



Math Skills Student Kits – Grade 4 Activities

These activities were selected for use with the Didax® Math Skills Student Kit for Grade 4 (item #211997). You can use the Bookmarks in this PDF file to navigate to the activities.

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PLACE VALUE

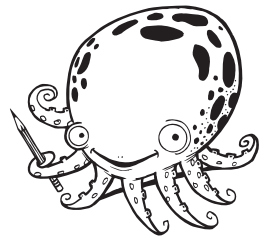
NUMBER AND OPERATIONS

1. Complete the table for the boldface digits.

Number	Place value	Expanded form	Value
<u>1</u> 24	tens	2×10	20
(a) 49 6			
(b) 1, 3 84			
(c) 2, 6 52			
(d) 3 ,499			
(e) 15, 6 79			
(f) 2 4,014			
(g) 2 5,000			
(h) 77, 7 77			

2. Write the missing numbers.

- (a) $1,342 = 1,000 + \square + \square + 2$ (b) $2,583 = \square + 500 + 80 + \square$
(c) $\square = 4,000 + 200 + 10 + 1$ (d) $8,644 = 8,000 + \square + \square + \square$
(e) $\square = 9,000 + 100 + 20 + 5$
(f) $12,462 = 10,000 + \square + \square + 60 + \square$
(g) $21,876 = \square + \square + \square + \square + \square$



3. Write the place value of the six (6) in these numbers.

- (a) 26 \square (b) 621 \square (c) 306 \square (d) 564 \square
(e) 1,611 \square (f) 6,482 \square (g) 62,541 \square (h) 36,000 \square

4. Write these numbers as a sum. Use a calculator to find each total.

(a) $42 + 7 + 174 + 47 + 747$

(b) $65 + 6,465 + 665 + 16,645 + 6$

(c) Underline the number in the thousands place in each answer.

STUDENT NAME

ADDITION

NUMBER AND OPERATIONS

1. (a) $4 + 11 =$ (b) $5 + 13 =$ (c) $25 + 12 =$
 (d) $29 + 4 =$ (e) $32 + 8 =$ (f) $41 + 19 =$
 (g) $16 + 44 =$ (h) $57 + 14 =$

2. (a) $\begin{array}{r} 64 \\ + 16 \\ \hline \end{array}$ (b) $\begin{array}{r} 48 \\ + 42 \\ \hline \end{array}$ (c) $\begin{array}{r} 37 \\ + 74 \\ \hline \end{array}$ (d) $\begin{array}{r} 49 \\ + 84 \\ \hline \end{array}$ (e) $\begin{array}{r} 62 \\ + 59 \\ \hline \end{array}$ (f) $\begin{array}{r} 87 \\ + 47 \\ \hline \end{array}$

3. (a) $\begin{array}{r} 123 \\ + 234 \\ \hline \end{array}$ (b) $\begin{array}{r} 302 \\ + 287 \\ \hline \end{array}$ (c) $\begin{array}{r} 252 \\ + 238 \\ \hline \end{array}$ (d) $\begin{array}{r} 455 \\ + 309 \\ \hline \end{array}$ (e) $\begin{array}{r} 604 \\ + 269 \\ \hline \end{array}$

4. (a) $\begin{array}{r} 386 \\ + 229 \\ \hline \end{array}$ (b) $\begin{array}{r} 555 \\ + 255 \\ \hline \end{array}$ (c) $\begin{array}{r} 499 \\ + 228 \\ \hline \end{array}$ (d) $\begin{array}{r} 688 \\ + 145 \\ \hline \end{array}$ (e) $\begin{array}{r} 1,708 \\ + 2,597 \\ \hline \end{array}$

5. (a) $\begin{array}{r} 142 \\ 304 \\ + 145 \\ \hline \end{array}$ (b) $\begin{array}{r} 206 \\ 246 \\ + 264 \\ \hline \end{array}$ (c) $\begin{array}{r} 314 \\ 245 \\ + 199 \\ \hline \end{array}$ (d) $\begin{array}{r} 802 \\ 140 \\ + 79 \\ \hline \end{array}$ (e) $\begin{array}{r} 1,333 \\ 1,444 \\ + 1,555 \\ \hline \end{array}$

6. Complete the grids.

(a)

9					
8					
7					
6					
5					
+	11	12	13	14	15

(b)

50					
40					
30					
20					
10					
+	11	22	33	44	55

7. Complete the squares so each row and column adds up to the same number.

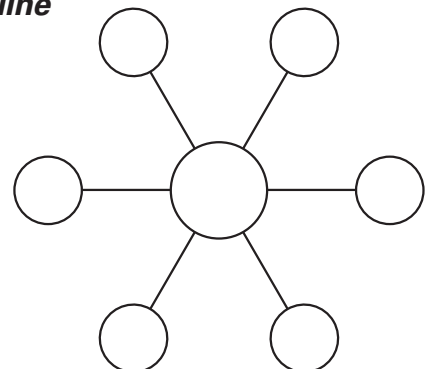
(a)

		6
9		21
		18

(b)

23		
15		
22	21	

8. Use the numbers from one (1) to seven (7) so each line adds to 12.



STUDENT NAME

SUBTRACTION

NUMBER AND OPERATIONS

STUDENT NAME

1. (a) $9 - 6 = \square$

(b) $15 - 8 = \square$

(c) $25 - 15 = \square$

(d) $22 - 15 = \square$

(e) $40 - 10 = \square$

(f) $50 - 25 = \square$

(g) $100 - 1 = \square$

(h) $75 - 25 = \square$

2. (a)
$$\begin{array}{r} 69 \\ - 42 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 74 \\ - 43 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 88 \\ - 28 \\ \hline \end{array}$$

(d)
$$\begin{array}{r} 65 \\ - 64 \\ \hline \end{array}$$

(e)
$$\begin{array}{r} 87 \\ - 24 \\ \hline \end{array}$$

3. (a)
$$\begin{array}{r} 245 \\ - 123 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 456 \\ - 353 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 848 \\ - 207 \\ \hline \end{array}$$

(d)
$$\begin{array}{r} 999 \\ - 404 \\ \hline \end{array}$$

(e)
$$\begin{array}{r} 2,467 \\ - 1,352 \\ \hline \end{array}$$

4. (a)
$$\begin{array}{r} 43 \\ - 26 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 62 \\ - 38 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 72 \\ - 68 \\ \hline \end{array}$$

(d)
$$\begin{array}{r} 145 \\ - 29 \\ \hline \end{array}$$

(e)
$$\begin{array}{r} 267 \\ - 158 \\ \hline \end{array}$$

5. (a)
$$\begin{array}{r} 342 \\ - 139 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 425 \\ - 178 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 408 \\ - 229 \\ \hline \end{array}$$

(d)
$$\begin{array}{r} 2,524 \\ - 389 \\ \hline \end{array}$$

(e)
$$\begin{array}{r} 3,400 \\ - 1,355 \\ \hline \end{array}$$

6. Complete the grids.

 (a)

19					
18					
17					
16					
15					
-	2	3	5	7	9

 (b)

60					
50					
40					
30					
20					
-	4	6	10	15	20

7. Write the missing numbers.

(a)
$$\begin{array}{r} 7 \square 7 \\ - 4 0 \square \\ \hline 3 0 0 \end{array}$$

(b)
$$\begin{array}{r} 3 4 \square \\ - \square 3 9 \\ \hline 1 \square 3 \end{array}$$

(c)
$$\begin{array}{r} \square 0 7 \\ - 2 \square 8 \\ \hline 1 2 \square \end{array}$$

(d)
$$\begin{array}{r} 3, \square 5 6 \\ - \square 7 \square 9 \\ \hline 1, 6 6 \square \end{array}$$

MULTIPLICATION

NUMBER AND OPERATIONS

1. (a) $8 \times 5 =$

(b) $7 \times 6 =$

(c) $9 \times 9 =$

(d) $4 \times 8 =$

(e) $7 \times 8 =$

(f) $6 \times 9 =$

(g) $7 \times 7 =$

(h) $9 \times 8 =$

2. (a) $\begin{array}{r} 23 \\ \times 2 \\ \hline \end{array}$

(b) $\begin{array}{r} 41 \\ \times 2 \\ \hline \end{array}$

(c) $\begin{array}{r} 53 \\ \times 3 \\ \hline \end{array}$

(d) $\begin{array}{r} 42 \\ \times 4 \\ \hline \end{array}$

(e) $\begin{array}{r} 52 \\ \times 4 \\ \hline \end{array}$

3. (a) $\begin{array}{r} 36 \\ \times 4 \\ \hline \end{array}$

(b) $\begin{array}{r} 55 \\ \times 6 \\ \hline \end{array}$

(c) $\begin{array}{r} 84 \\ \times 4 \\ \hline \end{array}$

(d) $\begin{array}{r} 73 \\ \times 5 \\ \hline \end{array}$

(e) $\begin{array}{r} 68 \\ \times 4 \\ \hline \end{array}$

4. (a) $\begin{array}{r} 122 \\ \times 2 \\ \hline \end{array}$

(b) $\begin{array}{r} 134 \\ \times 2 \\ \hline \end{array}$

(c) $\begin{array}{r} 115 \\ \times 5 \\ \hline \end{array}$

(d) $\begin{array}{r} 214 \\ \times 6 \\ \hline \end{array}$

(e) $\begin{array}{r} 318 \\ \times 4 \\ \hline \end{array}$

5. (a) $\begin{array}{r} 525 \\ \times 5 \\ \hline \end{array}$

(b) $\begin{array}{r} 246 \\ \times 5 \\ \hline \end{array}$

(c) $\begin{array}{r} 204 \\ \times 6 \\ \hline \end{array}$

(d) $\begin{array}{r} 357 \\ \times 3 \\ \hline \end{array}$

(e) $\begin{array}{r} 289 \\ \times 4 \\ \hline \end{array}$

6. (a) $\begin{array}{r} 21 \\ \times 12 \\ \hline \end{array}$

(b) $\begin{array}{r} 31 \\ \times 11 \\ \hline \end{array}$

(c) $\begin{array}{r} 32 \\ \times 12 \\ \hline \end{array}$

(d) $\begin{array}{r} 41 \\ \times 10 \\ \hline \end{array}$

(e) $\begin{array}{r} 22 \\ \times 22 \\ \hline \end{array}$

7. Complete the grids.

(a)

8					
7					
6					
5					
4					
\times	2	3	4	5	6

(b)

11					
9					
7					
5					
3					
\times	2	4	6	8	10

STUDENT NAME

MULTIPLICATION PROBLEMS

NUMBER AND OPERATIONS

STUDENT NAME

1. Thirty-two students each have three pens. How many pens are there altogether?

2. Four shelves each hold 52 books. How many books are there altogether?

3. In baseball, there are six outs in each inning. How many outs in 15 innings?

4. How many days are there in 40 weeks?

5. Lana rides her bike 29 km every week. How many kilometers would she ride in six weeks?

6. If one row seats 56 people, how many people can eight rows seat?

7. Lee and Mandela each sent a total of 123 text messages. What was their combined total?

8. A total of 162 people each planted six seedlings. How many seedlings were planted altogether?

9. How many months are there in ten years?

10. If one carton holds 12 eggs, how many eggs are there in 33 cartons?

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

11. 24×3

12. 216×7

DIVISION

NUMBER AND OPERATIONS

1. (a) $12 \div 4 =$ (b) $15 \div 5 =$ (c) $14 \div 2 =$
 (d) $20 \div 4 =$ (e) $16 \div 8 =$ (f) $25 \div 5 =$
 (g) $24 \div 6 =$ (h) $50 \div 10 =$

2. (a) $3 \overline{)36}$ (b) $4 \overline{)84}$ (c) $2 \overline{)64}$ (d) $3 \overline{)96}$ (e) $4 \overline{)88}$

3. (a) $2 \overline{)428}$ (b) $3 \overline{)363}$ (c) $2 \overline{)608}$ (d) $4 \overline{)848}$ (e) $3 \overline{)693}$

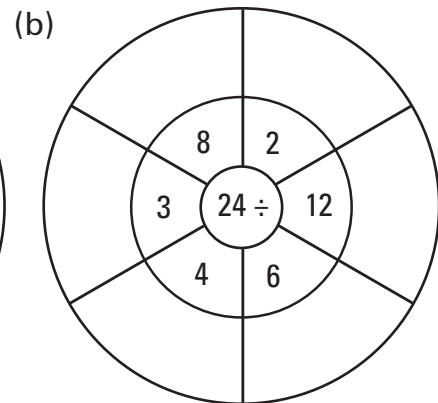
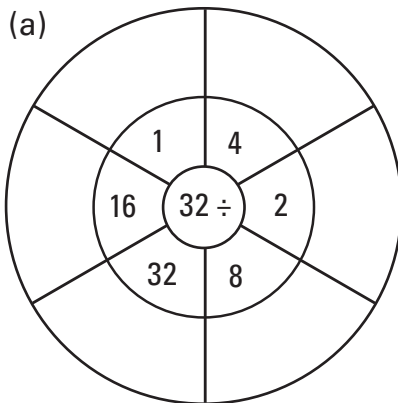
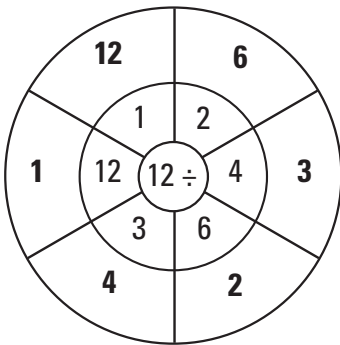
4. (a) $4 \overline{)52}$ (b) $3 \overline{)48}$ (c) $4 \overline{)96}$ (d) $2 \overline{)76}$ (e) $5 \overline{)75}$

5. (a) $2 \overline{)432}$ (b) $4 \overline{)896}$ (c) $3 \overline{)984}$ (d) $3 \overline{)426}$ (e) $4 \overline{)564}$

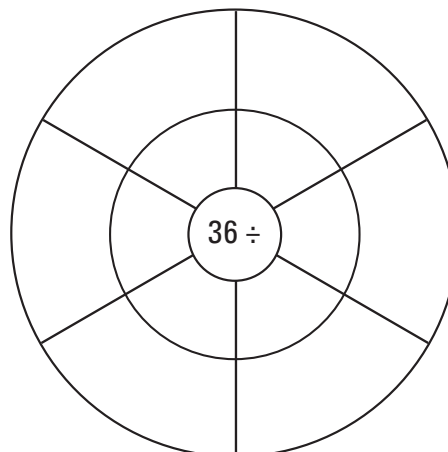
6. (a) $3 \overline{)853}$ (b) $4 \overline{)933}$ (c) $6 \overline{)739}$ (d) $3 \overline{)877}$ (e) $6 \overline{)737}$

7. Complete these division wheels.

Example:



8. Complete your own division wheel using the number 36.



STUDENT NAME

DIVISION PROBLEMS

NUMBER AND OPERATIONS

STUDENT NAME

1. Thirty-nine books were divided among three people. How many books were given to each person?

2. Eighty-four oranges needed to be divided among four crates. How many oranges were placed in each crate?

3. Fifty-six students were divided into four teams. How many students in each team?

4. A piece of wood is 85 cm long. How many five-cm-long pieces can be cut from it?

5. Three buses were needed for 129 students. How many students were on each bus?

6. Three trucks had a total of 423 boxes loaded equally among them. How many boxes were in each truck?

7. Four shelves hold a total of 560 books. How many books are on each shelf?

8. Paige had 147 photographs that she sorted into seven equal piles. How many were in each pile?

9. Jake had a total of \$232 to spend on a four-day holiday. How much did he spend each day?

10. Riley donated \$852 equally to three charities. How much did she give to each charity?

11. **Create your own division crossword. Use a calculator to help.**

1. 1	2		2.		3.
1		4.			
5.	6.			7.	
			8.		9.
10.		11.			
12.				13.	

Across		Down	
1. $24 \div 2$	8.	1. $333 \div 3$	7.
2.	11.	2.	8.
4.	12.	3.	9.
5.	13.	4.	10.
		6.	11.

3. Partial Products

Number of Players: Entire class

What to Do

1. Shuffle the cards. Draw four cards from the top of the deck, one card at a time. Pause after you draw each card to allow each student to decide where in the grid to write the number.

For example, suppose that the first card drawn is a 3. Some students might record the 3 in the tens place of the multiplicand. Others might use the 3 as the multiplier.

		3	
x			
___	hundreds		
___	tens		
___	ones		
Total			

x			3
___	hundreds		
___	tens		
___	ones		
Total			

Materials

- 36 playing cards: 1 (ace) through 9 from a deck
- Copy of the “Partial Products” form for each student (next page)

Don't draw the second card until every student has made his or her choice.

2. As you continue to draw cards, students continue to fill in their grids using any remaining open positions. They may not erase any of their previous choices.
3. After four cards have been drawn, have students compute the number of hundreds, the number of tens, and the number of ones in the product. There are three groups of winners of Round 1: those students with the largest number of hundreds, those with the largest number of tens, and those with the largest number of ones.
4. Now have students add the partial products. The Grand Prize goes to those students with the largest product.
5. Lead a discussion in which students share their strategies. What do you have to try to do in order to win the Grand Prize? In how many different ways could you win Round 1? What if the prizes went to those with the smallest products?

Partial Products

	<input type="text"/>	<input type="text"/>	<input type="text"/>
×			<input type="text"/>
<hr/>			
_____	hundreds		
_____	tens		
_____	ones		
Total	<input type="text"/>		

	<input type="text"/>	<input type="text"/>	<input type="text"/>
×			<input type="text"/>
<hr/>			
_____	hundreds		
_____	tens		
_____	ones		
Total	<input type="text"/>		

	<input type="text"/>	<input type="text"/>	<input type="text"/>
×			<input type="text"/>
<hr/>			
_____	hundreds		
_____	tens		
_____	ones		
Total	<input type="text"/>		

	<input type="text"/>	<input type="text"/>	<input type="text"/>
×			<input type="text"/>
<hr/>			
_____	hundreds		
_____	tens		
_____	ones		
Total	<input type="text"/>		

Focal Point

Number/Connections – Develop the concept of one (whole) with fractions using physical objects to explore and explain relationships among mathematical ideas.

Materials

- Pattern blocks:
 - triangles
 - blue rhombuses
 - trapezoids

Instructions

Have the students use only the following pattern blocks: trapezoids, blue rhombuses, and triangles. Guide them through the exercises on the worksheet, as follows:

1. Have them cover the hexagon first with only trapezoids. Ask: How many trapezoids did you need?
2. Point out that since only 2 trapezoids were needed, each trapezoid is one of two trapezoids needed (or $\frac{1}{2}$ of the hexagon). Have them fill in the blanks on the activity page for question 1.
3. Have the students do the same with the blue rhombuses and triangles (questions 2 and 3).
4. For question 4, say: Now we are going to find the one missing pattern block that will make 1 (the whole hexagon). Let's do the first one together. Place 1 trapezoid and then 1 rhombus in the hexagon at the top of the page. What one block is needed to complete the figure and make 1 (the hexagon)? *1 triangle*
What is its fractional name in relation to 1 (the whole hexagon)? *Answer: $\frac{1}{6}$*

5. Have the students complete exercises 5–8. In 9–13, the fractional names are given. The students place the corresponding blocks on the hexagon to find out which fractional part is missing.

Guided Learning

1. How many trapezoids cover the 1 (hexagon)?
Each is therefore ____ of the hexagon.
2. How many blue rhombuses cover the 1 (hexagon)?
Each is therefore ____ of the hexagon.
3. How many triangles cover the 1 (hexagon)?
Each is therefore ____ of the hexagon.
4. How many $\frac{1}{2}$'s equal 1?
5. How many $\frac{1}{3}$'s equal 1?
6. How many $\frac{1}{6}$'s equal 1?"
7. The sum $\frac{1}{6} + \frac{1}{3} + \frac{1}{2}$ equals what number?
1
Explain.

Explore More!

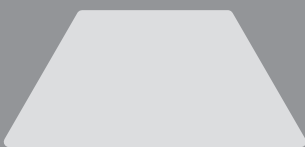
To do the following exercises, the students will need 2 blocks of the same kind to make 1 (whole hexagon). Which kind of block is needed?

$$2 \text{ blue rhombuses} + \underline{\hspace{2cm}} = 1 \text{ (whole hexagon)} \quad 2 \text{ triangles}$$

$$\frac{1}{2} + \frac{1}{6} + \underline{\hspace{2cm}} = 1 \text{ (whole hexagon)} \quad 2 \text{ triangles}$$

$$\frac{3}{6} + \frac{1}{6} + \underline{\hspace{2cm}} = 1 \text{ (whole hexagon)} \quad 2 \text{ triangles}$$

Have students explain why all the examples need 2 triangles. Have them write the explanation in their math journal.

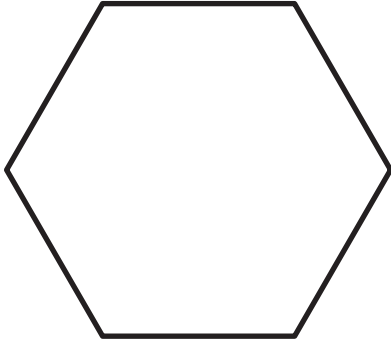




Just One (Hexagon)!

Name: _____

Follow the directions and fill in the blanks.



1. Cover the hexagon with only trapezoids. Since _____ trapezoids cover the hexagon, each trapezoid is _____ of the hexagon.
2. Cover the hexagon with only blue rhombuses. Since _____ blue rhombuses cover the hexagon, each rhombus is _____ of the hexagon.
3. Cover the hexagon with only triangles. Since _____ triangles cover the hexagon, each triangle is _____ of the hexagon.

Place the indicated pattern blocks in the outline of the hexagon above to find the block(s) that will make just one hexagon. Write the name of the missing block and its fraction name in the spaces provided.

4. 1 trapezoid + 1 rhombus + $\frac{1 \text{ triangle}}{\text{(missing block)}}$ [$\frac{1}{6}$] = 1 (whole hexagon)
(fraction name)
5. 2 rhombuses + 1 triangle + _____ [_____] = 1 (whole hexagon)
6. 1 trapezoid + 1 triangle + _____ [_____] = 1 (whole hexagon)
7. 3 triangles + _____ [_____] = 1 (whole hexagon)
8. 2 triangles + 1 rhombus + _____ [_____] = 1 (whole hexagon)
9. $\frac{1}{6} + \frac{1}{3} +$ _____ [_____] = 1 (whole hexagon)
10. $\frac{2}{6} + \frac{1}{3} +$ _____ [_____] = 1 (whole hexagon)
11. $\frac{1}{3} + \frac{1}{2} +$ _____ [_____] = 1 (whole hexagon)
12. $\frac{1}{3} + \frac{1}{3} +$ _____ [_____] = 1 (whole hexagon)
13. $\frac{1}{3} + \frac{3}{6} +$ _____ [_____] = 1 (whole hexagon)

Focal Point

Number Sense/Representation – Develop the concept of equivalence. Use representations to explore problem situations and develop the concept of addition of fractions.

Materials

- Pattern blocks

Instructions

Have the students cover each design (A–F) with the pattern blocks indicated. Students will use same-color pattern blocks for each design. Assuming the hexagon represents one whole unit, have them write the fraction name for the original design and the equivalent fraction name (for the covering pieces) in the form of a number sentence.

Guided Learning

Reinforce the understanding that fractional numbers, like whole numbers, have many names for the same value.

Ask: What one pattern block covers 3 triangles? If the hexagon = 1, what is another name for $\frac{3}{6}$? *Answer:* $\frac{1}{2}$

What one pattern block covers 1 triangle and 1 blue rhombus? If a hexagon = 1, what is another name for $\frac{1}{6} + \frac{1}{3}$? *Answer:* $\frac{1}{2}$

**Explore More!**

Have the students make three new and original examples of equivalence, as follows: Take two or more pattern blocks, put them together, and outline the resulting shape. Find the same-color pattern block that will cover the area of the new shape. Write the corresponding addition sentence.



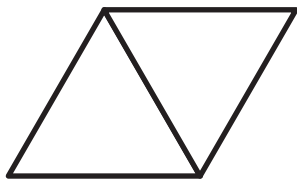
Cover with One Color

Name: _____

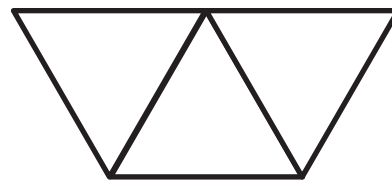
Cover each design with the pattern blocks shown below.

Find the equivalent values by placing pattern blocks (of one color) on top of each design. Compare each pattern block to the hexagon (one whole unit) and record each fraction name.

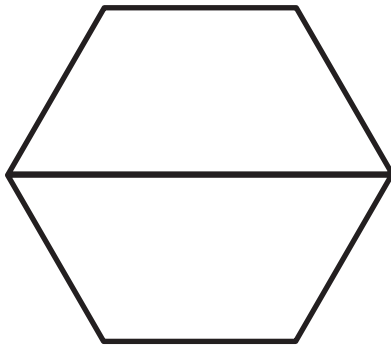
Write a number sentence showing the fraction names and the equivalent values. (See Example A.)



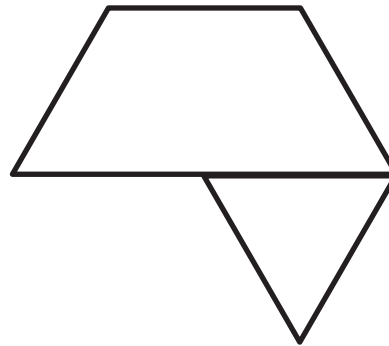
A. $\frac{1}{6} + \frac{1}{6} = \frac{1}{3}$ _____



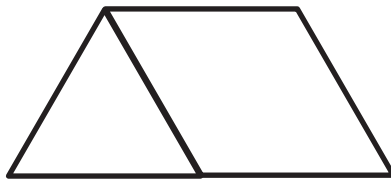
B. _____



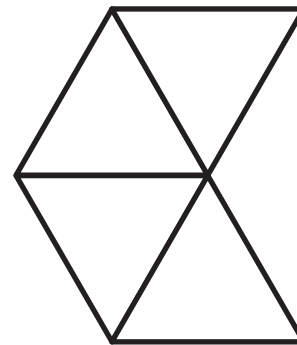
C. _____



D. _____



E. _____



F. _____

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!**

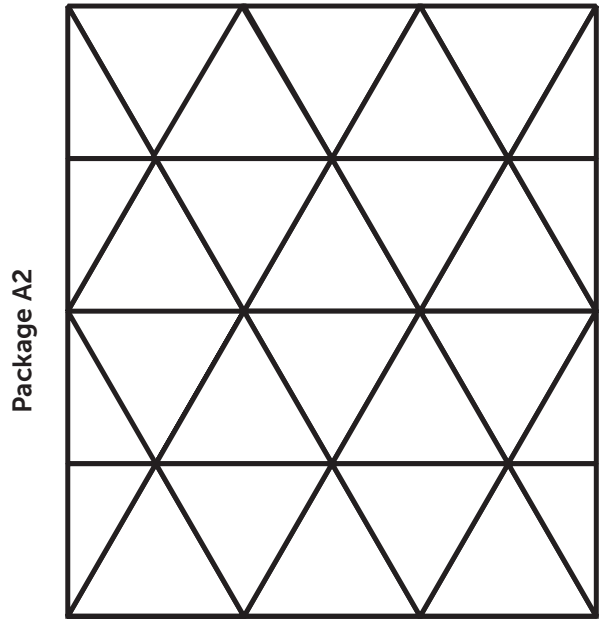
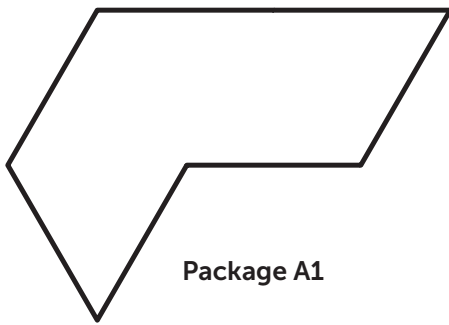
Have the students use triangles to make a package whose perimeter is double that of the original package. What is its area? How does the new area compare to that of the original package. Will this always be true?



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.

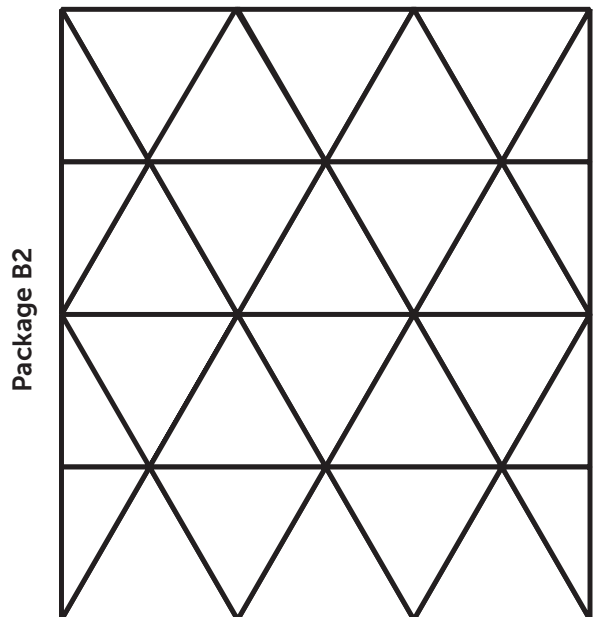
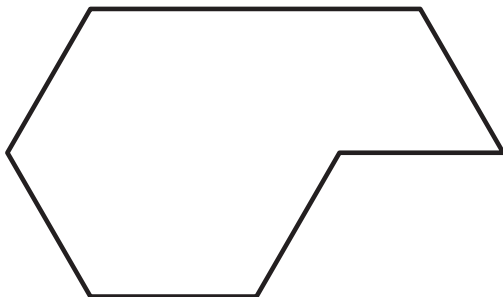


A1 area: _____ triangular units

A2 area: _____ triangular units

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

Why? _____



B1 area: _____ triangular units

B2 area: _____ triangular units

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

Why? _____

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?

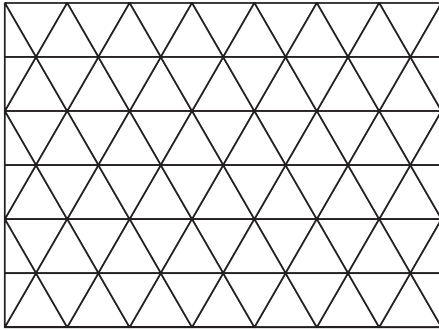


Blue Packages

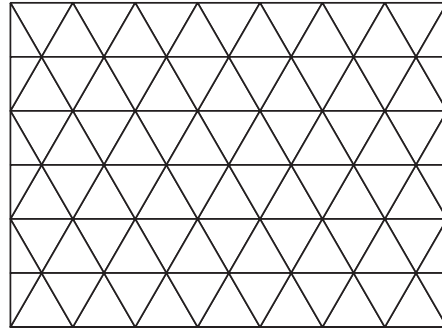
Name: _____

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.

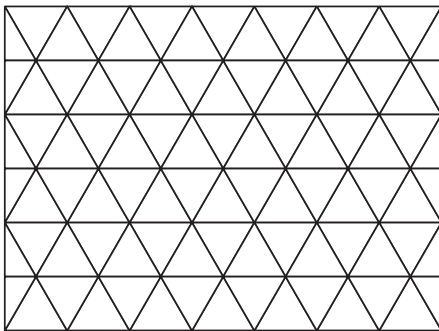
Grid A



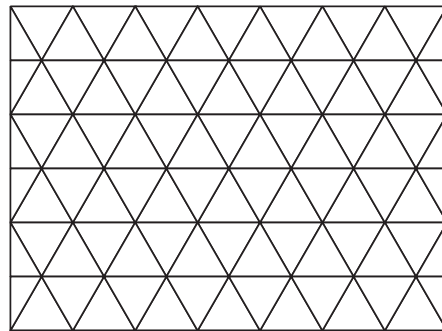
Grid B



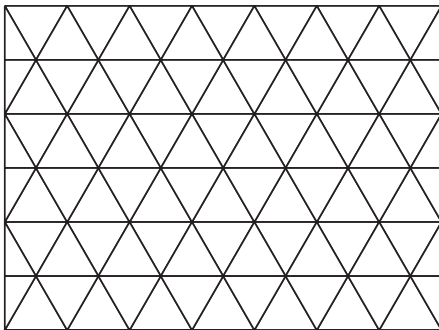
Grid C Area = 8 Perimeter = 10



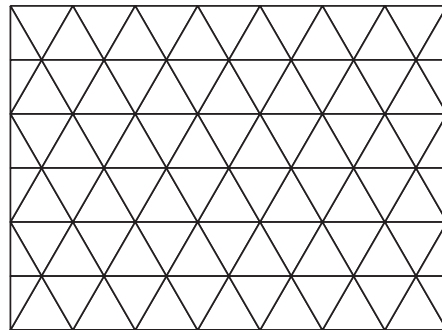
Grid D Area = 6 Perimeter = 8



Grid E Area = 12 Perimeter = 10



Grid F Area = 10 Perimeter = 12



Focal Point

Measurement – Explore the relationship between area and perimeter. Explore how perimeter can vary for figures with fixed areas.

Materials

- Pattern blocks
 - triangles
 - blue rhombuses
 - trapezoids

Instructions

Remind the students that the length of one side of the triangle is equal to 1 unit.

For the first activity, have the students take 6 triangles and make 3 packages of different shapes. In each package, the triangles must touch completely along at least one side.

Have the students sketch the packages, putting “L” on the package with the longest perimeter and “S” on the package with the shortest perimeter.

Have them do the same with 4 blue rhombuses and 4 red trapezoids.

Guided Learning

1. What is the area of each package you sketched?
2. Did the package with the smallest perimeter have the smallest area? Is this always true?
3. Do the packages with the same area always have the same perimeter? Explain. Give an example.

**Explore More!**

Have the students redo this activity using one of each: triangle, blue rhombus, and trapezoid.

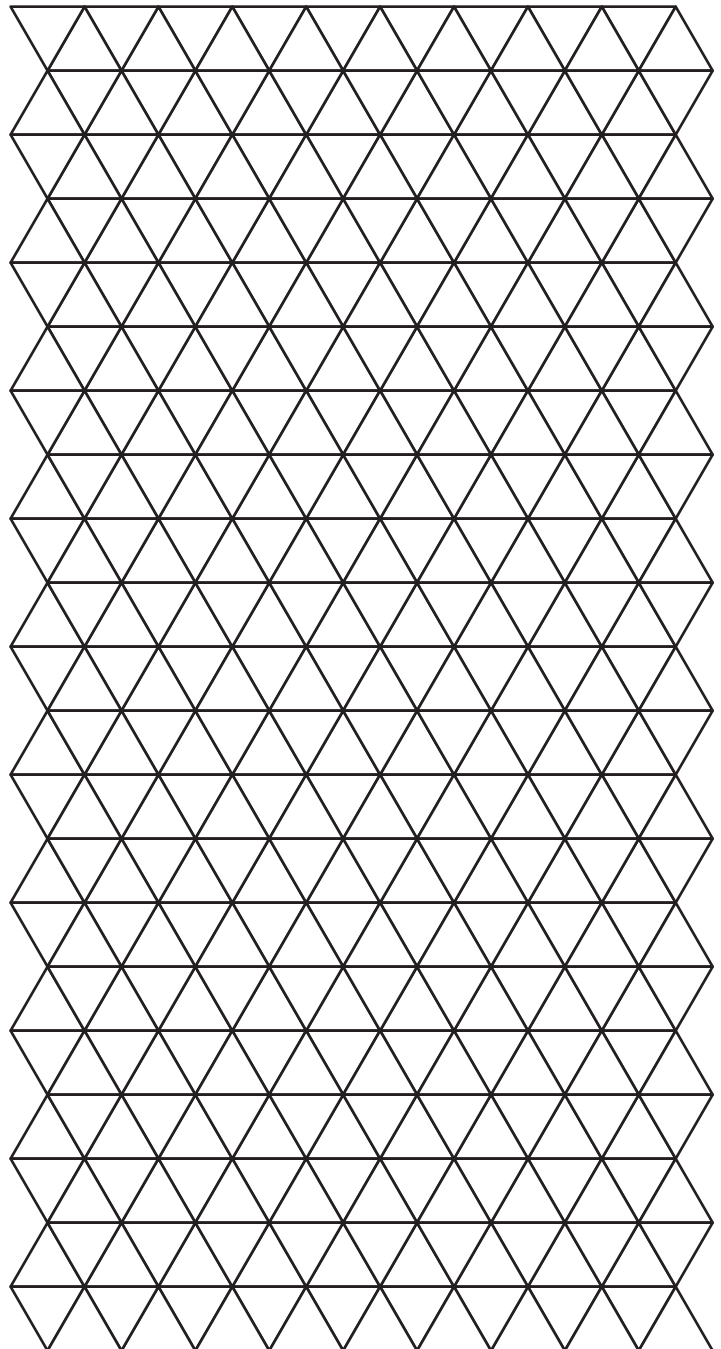





Remodeling

Name: _____

1. Assume the length of one side of a triangle is equal to 1 unit. Take 6 triangles and make 3 different packages. (Remember: the triangles must touch completely on at least one side.)
2. Sketch the packages on the grid. Put "S" on the package with the shortest perimeter and "L" on the package with the longest perimeter. Then fill in the table.
3. Do the same for the blue rhombus and the trapezoid.

Sketch



Shape	Take	Smallest Perimeter	Largest Perimeter
 triangle	6	____ units	____ units
 blue rhombus	4	____ units	____ units
 trapezoid	4	____ units	____ units

Make the Most of It

GAME
4-2

Learning Objectives

Read and write multi-digit numbers based on meanings of digits in each place, and use $>$, $=$, and $<$ symbols to compare the numbers.

Content Standard

Generalize place value understanding for multi-digit whole numbers.
(CCSSM: 4.NBT.1 and 4.NBT.2)

Math Vocabulary

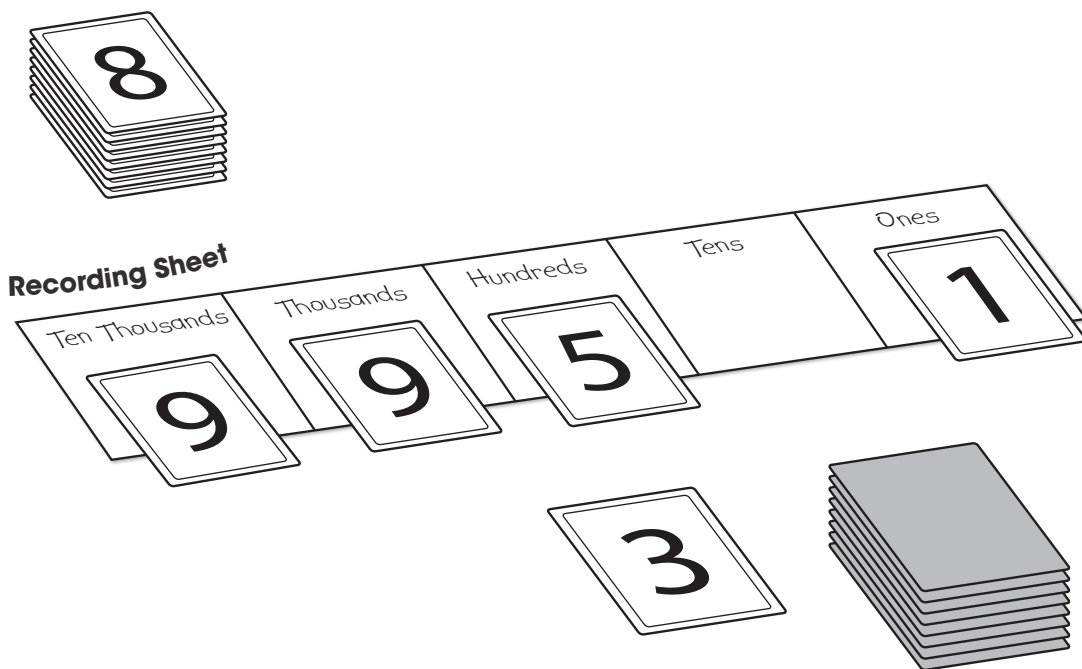
- *place value*
- *ones place*
- *tens place*
- *hundreds place*
- *thousands place*
- *ten thousands place*

Materials

For each pair of students:

- Deck (4 sets) of Number Cards 0-9 for each pair of students (page 59)
- Game Rules, if needed after presentation (page 64)
- Each student makes a simple place value mat. (Tip: Cut 11 × 17-inch paper in half lengthwise to create two mats. Fold mats in half widthwise and then into thirds to make 6 columns.)

Ten Thousands	Thousands	Hundreds	Tens	Ones



Explaining the Game: Make the Most of It

Number of Players: 2

Object: Players make the largest possible five-digit number with the cards they draw.

How to Play:

1. Players take turns drawing one card at a time.
 - Try to make the largest five-digit number possible by placing the card in one of the place value columns on your place value mat.
 - Once a card is placed, it cannot be moved.
2. When the 6th card is drawn, the player may:
 - Choose to replace one of the cards on the place value mat with the 6th card, or
 - Discard the 6th card.
3. The player with the largest five-digit number wins a point and:
 - Writes the comparison sentence (for example, $85,564 > 76,432$).
 - Explains how he/she knows the winning number is larger.

Differentiation

More Support

- Start with a place value mat that only goes to hundreds or thousands. Draw one more card than the number of place values on the mat.
- Have students say the value after each placement. For example, if the first card placed is a 5 in the tens place, the student says, "Fifty." If the second card played is a 6 in the hundreds place, the student says, "Six hundred."

More Challenge

- Make whole numbers that have more than five digits.

Advanced Challenge (above grade level)

- Make decimal numbers, including 10ths and 100ths. Whole numbers could be written in black and decimals in red.

Number Cards 0-9

0

1

2

3

4

5

6

7

8

9

Number Cards used in Games 4-2, 4-4, 4-5, 4-6, and 4-11. Print 4 copies of this page on card stock for each deck.

Pages 59-62: Printing half of the decks on a different color of card stock will make cleanup easier.

Explaining the Game: Feuding Fractions

Number of Players: 2

Materials: A deck of 8ths or 12ths Fraction Cards for each pair of students (remove all cards with a numerator of 0.)

Object: Add fractions.

- The player with the larger sum wins all the cards for that round.
- The player who captures all of the cards in the deck is the winner.

How to Play:

1. Taking turns, each player:
 - Draws 2 cards from the deck.
 - Adds the fractions.
 - If the sum is less than 1, the player draws additional cards until the sum is at least one whole.
 - Reports the sum of all cards as a whole number or as a mixed number.
2. Each player checks and compares the sums of the other player.
3. The player with the larger sum wins all the cards for that round.
4. If both players have the same sum, they return the cards to the bottom of the deck and play again.
5. Play continues until one player wins by capturing all the cards.

$$\frac{2}{8} + \frac{1}{8} + \frac{4}{8} =$$

$$\frac{5}{8} + \frac{3}{8} =$$

Differentiation

More Support

- Let students add pictorial representations of fractions (such as fraction bars or circles) to 8ths or 4ths cards. (Four sets in each deck.) Then play with those decks.

More Challenge

- Use a mixed deck of 4ths and 8ths, or a deck of halves, 4ths, and 8ths, or
- Play with other targets (for example, the winner is the player whose sum is closest to $\frac{1}{2}$ or $1\frac{1}{2}$).

Deepening the Understanding

Ask the class:

Mathematical Practices (CCSSM)

What are all the ways you can write $\frac{5}{8}$ as the sum of cards in the 8ths deck?

MP2 Reason abstractly and quantitatively.

If you need to trade the seven cards below for two cards with the same value as the original seven cards, what are your options?

MP2 Reason abstractly and quantitatively.

$\frac{1}{12}, \frac{1}{12}, \frac{1}{12}, \frac{1}{12}, \frac{1}{12}, \frac{1}{12}, \frac{1}{12}$

If you had $\frac{7}{8}$ and $\frac{4}{8}$, how could you easily add them in your head?

MP2 Reason abstractly and quantitatively.

(Note: An easy option would be to decompose $\frac{4}{8}$ into $\frac{1}{8} + \frac{3}{8}$ and then add $\frac{7}{8} + \frac{1}{8} = 1$; $1 + \frac{3}{8} = 1\frac{3}{8}$.)

If you had $\frac{2}{8}, \frac{5}{8},$ and $\frac{6}{8},$ how could you rearrange the fractions to add them in your head?

MP2 Reason abstractly and quantitatively.

After a student shares an idea, ask the class if they agree or disagree and why.

MP3 Construct viable arguments and critique the reasoning of others.

Fraction Cards

Print 4 copies of this page on card stock for each deck.

$$\frac{0}{8}$$

$$\frac{1}{8}$$

$$\frac{2}{8}$$

$$\frac{3}{8}$$

$$\frac{4}{8}$$

$$\frac{5}{8}$$

$$\frac{6}{8}$$

$$\frac{7}{8}$$

$$\frac{8}{8}$$

$$\frac{0}{5}$$

$$\frac{1}{5}$$

$$\frac{2}{5}$$

Fraction Cards

Print 4 copies of this page on card stock for each deck.

$$\frac{3}{5}$$

$$\frac{4}{5}$$

$$\frac{5}{5}$$

$$\frac{0}{12}$$

$$\frac{1}{12}$$

$$\frac{2}{12}$$

$$\frac{3}{12}$$

$$\frac{4}{12}$$

$$\frac{5}{12}$$

$$\frac{6}{12}$$

$$\frac{7}{12}$$

$$\frac{8}{12}$$

Fraction Cards

Print 4 copies of this page on card stock for each deck.

$$\frac{9}{12}$$

$$\frac{10}{12}$$

$$\frac{11}{12}$$

$$\frac{12}{12}$$

$$\frac{0}{4}$$

$$\frac{1}{4}$$

$$\frac{2}{4}$$

$$\frac{3}{4}$$

$$\frac{4}{4}$$

$$\frac{0}{2}$$

$$\frac{1}{2}$$

$$\frac{2}{2}$$



Discovering Equivalent Fractions - 1

NAME: _____ DATE: _____

Use your fraction materials. For each example, compare the two fractions to see if they have the same area.

If the two fractions have the same area, put an equal sign (=) between them. If the two fractions do not have the same area, use the greater than (>) or less than (<) symbol to make the expression true.

$$\frac{1}{3} \square \frac{2}{6}$$

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

$$\frac{1}{2} \square \frac{4}{6}$$

$$\frac{1}{6} \square \frac{2}{12}$$

$$\frac{3}{4} \square \frac{8}{12}$$

$$\frac{1}{5} \square \frac{2}{10}$$



Discovering Equivalent Fractions - 2

NAME: _____ DATE: _____

Use your fraction materials. Decide which symbol goes in the box to make each statement true. Record your findings in the Equivalent Fractions Truth Table.

=, >, <

$\frac{1}{2} \square \frac{2}{4}$	$\frac{1}{4} \square \frac{3}{8}$	$\frac{1}{3} \square \frac{3}{6}$
$\frac{3}{4} \square \frac{7}{8}$	$\frac{3}{3} \square \frac{4}{6}$	$\frac{2}{2} \square \frac{10}{10}$
$\frac{5}{6} \square \frac{2}{4}$	$\frac{2}{12} \square \frac{1}{6}$	$\frac{2}{3} \square \frac{3}{6}$
$\frac{1}{8} \square \frac{1}{12}$	$\frac{2}{3} \square \frac{4}{6}$	$\frac{3}{6} \square \frac{2}{5}$
$\frac{8}{10} \square \frac{4}{5}$	$\frac{4}{4} \square \frac{6}{8}$	$\frac{3}{8} \square \frac{8}{12}$
$\frac{1}{5} \square \frac{2}{10}$	$\frac{4}{6} \square \frac{8}{12}$	$\frac{3}{8} \square \frac{11}{12}$



Discovering Equivalent Fractions - 3

NAME: _____ DATE: _____

Use your fraction materials. Decide which symbol goes in the box to make each statement true. Record your findings in the Equivalent Fractions Truth Table.

=, >, <

$\frac{7}{8} \square \frac{2}{2}$	$\frac{1}{4} \square \frac{3}{12}$	$\frac{2}{4} \square \frac{2}{6}$
$\frac{6}{8} \square \frac{5}{6}$	$\frac{1}{3} \square \frac{2}{6}$	$\frac{1}{6} \square \frac{2}{8}$
$\frac{5}{8} \square \frac{2}{4}$	$\frac{4}{4} \square \frac{7}{8}$	$\frac{3}{8} \square \frac{3}{6}$
$\frac{1}{8} \square \frac{1}{5}$	$\frac{2}{3} \square \frac{8}{12}$	$\frac{2}{6} \square \frac{4}{12}$
$\frac{3}{5} \square \frac{6}{10}$	$\frac{4}{6} \square \frac{3}{5}$	$\frac{3}{8} \square \frac{3}{6}$
$\frac{7}{8} \square \frac{3}{3}$	$\frac{1}{2} \square \frac{5}{10}$	$\frac{2}{4} \square \frac{3}{6}$



Discovering Equivalent Fractions - 4

NAME: _____ DATE: _____

Use your fraction materials. Decide which symbol goes in the box to make each statement true. Record your findings in the Equivalent Fractions Truth Table.

=, >, <

$\frac{5}{8} \square \frac{5}{6}$	$\frac{1}{2} \square \frac{6}{12}$	$\frac{5}{6} \square \frac{10}{12}$
$\frac{2}{8} \square \frac{1}{4}$	$\frac{4}{8} \square \frac{6}{12}$	$\frac{6}{8} \square \frac{5}{6}$
$\frac{2}{5} \square \frac{4}{10}$	$\frac{3}{5} \square \frac{2}{4}$	$\frac{11}{12} \square \frac{9}{10}$
$\frac{2}{5} \square \frac{6}{10}$	$\frac{4}{5} \square \frac{3}{4}$	$\frac{3}{8} \square \frac{2}{6}$
$\frac{2}{6} \square \frac{5}{12}$	$\frac{6}{8} \square \frac{3}{4}$	$\frac{5}{6} \square \frac{2}{8}$
$\frac{7}{8} \square \frac{4}{5}$	$\frac{1}{3} \square \frac{4}{12}$	$\frac{3}{4} \square \frac{9}{12}$



Equivalent Fractions Truth Table - 1

NAME: _____ DATE: _____

Record the equivalent fractions you discovered here. Some are recorded for you.

Fractions equivalent to 1 (whole)

$$\frac{1}{1} = \frac{2}{2} = \frac{3}{3} = \frac{4}{4} = \frac{5}{5} = \frac{6}{6} = \frac{7}{7} = \frac{8}{8} = \frac{9}{9} = \frac{10}{10} = \frac{11}{11} = \frac{12}{12}$$

Fractions equivalent to $\frac{1}{2}$

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$$

Fractions equivalent to $\frac{1}{3}$

$$\frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12}$$

Fractions equivalent to $\frac{2}{3}$

$$\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12}$$

Fractions equivalent to $\frac{1}{4}$

$$\frac{1}{4} = \frac{2}{8} = \frac{3}{12}$$

Fractions equivalent to $\frac{3}{4}$

$$\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$$



Equivalent Fractions Truth Table - 2

NAME: _____ DATE: _____

Record the equivalent fractions you discovered here.

Fractions equivalent to $\frac{1}{5}$

$$\frac{1}{5} = \underline{\quad}$$

Fractions equivalent to $\frac{2}{5}$

$$\frac{2}{5} = \underline{\quad}$$

Fractions equivalent to $\frac{3}{5}$

$$\frac{3}{5} = \underline{\quad}$$

Fractions equivalent to $\frac{4}{5}$

$$\frac{4}{5} = \underline{\quad}$$

Fractions equivalent to $\frac{1}{6}$

$$\frac{1}{6} = \underline{\quad}$$

Fractions equivalent to $\frac{2}{6}$

$$\frac{2}{6} = \underline{\quad}$$

Fractions equivalent to $\frac{4}{6}$

$$\frac{4}{6} = \underline{\quad}$$

Fractions equivalent to $\frac{5}{6}$

$$\frac{5}{6} = \underline{\quad}$$



Creating Common Denominators - 3

NAME: _____ DATE: _____

Take out your Equivalent Fractions Truth Table. Use it to answer the questions.

Compare $\frac{1}{4}$ and $\frac{5}{8}$. Are the denominators the same? **YES** **NO**

Look at your Equivalent Fractions Truth Table.

Is there a fraction with a denominator of 8 that is equivalent to $\frac{1}{4}$? **YES** **NO**

What is it? _____ So $\frac{1}{4}$ is equivalent to _____.

Rewrite $\frac{1}{4}$ and $\frac{5}{8}$ using common denominators: _____ and $\frac{5}{8}$

State these two fractions as a comparison using =, <, or >.

_____.

(Now use your fraction materials to prove your statement is true.)



Creating Common Denominators - 4

NAME: _____ DATE: _____

Take out your Equivalent Fractions Truth Table. Use it to answer the questions.

Compare $\frac{1}{2}$ and $\frac{3}{6}$. Are the denominators the same? YES NO

Look at your Equivalent Fractions Truth Table.

Is there a fraction with a denominator of 6 that is equivalent to $\frac{1}{2}$? YES NO

What is it? _____ So $\frac{1}{2}$ is equivalent to _____ .

Rewrite $\frac{1}{2}$ and $\frac{3}{6}$ using common denominators: _____ and $\frac{3}{6}$

State these two fractions as a comparison using =, <, or >.

_____.

(Now use your fraction materials to prove your statement is true.)



Creating Common Denominators - 13

NAME: _____ DATE: _____

Take out your Equivalent Fractions Truth Table. Use it to answer the questions.

Compare $\frac{2}{3}$ and $\frac{3}{4}$. Are the denominators the same? YES NO

Is there a fraction with a denominator of 4 that is equivalent to $\frac{2}{3}$? YES NO

Is there a fraction with a denominator of 3 that is equivalent to $\frac{3}{4}$? YES NO

If you answered No to all three questions, **both** denominators must be changed before a comparison can be made.

Look again at your table. Compare the fractions that are equivalent to $\frac{2}{3}$ with the fractions that are equivalent to $\frac{3}{4}$. Do any of them share the same denominator?

YES NO

If Yes, what is the denominator? _____

This is the **least common denominator** for $\frac{2}{3}$ and $\frac{3}{4}$.

Rewrite $\frac{2}{3}$ and $\frac{3}{4}$ in terms of their least common denominator:

$\frac{2}{3}$ is equivalent to _____ . $\frac{3}{4}$ is equivalent to _____ .

Now state the two fractions as a comparison using =, <, or >. _____ .

(Use your fraction materials to prove your statement is true.)



Creating Common Denominators - 14

NAME: _____ DATE: _____

Take out your Equivalent Fractions Truth Table. Use it to answer the questions.

Compare $\frac{1}{2}$ and $\frac{4}{5}$. Are the denominators the same? YES NO

Is there a fraction with a denominator of 5 that is equivalent to $\frac{1}{2}$? YES NO

Is there a fraction with a denominator of 2 that is equivalent to $\frac{4}{5}$? YES NO

If you answered No to all three questions, **both** denominators must be changed before a comparison can be made.

Look again at your table. Compare the fractions that are equivalent to $\frac{1}{2}$ with the fractions that are equivalent to $\frac{4}{5}$. Do any of them share the same denominator?

YES NO

If Yes, what is the denominator? _____

This is the **least common denominator** for $\frac{1}{2}$ and $\frac{4}{5}$.

Rewrite $\frac{1}{2}$ and $\frac{4}{5}$ in terms of their least common denominator:

$\frac{1}{2}$ is equivalent to _____ . $\frac{4}{5}$ is equivalent to _____ .

Now state the two fractions as a comparison using =, <, or >. _____ .

(Use your fraction materials to prove your statement is true.)



Decomposing Fractions - 2

NAME: _____ DATE: _____

Decompose each fraction three different ways. Use your fraction materials. Then record what you have created with the materials.

1. Decompose $\frac{9}{12}$ three different ways.

2. Decompose $\frac{5}{6}$ three different ways.

3. Decompose $\frac{8}{8}$ three different ways.

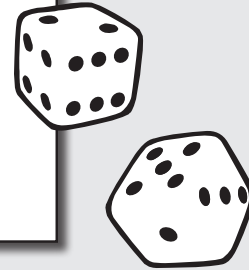
4. Decompose $\frac{9}{10}$ three different ways.

5. Decompose $\frac{10}{12}$ three different ways.

Directions for Division Graph Activities

Objectives

- Develop a working knowledge of the mathematical concepts of division.
- Practice division facts 2 through 12.
- Recognize and reinforce factors.
- Quick recognition of all possible sum combinations on two dice.
- Practice directionality on the x and y axes.



The **Graph** activities are an introductory lesson to familiarize students with division facts. The simplicity of these activities makes them a tool for diversifying learning. Some students may find it beneficial to stay with the Graph activities to develop recognition and fluency, while others are ready for more challenging involvement with division facts.

Introduce the **Division Graphs** by demonstrating on an overhead or interactive whiteboard.

How to Play

- Toss two dice and find the sum.
- The sum is the **quotient** of a division equation on the chart. Fill in the box above the equation with the quotient.
- The first team to fill in a column wins.

Suggestions

- Have students use the term “has how many” instead of “divided by” when reading the division sign (\div).
- If students are struggling to recall division facts, suggest they skip count by the divisor until they reach the quotient (die toss) to find the multiple (dividend) or, if necessary, refer to the Division Chart (page ix).

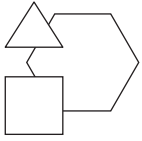
Variations

- First team to fill a column wins.

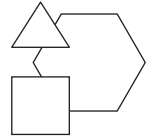
- First team to fill three columns wins.
- First team to fill a column stops the activity. Teams find the total of all the numbers entered on the graph to determine the highest score.
- Toss dice 10 times. Team with the highest sum wins. Keep a record of tosses and use as a probability lesson.
- Team tosses two dice and finds the sum. Instead of recording the quotient, teacher instructs students to perform another calculation to the quotient and record the answer on the graph, such as:
 - Double or triple the quotient
 - Halve the quotient
 - Add 5 to the quotient and halve the result
 - Add 7, 8, 9, 10, or 11 to the quotient
 - Subtract 7, 8, 9, 10, or 11 from the quotient (possible to result in a negative number)
 - After 5, 10, or 15 tosses, tally the answers to see which team has the highest or lowest score.

Discussion

- How do you figure out a division solution if you cannot recall the division fact?
- How do the multiplication facts help with division?
- How can skip counting help in solving division problems?

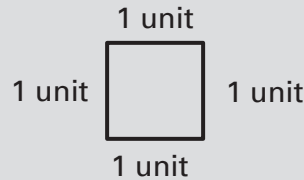


Perimeter vs. Area – Activity Page 1



Name: _____

Perimeter is the distance around a figure. For a square, all sides have the same length, so the perimeter P is four times the length of a side. If the side of an interlocking square has a length of one unit, then the perimeter is $P = 4$ units.



Area is the space inside a figure. It is measured in **square units**. The area of the above square is 1 square unit ($A = 1$ square unit). You can find the area of a figure by counting the number of square units inside it.

1. Connect two squares.

What is the perimeter of this rectangle? $P =$ _____ units

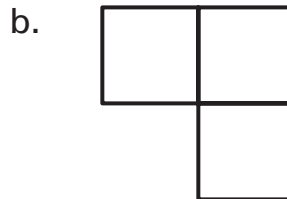
What is the area? $A =$ _____ square units

2. You can connect three squares in more than one way. Take three squares and make these shapes. What is the perimeter of each shape? What is the area of each?



$P =$ _____

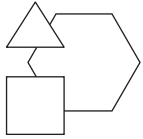
$A =$ _____



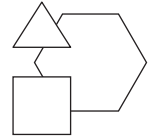
$P =$ _____

$A =$ _____





Perimeter vs. Area – Activity Page 2



Name: _____

3. a. By connecting four squares, you can make five different shapes. Take four squares and make the shapes. Sketch each shape below.

- b. Find the perimeter of each figure, and then find the area of each figure.

$P =$ _____ $P =$ _____ $P =$ _____ $P =$ _____ $P =$ _____

$A =$ _____ $A =$ _____ $A =$ _____ $A =$ _____ $A =$ _____

4. What do you notice about the perimeters and areas of the figures above? Is there a relationship between the perimeter and area of a figure?

The measure of the four interior angles of a rectangle total 360° . Is this statement true or false?

Draw a picture to show the angle measures.

Going Further

If a quadrilateral contains a right angle, then the quadrilateral must have two perpendicular line segments. Explain in writing why this statement must be true.

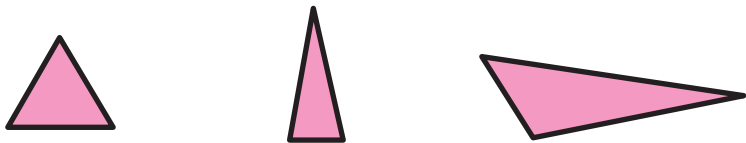
The sum of the measures of the three angles of a triangle is 180° . This is true for all triangles. If a triangle has angles that measure 40° and 110° , what is the measure of the third angle?

Draw a picture and then write and solve an equation.

Use x to represent the unknown angle measure.

Going Further

Explain in writing how to find the missing angle measure of a triangle when two angle measures are known.



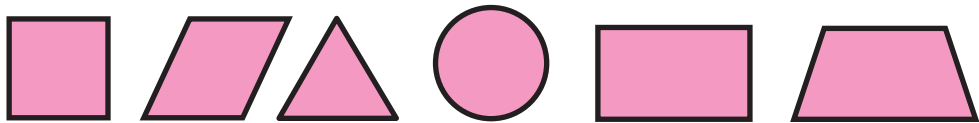
All triangles have at least one line of symmetry.

Is this statement true or false?

Copy and name the triangles shown. Draw the lines of symmetry for each triangle. Then answer the question.

Going Further

Ask a partner to solve the same problem.
Do you and your partner agree on the solution?

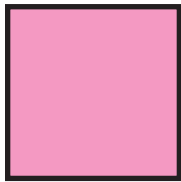


Which of these shapes have a common attribute—parallel sides? Which of these shapes have four right angles?

Use what you know about the properties of two-dimensional figures.

Going Further

Draw a shape that has two pairs of parallel sides but no right angles.
What is the name of this shape?

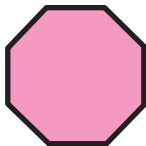
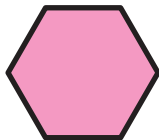
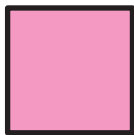
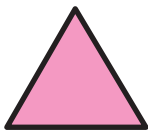


How many lines of symmetry does each figure have?

Draw a picture to illustrate the solution.

Going Further

Draw a polygon that is not a square or a trapezoid and show the lines of symmetry.



How many lines of symmetry does each of these regular polygons have? Describe the pattern that you see.

Copy each figure on paper and draw the lines of symmetry.

Going Further

How many lines of symmetry does a regular dodecagon (12-sided polygon) have? Use the pattern you discovered.

46 Multiplication of a One-Digit Number by a Two-Digit Number

Math Standard Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations.

i Grouping(s)

Small guided math group

/ Materials

For the student:

- 100-bead number line (BNL)
- “Multiplication of a One-Digit Number by a Two-Digit Number” Cards (page 134)
- Recording Sheet (page 135)

> Overview

Students draw a card and model the multiplication problem on the BNL.

□ Presenting the Activity

1. Students draw a card.
2. Students build the quantity on the BNL using a multiplication strategy such as the break-apart strategy (shown below).
3. Students record the expression, how they broke apart the numbers, and the resulting equation.

Ⓜ Guided Learning

Ask:

- How did you interpret the problem?
- How do you know that you are correct?

⦿ Assessing Student Responses

- Was student successful in modeling the multiplication problem?
Y / N / Emerging
- Could student explain the concept?
Y / N / Emerging

Equation/ Strategy	Show on the BNL.	Product
$2 \times 11 =$ 2×10 2×1		22

Activity 46: "Multiplication of a One-Digit Number by a Two-Digit Number" Cards

2×11	2×12	2×22
2×25	3×11	3×12
3×14	4×12	4×14
5×11	5×12	5×15
6×12	7×12	8×12
3×15	4×15	6×15
5×14	5×13	6×14
6×16	7×13	2×16

Activity 46: "Multiplication of a 1-Digit Number by a 2-Digit Number" Recording Sheet

The first one is done for you.

Equation/ Strategy	Show on the BNL.	Product
$2 \times 11 =$ 2×10 2×1		22

47 Division with a Remainder

Math Standard Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors,

i Grouping(s)

Small guided math group

/ Materials

For the student:

- 100-bead number line (BNL)
- “Division with a Remainder” Cards (page 136)
- Recording Sheet (page 137)

◀ Overview

Students draw a card and model division with a remainder on the BNL.

Extension

Students make up their own division with remainder problems and give them to a partner to solve on the BNL.

📄 Presenting the Activity

1. Teacher gives the example $14 \div 3$.
Students grab 14 beads on the BNL.
Teacher *asks*: How many groups of 3 can you make? What is left over?
2. Students draw a card.
3. Students model division with a remainder on the BNL.
4. Students record the problem and solution on the recording sheet.

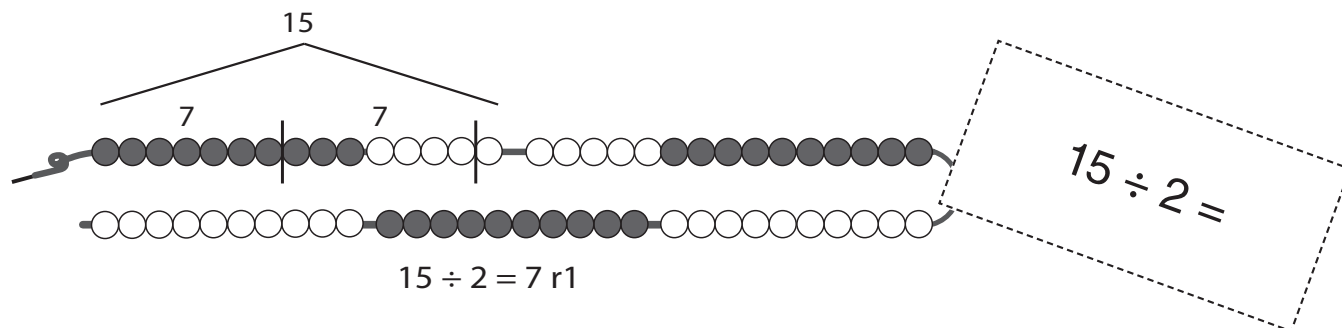
👤 Guided Learning

Ask:

- How did you interpret the problem?
- How do you know that you are correct?

🌀 Assessing Student Responses

- Was student successful in modeling the division problem?
Y / N / Emerging
- Could student explain the concept?
Y / N / Emerging



Activity 47: "Division with a Remainder" Cards

$5 \div 2 =$

$17 \div 8 =$

$9 \div 2 =$

$15 \div 2 =$

$17 \div 2 =$

$19 \div 2 =$

$15 \div 6 =$

$18 \div 4 =$

$19 \div 3 =$

$25 \div 6 =$

$18 \div 5 =$

$21 \div 2 =$

$80 \div 6 =$

$30 \div 4 =$

$40 \div 9 =$

$17 \div 3 =$

$11 \div 2 =$

$16 \div 3 =$

$14 \div 3 =$

$12 \div 5 =$

$10 \div 3 =$

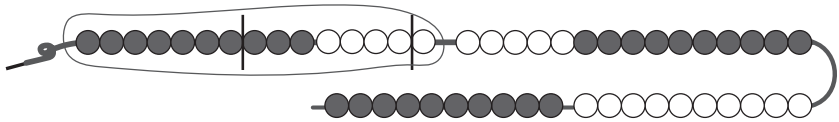
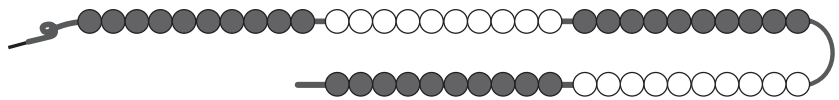
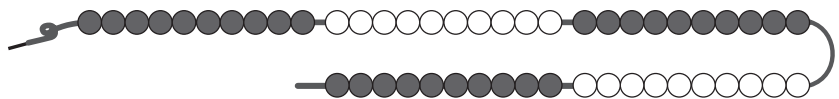
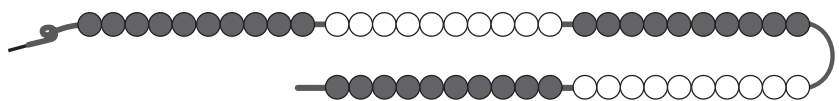
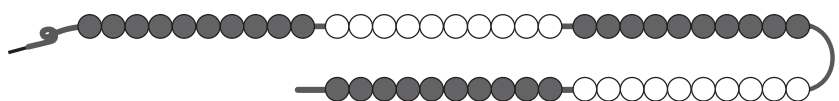
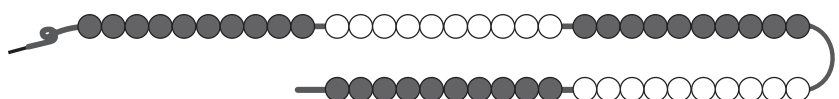
$50 \div 6 =$

$45 \div 8 =$

$36 \div 5 =$

Activity 47: "Division with a Remainder" Recording Sheet

The first one is done for you.

Equation	Show on the BNL	Quotient
15 ÷ 2 =		7 r1
		
		
		
		
		

48 Add Decimal Fractions

Math Standard Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.

Grouping(s)

Small guided math group or workstation

Overview

Students draw a card and add two fractions in decimal form.

Materials

For the student:

- 100-bead number line (BNL)
- “Add Decimal Fractions” Cards (page 138)
- Recording Sheet (page 139)

Presenting the Activity

1. Make sure that students understand that, when working with decimals, the 100-bead number line represents one whole and that each bead represents $1/100$ or 0.01 and that 10 beads represent $1/10$ or 0.1 .
2. Students draw a card and find the first addend on the BNL.
3. Students add the second addend on the BNL.
4. Students record the sum on the recording sheet.

Extension

Students make up their own decimal fraction addition problems and give them to a partner to solve on the BNL.

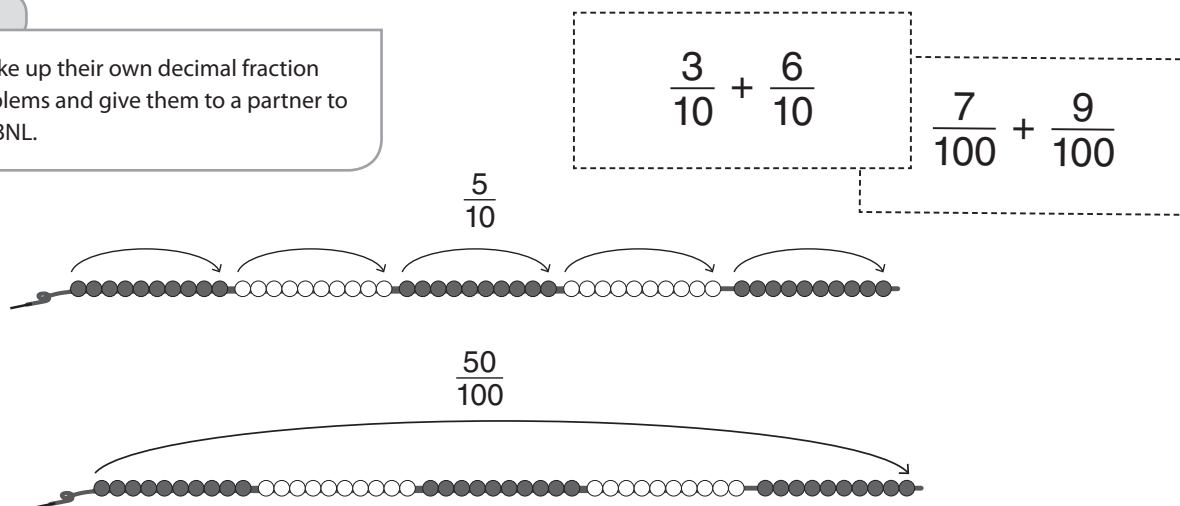
Guided Learning

Ask:

- How did you interpret the problem?
- How do you know that you are correct?

Assessing Student Responses

- Was student successful in adding two fractions with respective denominators of 10 and 100?
Y / N / Emerging
- Could student explain the concept?
Y / N / Emerging



Activity 48: "Add Decimal Fractions" Cards

$$\frac{2}{10} + \frac{4}{10}$$

$$\frac{3}{10} + \frac{6}{10}$$

$$\frac{4}{10} + \frac{6}{10}$$

$$\frac{5}{10} + \frac{5}{10}$$

$$\frac{6}{10} + \frac{2}{10}$$

$$\frac{7}{10} + \frac{2}{10}$$

$$\frac{1}{10} + \frac{3}{10}$$

$$\frac{9}{10} + \frac{1}{10}$$

$$\frac{8}{10} + \frac{2}{10}$$

$$\frac{4}{10} + \frac{4}{10}$$

$$\frac{3}{10} + \frac{3}{10}$$

$$\frac{2}{10} + \frac{3}{10}$$

$$\frac{50}{100} + \frac{50}{100}$$

$$\frac{60}{100} + \frac{40}{100}$$

$$\frac{7}{100} + \frac{9}{100}$$

$$\frac{80}{100} + \frac{20}{100}$$

$$\frac{90}{100} + \frac{10}{100}$$

$$\frac{10}{100} + \frac{7}{100}$$

$$\frac{60}{100} + \frac{20}{100}$$

$$\frac{50}{100} + \frac{30}{100}$$

$$\frac{70}{100} + \frac{10}{100}$$

$$\frac{80}{100} + \frac{10}{100}$$

$$\frac{90}{100} + \frac{5}{100}$$

$$\frac{60}{100} + \frac{10}{100}$$

Name _____ Date _____

Activity 48: "Add Decimal Fractions" Recording Sheet

The first one is done for you.

Expression	Sum
$\frac{2}{10} + \frac{4}{10}$	$\frac{6}{10}$

51 Compare Decimal Fractions

Math Standard Compare two decimals to hundredths by reasoning about their size.

Grouping(s)

Small guided math group or workstation

Materials

For the student:

- 100-bead number line (BNL)
- “Compare Decimal Fractions” Cards, Sets A and B (pages 144–145)
- Recording Sheet (page 146)

Overview

Students draw a card and compare two decimals on the BNL using the symbols $>$, $=$, and $<$.

Presenting the Activity

1. Students draw a card.
2. Students compare decimals on the BNL.
3. Students show their comparison on the BNLs on the recording sheet
4. Students record the results of their comparisons with the symbol $>$, $=$, or $<$.

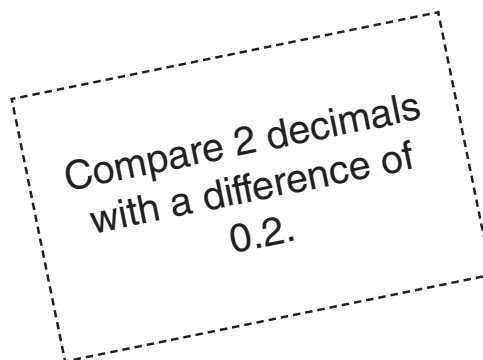
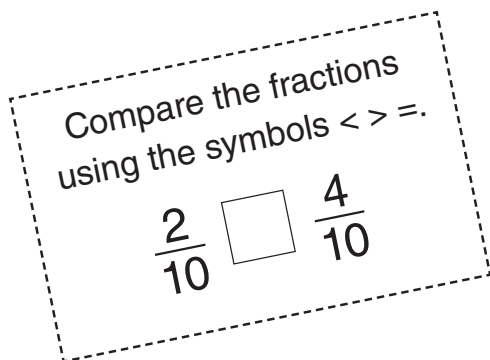
Guided Learning

Ask:

- How did you interpret the problem?
- How do you know you are correct?

Assessing Student Responses

- Was student successful in comparing two decimals to hundredths?
Y / N / Emerging
- Could student explain the concept?
Y / N / Emerging



Activity 51: "Compare Decimal Fractions" Card Set A

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{2}{10} \square \frac{4}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{3}{10} \square \frac{6}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{4}{10} \square \frac{6}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{5}{10} \square \frac{5}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{6}{10} \square \frac{2}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{7}{10} \square \frac{2}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{1}{10} \square \frac{3}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{9}{10} \square \frac{1}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{8}{10} \square \frac{2}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{50}{100} \square \frac{50}{100}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{60}{100} \square \frac{40}{100}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{7}{100} \square \frac{9}{10}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{8}{10} \square \frac{20}{100}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{60}{100} \square \frac{40}{100}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{10}{100} \square \frac{7}{100}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{6}{10} \square \frac{25}{100}$$

Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{4}{100} \square \frac{3}{10}$$

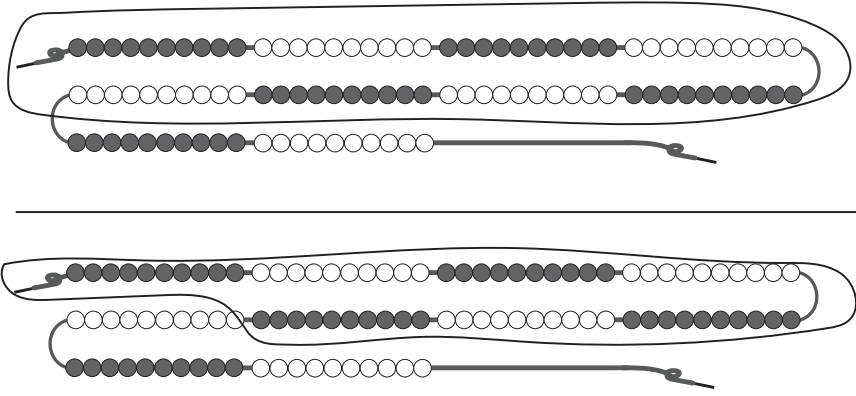
Compare the fractions using the symbols $<$ $>$ $=$.

$$\frac{80}{100} \square \frac{8}{10}$$

Activity 51: "Compare Decimal Fractions" Card Set B

Compare 2 decimals with a difference of 0.1.	Compare 2 decimals with a difference of 0.2.	Compare 2 decimals with a difference of 0.05.
Find a decimal greater than 0.20.	Find a decimal greater than 0.5.	Find a decimal greater than 0.88.
Find a decimal less than 0.33.	Find a decimal less than 0.61.	Find a decimal less than 0.9.
Find a decimal between 0.20 and 0.50.	Find a decimal between 0.70 and 0.90.	Find a decimal between 0.10 and 0.25.
Which is greater, 0.55 or 0.2?	Which is greater, 0.09 or 0.1?	Which is greater, 0.20 or 0.08?
Which is less, 0.7 or 0.09?	Which is less, 0.1 or 0.06?	Which is less, 0.05 or 0.01?

Activity 51: "Compare Decimal Fractions" Recording Sheet

Show on the BNL.	Record comparison with >, =, or <.
	$0.8 > 0.7$
