Which fractions are equal to one-half?

1.



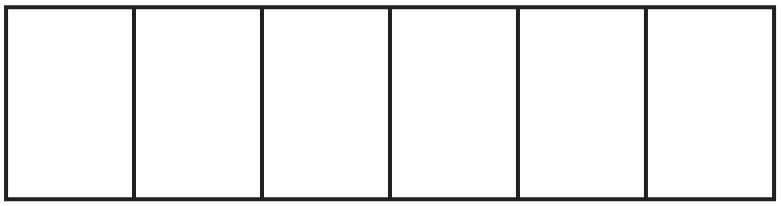
$\frac{1}{2}$

2.



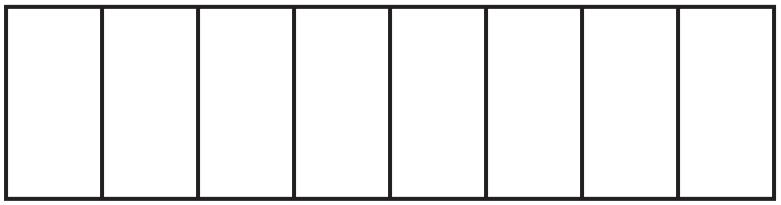
_____

3.



_____

4.



_____

$\frac{1}{2} = \frac{\quad}{\quad} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$

Equivalent Fractions with Fraction Rectangles

NAME: _____ DATE: _____

Use your fraction rectangles or fraction circles. Fill in the missing numbers to make these statements true.

$\frac{\square}{6} = \frac{2}{4}$ $\frac{\square}{6} = \frac{1}{3}$ $\frac{8}{8} = \frac{\square}{2}$

$\frac{4}{8} = \frac{\square}{4}$ $\frac{\square}{3} = \frac{4}{6}$ $\frac{3}{6} = \frac{\square}{2}$

$\frac{\square}{2} = \frac{2}{4}$ $\frac{\square}{4} = \frac{2}{8}$ $\frac{2}{6} = \frac{\square}{3}$

$\frac{\square}{8} = \frac{1}{4}$ $\frac{2}{8} = \frac{\square}{4}$ $\frac{\square}{3} = \frac{2}{6}$

$\frac{3}{4} = \frac{\square}{8}$ $\frac{\square}{3} = \frac{4}{6}$ $\frac{3}{3} = \frac{\square}{4}$

7 Fraction Neighbors

Number of Students

Pairs

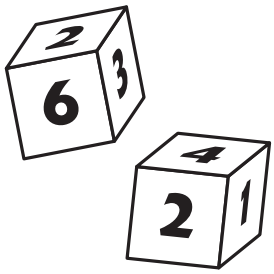
Materials

For each student:

- Fraction Number Line (3rds, 4ths, or 6ths) (pages 116–117)
- Two 1–6 number cubes

Overview

Students form fractions by tossing two number cubes. The fractions they generate are marked off on a number line.



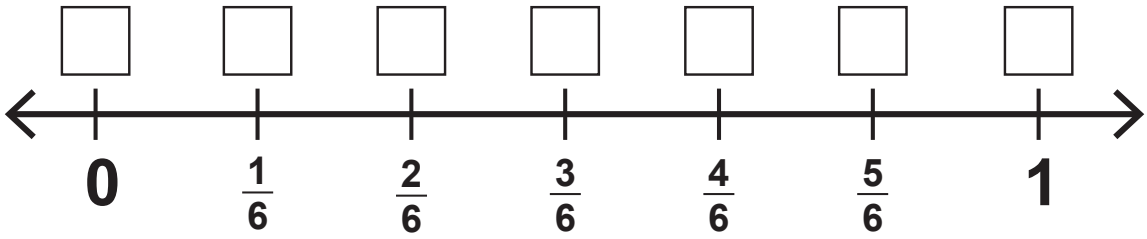
Presenting the Activity

1. Make a copy of the appropriate "Fraction Neighbors" Number Line (3rds, 4ths, or 6ths) for each student.
2. Distribute a fraction number line and two 1–6 number cubes to each pair of students.
3. Say to students:

   "You are going to play a game called 'Fraction Neighbors.'

   "For this game, you each have a fraction number line that is divided into thirds (or fourths or sixths).

   "On your turn, toss the two number cubes and form a proper fraction or 1.



Grade 3 Math Standards 3.NF.2, 3a; MPS 2

"For example, if you toss a 3 and a 4, you will form the fraction 3/4. If you toss a 6 and a 6, you will form the fraction 6/6, which is the same as 1.

"After you have determined the fraction, locate it on your fraction number line and place an 'X' in the square above the fraction.

"Continue taking turns, forming fractions with the number cubes, and marking the location of the fraction on the number line.

"Keep playing until one of you has three fractions in a row marked—for example, 1/6, 2/6 or 1/3, and 3/6 or 1/2.

"If you form a fraction that you have already marked, you lose your turn.

"If you toss '5' as the higher number (for example, 4 and 5 to make 4/5), toss again.

"The first player to mark three fractions in a row is the winner."

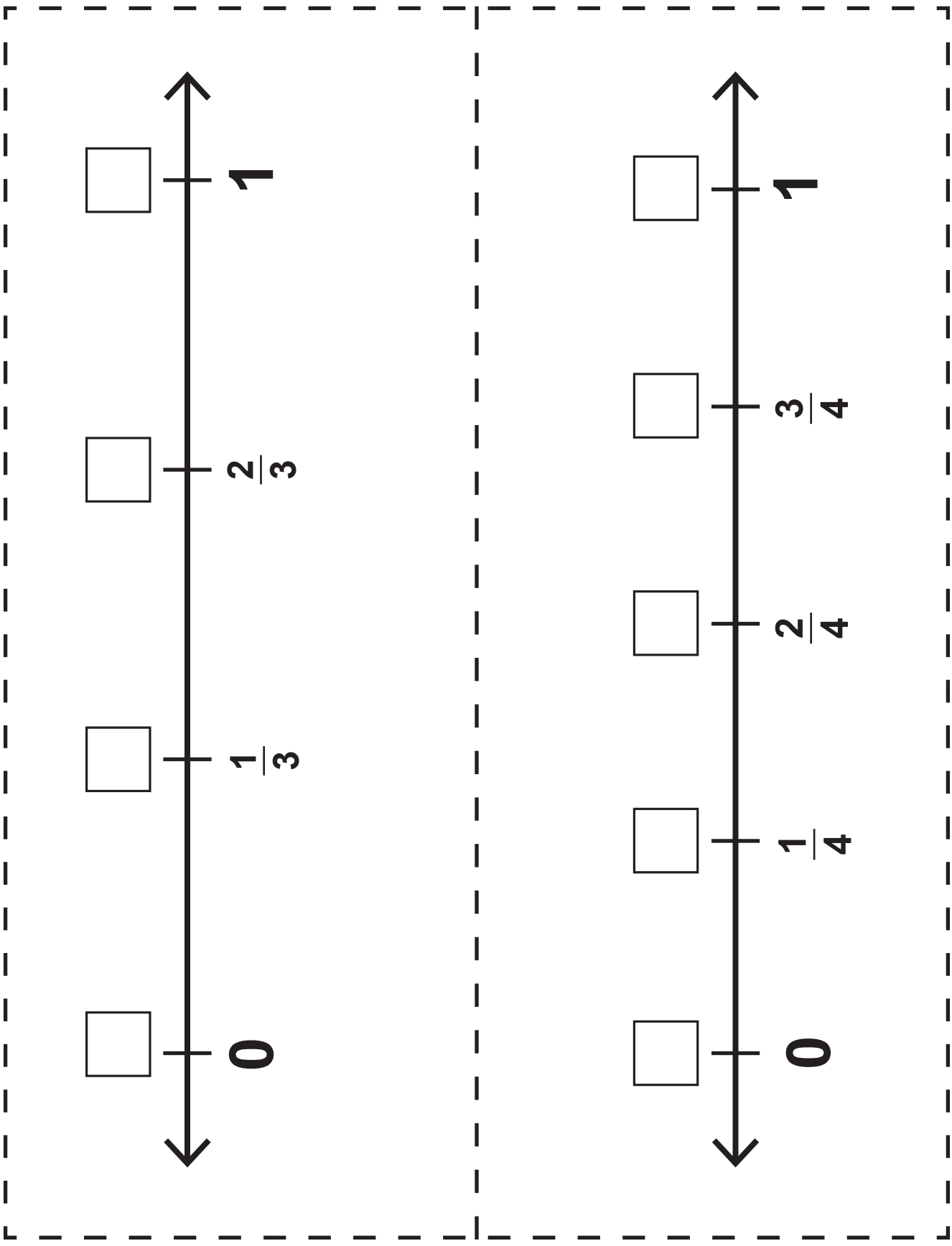
4. Small groups can play the game using the same rules.

Assessing Student Responses

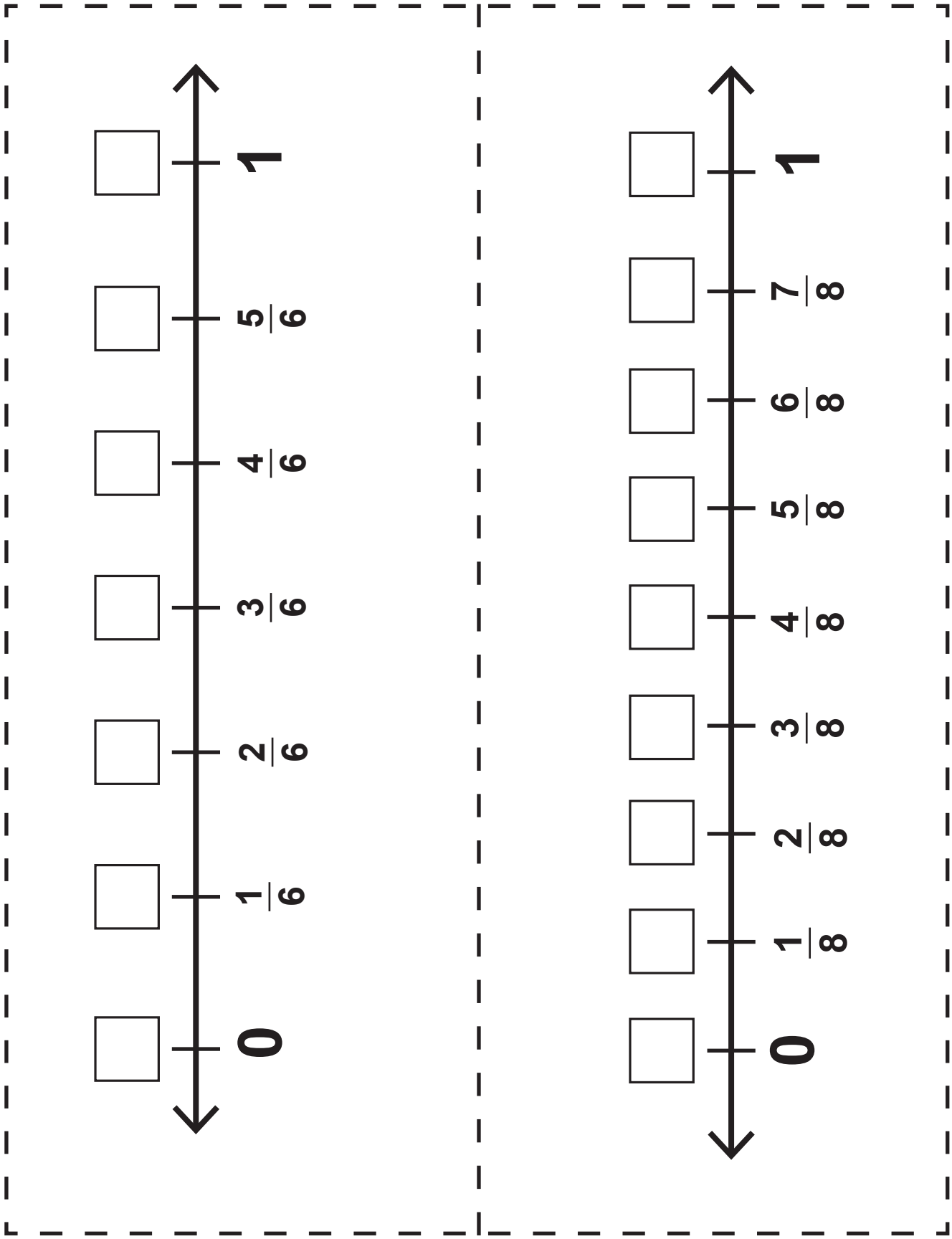
The following questions will help you assess your students' responses to the activity:

- Were students able to correctly translate the numbers tossed with the number cube into fractional amounts?
- Were students able to locate the fractions on the fraction number lines?
- Were students able to find equivalent fractions on the fraction number lines (2/6 = 1/3, 3/6 = 1/2, 4/6 = 2/3)?
- Were students able to recognize the fractional equivalents of 1?

"Fraction Neighbors" Number Line – 3rds, 4ths



"Fraction Neighbors" Number Line – 6ths, 8ths



41 Round to the Nearest Ten

Math Standard Use place value understanding to round whole numbers to the nearest 10 or 100.

Grouping(s)

Whole group or small guided math group

Materials

For the teacher:

- Demonstration 100-bead number line (BNL)

For the student:

- 100-bead number line (BNL)
- Number Cards (pages 81–85)
- Recording Sheet (page 127)

Overview

Students draw a card and round to the nearest ten using the BNL.

Presenting the Activity

1. Students select a card.
2. Students find the number on the BNL.
3. Students think about the two tens that the number sits between.
4. Students decide which ten the number is closest to and round to that number.
5. Students record the number on the recording sheet.

Guided Learning

Ask:

- Which two tens does the number sit between?
- Which ten is the number closest to?
- Which ten does the number round to?

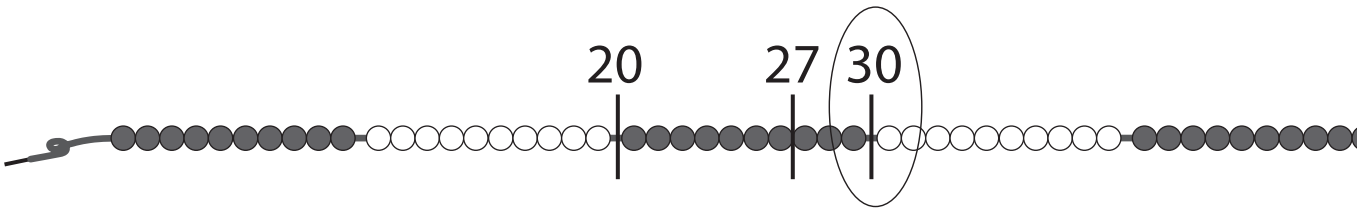
Assessing Student Responses

- Was student successful in rounding the numbers?

  Y / N / Emerging

- Could student explain his/her thinking?

  Y / N / Emerging



Number Cards 1–20

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

Number Cards 21–40

21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40

Number Cards 41–60

41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60

Number Cards 61–80

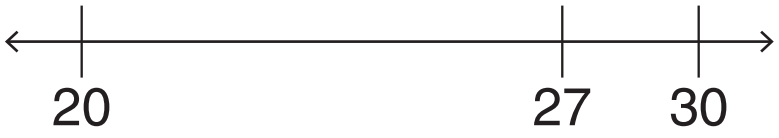
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80

Number Cards 81–100

81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

Name _____ Date _____

Activity 41: "Round to the Nearest Ten" Recording Sheet

Number	Label the 2 tens the number sits between and where the number is located on the number line.	Rounds to . . .
27		30
		
		
		
		
		

42 Round to the Nearest Hundred

Math Standard Use place-value understanding to round whole numbers to the nearest 10 or 100.

Grouping(s)

Whole group or small guided math group

Materials

For the student:

- Several 100-bead number lines (BNL) strung together
- Number Cards 1–100 (pages 81–85)
- Recording Sheet (page 128)

Overview

Students draw a card and round to the nearest hundred using the BNL.

Presenting the Activity

1. Students draw a card.
2. Students find the number on the BNL.
3. Students think about the two hundreds that the number is between.
4. Students decide which hundred the number is closest to and round to that number.
5. Students complete the recording sheet.

Guided Learning

Ask:

- Which two hundreds does the number sit between?
- Which hundred is the number closest to?
- Which hundred does the number round to?

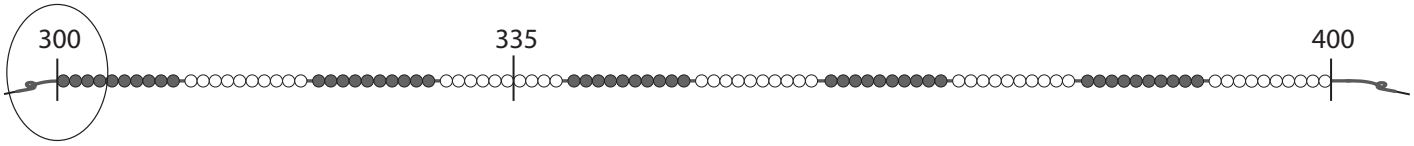
Assessing Student Responses

- Was student successful in rounding the numbers?

  Y / N / Emerging

- Could student explain his/her thinking?

  Y / N / Emerging



Name _____ Date _____

Activity 42: "Round to the Nearest Hundred" Recording Sheet

Number	Label the 2 hundreds the number sits between and where the number is located on the number line.	Rounds to . . .
335		300
		
		
		
		

43 Word Problems Using Multiplication and Division

Math Standard Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.

Grouping(s)

Small guided math group

Materials

For the student:

- 100-bead number line (BNL)
- "Word Problems Using Multiplication and Division" Cards (page 129)
- Recording Sheet (page 130)

Overview

Students model multiplication and division word problems on the BNL, identifying the number of groups and the number in each group.

Presenting the Activity

1. Students draw a word problem card.
2. Students model the multiplication or division word problem on the BNL.
3. Students record the solution on their recording sheet.

2. Mike had 2 boxes of marbles. He had 4 marbles in each box. How many did he have altogether?

13. The bakery baked 50 cookies. They put 10 cookies in each box. How many boxes did they use?

Guided Learning

Ask:

- What type of problem was it: multiplication or division?
- How did you solve the problem?

Assessing Student Responses

- Was student successful in reasoning about the problem?

  Y / N / Emerging
- Could student explain the concept?

  Y / N / Emerging

Activity 43: "Word Problems Using Multiplication and Division" Cards

1. Sue had 3 boxes of marbles. She had 2 marbles in each box. How many marbles did she have altogether?	**2.** Mike had 2 boxes of marbles. He had 4 marbles in each box. How many did he have altogether?	**3.** Maria had 3 boxes of marbles. She had 3 marbles in each box. How many did she have altogether?
4. Jamal had 9 boxes of marbles. He had 10 marbles in each box. How many did he have altogether?	**5.** Hong had 4 boxes of pencils. He had 10 marbles in each box. How many did he have altogether?	**6.** Grace had 5 boxes of pencils. She had 5 pencils in each box. How many did she have altogether?
7. The bakery baked 12 cookies. They packed the cookies equally in 2 boxes. How many were in each box?	**8.** The bakery baked 20 cookies. They packed the cookies equally in 2 boxes. How many cookies were in each box?	**9.** The bakery baked 10 pies. They packed the pies equally in 2 boxes. How many pies were in each box?
10. The bakery baked 100 cookies. They packed 10 cookies in each box. How many boxes did they use?	**11.** The bakery baked 20 pies. They packed 4 pies in each box. How many boxes did they use?	**12.** The bakery baked 50 cookies. They packed 10 cookies in each box. How many boxes did they use?
13. The bakery baked 30 cupcakes. They packed 5 cupcakes in each box. How many boxes did they use?	**14.** The store had 5 bags of oranges. There were 10 oranges in each bags. How many oranges were there altogether?	**15.** The store had 10 bags of apples. There were 10 apples in each bag. How many apples were there altogether?

Name _____ Date _____

Activities 43 and 44: "Word Problems Using Multiplication and Division" and "Model It!" Recording Sheets

Problem Number	Solution

44 Model It!

Math Standards Various

Grouping(s)

Small guided math group

Materials

For the student:

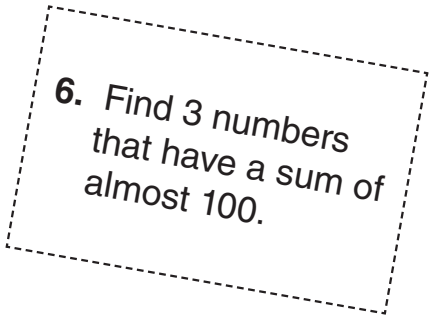
- 100-bead number line (BNL)
- "Model It!" Cards (page 131)
- Recording Sheet (page 130)

Overview

Students draw a card and model the value on the BNL, identifying the operation.

Presenting the Activity

1. Students draw a card.
2. Students build the quantity on the BNL.
3. Students record the solution on the recording sheet.



Guided Learning

Ask:

- How did you find the sum?
- How did you find the difference?
- How did you find the product?
- How did you find the quotient?
- How did you figure out the problem?

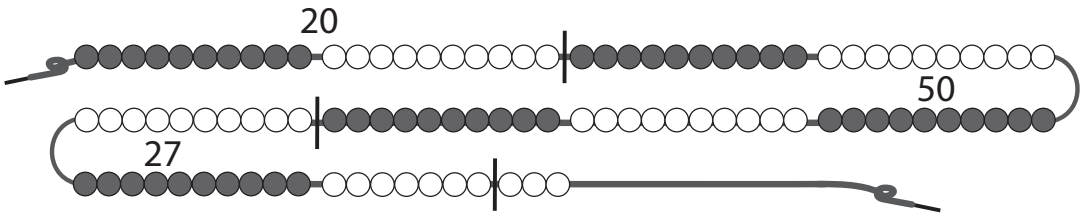
Assessing Student Responses

- Was student successful in reasoning about numbers and operations?

  Y / N / Emerging

- Could student explain the concept?

  Y / N / Emerging



$$20 + 50 + 27 = 97$$

Activity 44: "Model It!" Cards

1. Build a number less than 9×5.	**2.** Build a number close to 8×8.	**3.** Find 2 numbers with a difference of 25.
4. Find 2 numbers with a difference of 10.	**5.** Find 2 numbers with a sum of 57.	**6.** Find 3 numbers that have a sum of almost 100.
7. Find a number that is greater than 3×7 but less than 8×8.	**8.** Find a number that is between 6×6 and 8×8.	**9.** Find 4 numbers that have a sum of 100.
10. Name 3 numbers that round to 0.80.	**11.** Find a number and subtract 33. What is the difference?	**12.** Find a number and subtract 50. What is the difference?
13. Find a number and add 35. What is the sum?	**14.** Find a number and add 25. What is the sum?	**15.** Find 2 numbers with a product of 12.
16. Find 2 numbers with a product of 10.	**17.** Find 2 numbers with a quotient of 2.	**18.** Find 2 numbers with a quotient of 5.

Four in a Row

Topic: Multiplication facts

Object: Cover four-in-a-row with "your" markers.

Groups: 2 pair players

Materials for each group

- *Four in a Row* Gameboard A, p. 107
- 2 paper clips
- Markers (different color for each pair)

Directions

1. The first pair places two paper clips at the bottom of the gameboard, indicating two factors. The same pair multiplies the selected factors and places a marker on the resulting product.
2. The other pair moves only one of the paper clips to a new factor. Next, this pair multiplies the two factors and places a marker on that product. (It is permissible to have two paper clips on the same factor.)
3. Pairs continue alternating turns, moving one paper clip each time, multiplying the factors, and placing markers on the product on the gameboard.
4. The winner is the first pair to have four markers in a row horizontally, vertically, or diagonally.

Making Connections

Promote reflection and make mathematical connections by asking:

- What strategies helped you line up your markers in a row?
- What do you notice about the numbers used on the gameboard? Why do you think this is so?

KEY STANDARD

Interpret products of whole numbers—for example, interpret 5 × 7 as the total number of objects in 5 groups of 7 each. (**3.OA.A.1**)

Tips *If players feel insecure with the facts, you may allow three in a row to win.*

Gameboard B (p. 108) with products to 81 will help students practice the more difficult multiplication facts.

1	2	3	4	5
6	7	8	9	10
12	14	15	16	18
20	21	24	25	27
28	30	32	35	36

1 2 3 4 5 6 7 8 9

Four in a Row A

Gameboard

1	2	3	4	5
6	7	8	9	10
12	14	15	16	18
20	21	24	25	27
28	30	32	35	36

1 2 3 4 5 6 7 8 9

Four in a Row B

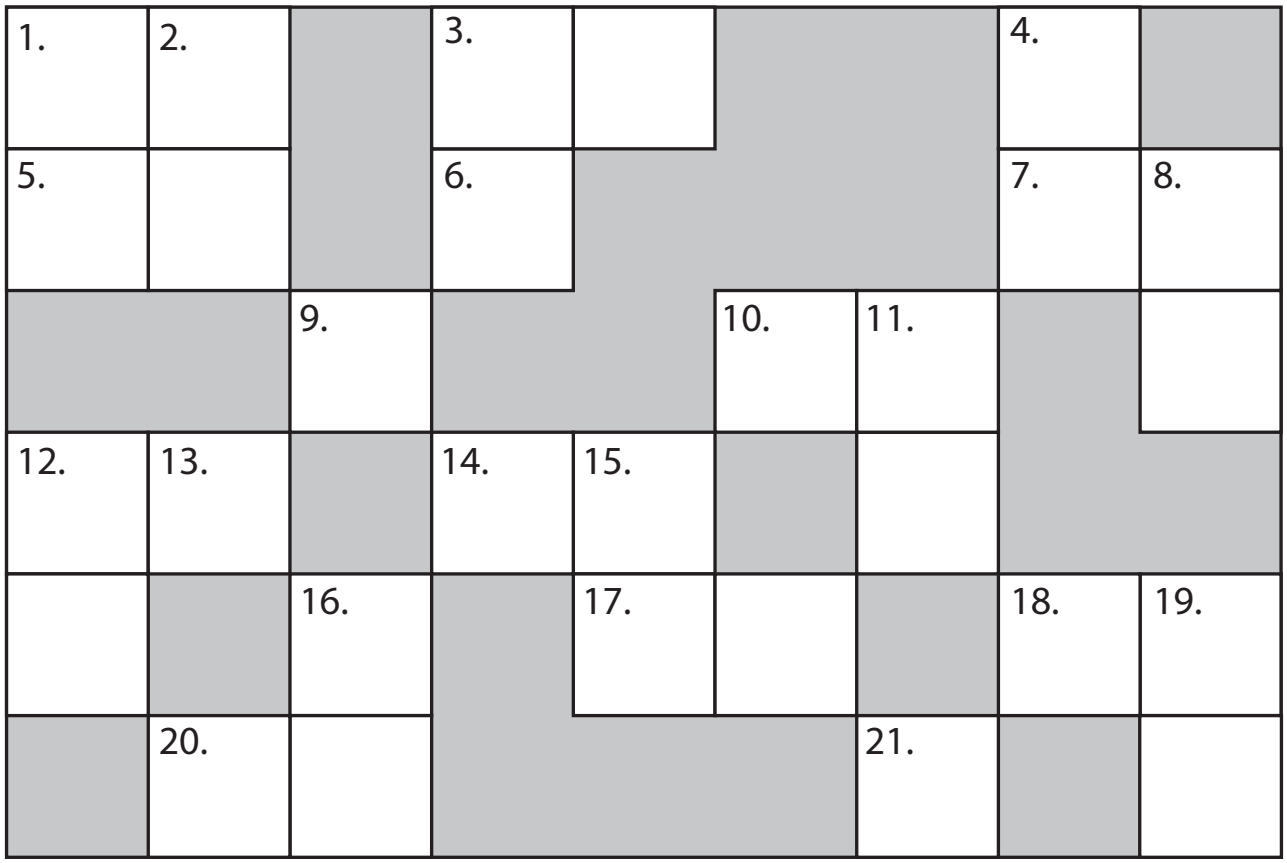
Gameboard

1	2	3	4	5	6
7	8	9	10	12	14
15	16	18	20	21	24
25	27	28	30	32	35
36	40	42	45	48	49
54	56	63	64	72	81

1 2 3 4 5 6 7 8 9

Cross-Number Puzzle A

Date _____ **Name** _____



Across →

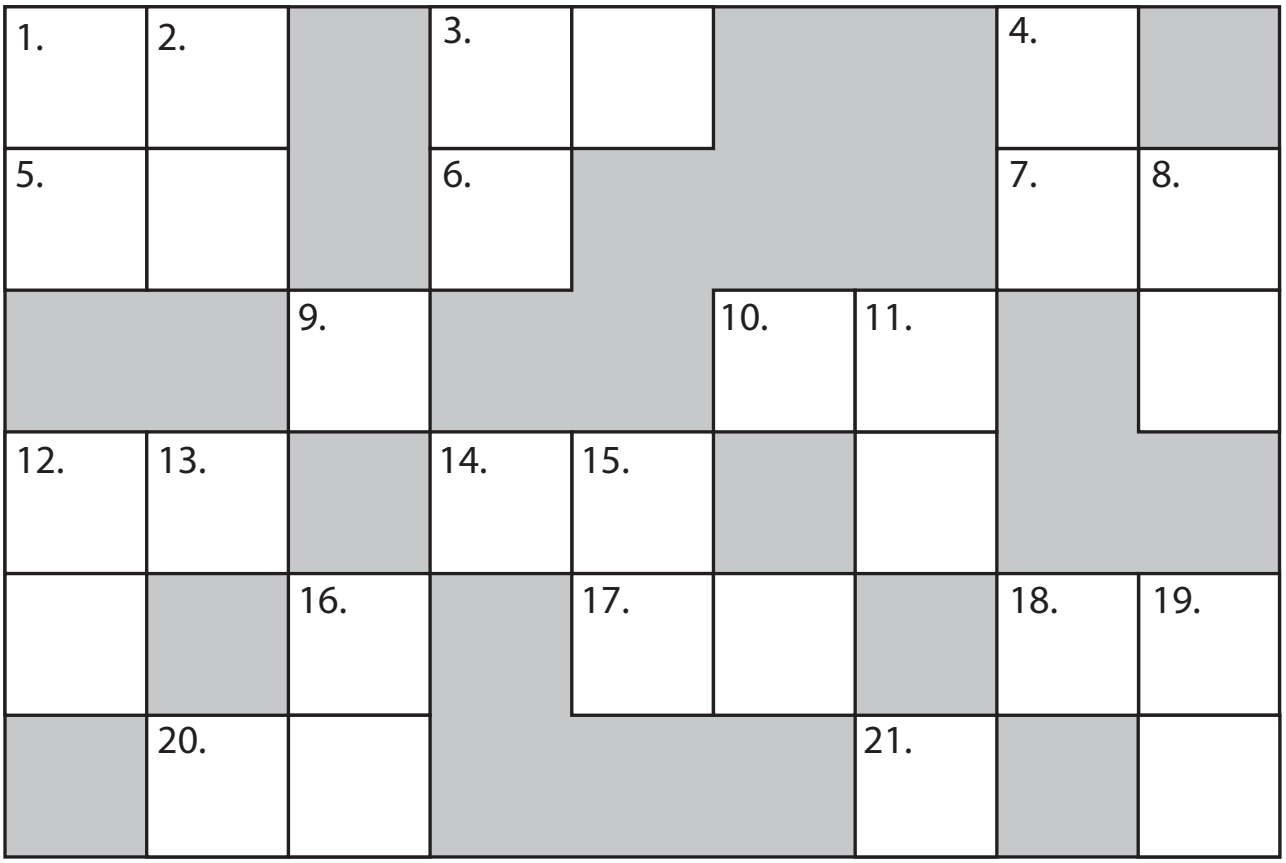
1. 3 × 5
3. 6 × 4
4. 9 × □ = 9
5. 5 × 4
6. 7 × □ = 35
7. 3 × 8
9. 5 × □ = 45
10. 4 × 3
12. 6 × 3
14. 3 × 7
17. 4 × 10
18. 8 × 4
20. 2 × 5
21. 3 × □ = 24

Down ↓

1. 2 × 6
2. 10 × 5
3. 5 × 5
4. 3 × 4
8. 8 × 5
11. 4 × 5
12. 8 × 2
13. 4 × □ = 32
15. 2 × 7
16. 6 × 5
19. 4 × 7
21. 2 × □ = 16

Cross-Number Puzzle B

Date _____ **Name** _____



Across →

1. ☐ ÷ 2 = 7

3. ☐ ÷ 5 = 4

4. 12 ÷ ☐ = 4

5. ☐ ÷ 5 = 5

6. ☐ = 32 ÷ 4

7. ☐ ÷ 6 = 4

9. ☐ = 9 ÷ 1

10. ☐ ÷ 7 = 3

12. ☐ ÷ 3 = 9

14. 6 = ☐ ÷ 2

17. 5 = ☐ ÷ 3

18. ☐ ÷ 9 = 4

20. ☐ ÷ 2 = 7

21. ☐ ÷ 4 = 1

Down ↓

1. ☐ ÷ 3 = 4

2. ☐ ÷ 5 = 9

3. ☐ ÷ 4 = 7

4. ☐ ÷ 4 = 8

8. ☐ ÷ 5 = 8

11. 6 = ☐ ÷ 3

12. 8 = ☐ ÷ 3

13. 35 ÷ 5 = ☐

15. ☐ ÷ 3 = 7

16. 6 = ☐ ÷ 4

19. ☐ ÷ 6 = 10

21. 36 ÷ 9 = ☐