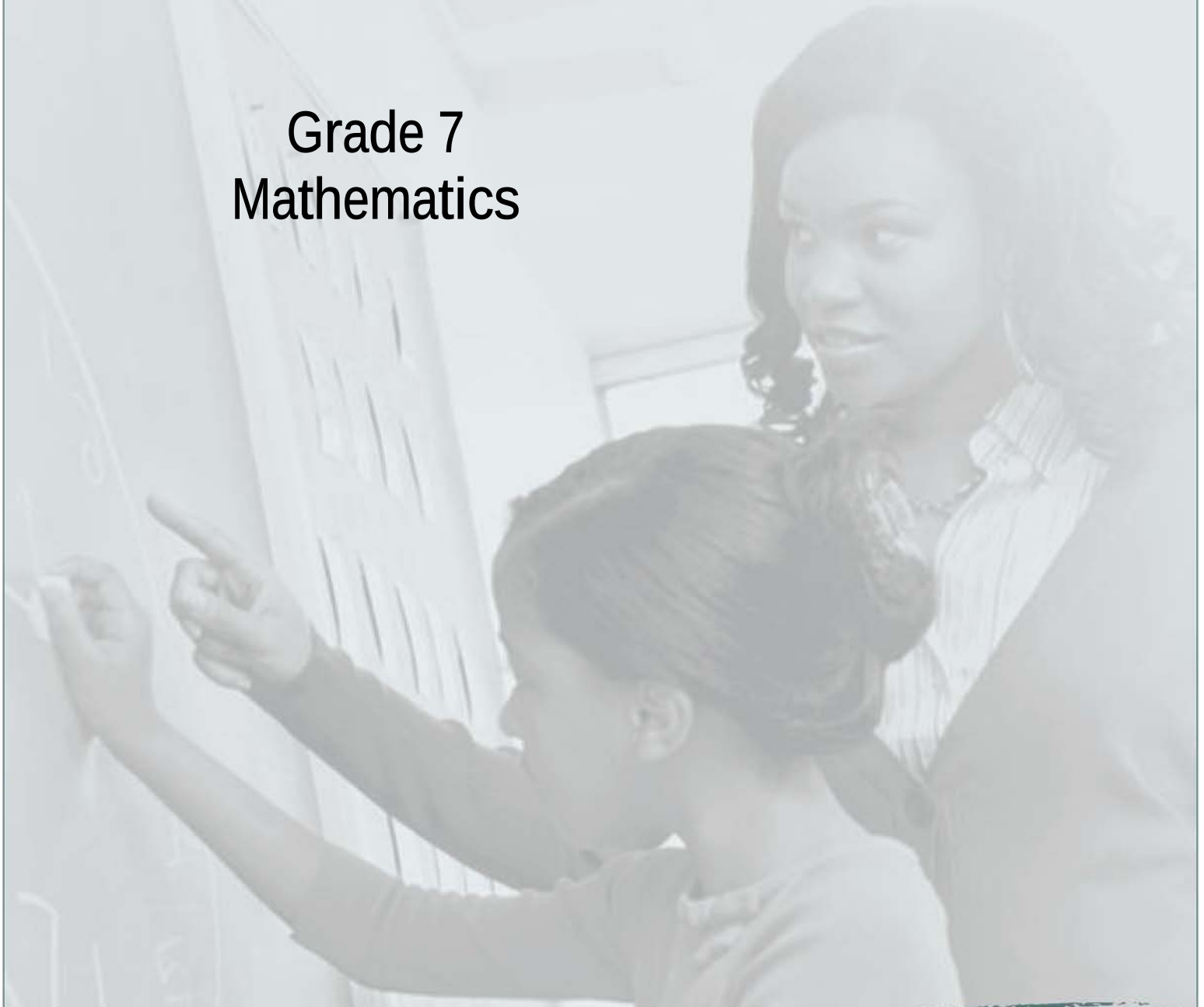
Louisiana Believes.

COMMON CORE STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

Grade 7 Mathematics



Transitional Curriculum

REVISED 2012

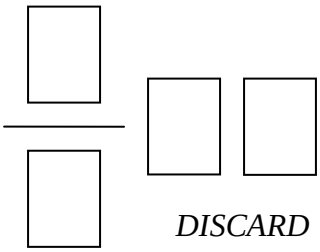
BLACKLINE MASTERS

LOUISIANA DEPARTMENT OF EDUCATION

Unit 1, Activity 1, Where's the Best Place

Name: _____ Date: _____

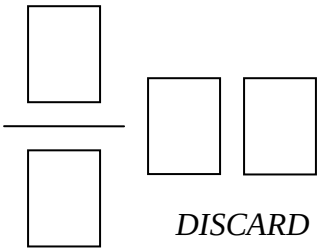
GAME 1:



DISCARD pile

Division:	**Winner:**
Inequality	

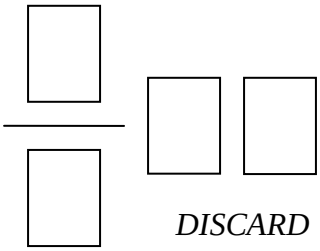
GAME 2:



DISCARD pile

Division:	**Winner:**
Inequality:	

GAME 3:



DISCARD pile

Division:	**Winner:**
Inequality:	

Unit 1, Activity 1, Numbers

One set of cards for every four students.

0	1
2	3
4	5
6	7
8	9

Unit 1, Activity 2, Fraction Comparisons

Name: _____ Date: _____

1. Using chart paper, complete the following situation. Be prepared to share your work in 20 minutes.

    a. Write two fractions that are equivalent. Explain how you know that they are equivalent.

    b. Look at the fractions you wrote in Part A. Write two other fractions, one that is equivalent to your first fraction and one that is equivalent to the second fraction.

    c. Are the four fractions you have written equivalent to each other? Why or why not?

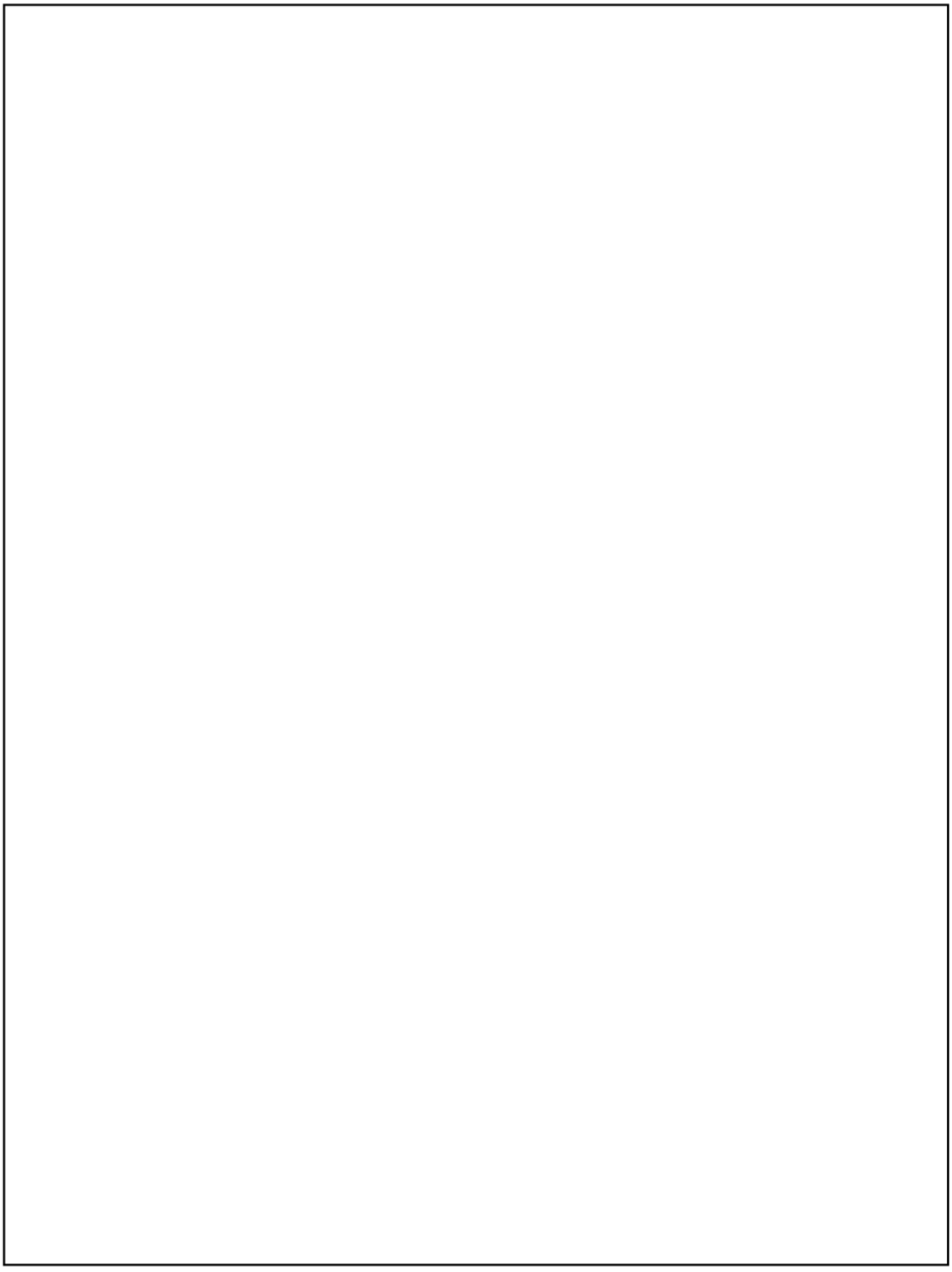
2. Using chart paper, complete the following situation. Be prepared to share your work in 20 minutes.

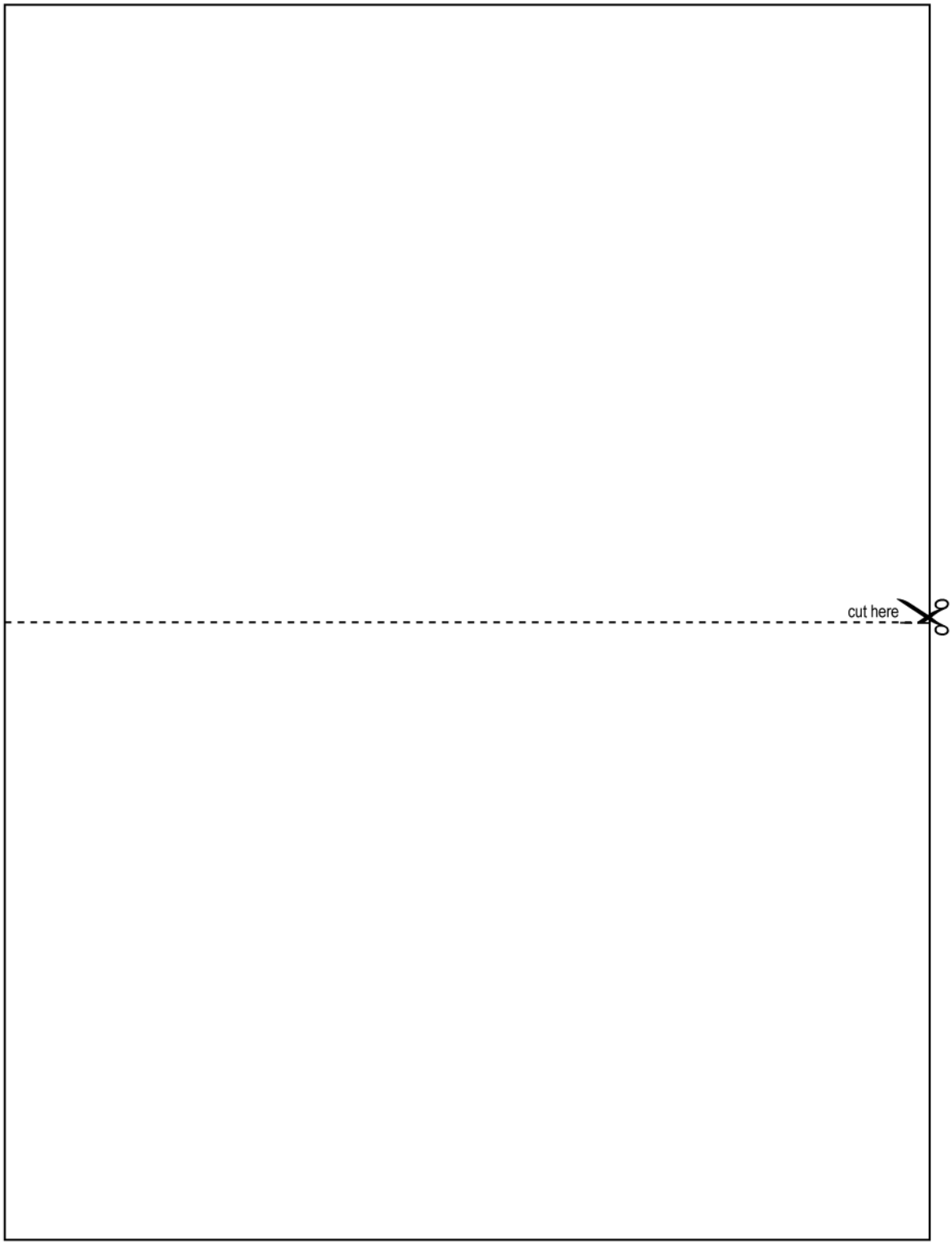
    a. Write two fractions that are not equivalent. Tell which is larger, and explain how you know.

    b. Look at the fraction you wrote in Part A. Write two other fractions, one that is **not** equivalent to your first fraction and another one that is **not** equivalent to your second fraction.

    c. Order the four fractions you have written from smallest to largest, and explain how you know the order is correct.

    d. Write a mathematical statement using the symbols $<$, $\leq$, $=$, $\geq$, $>$ and your fractions.

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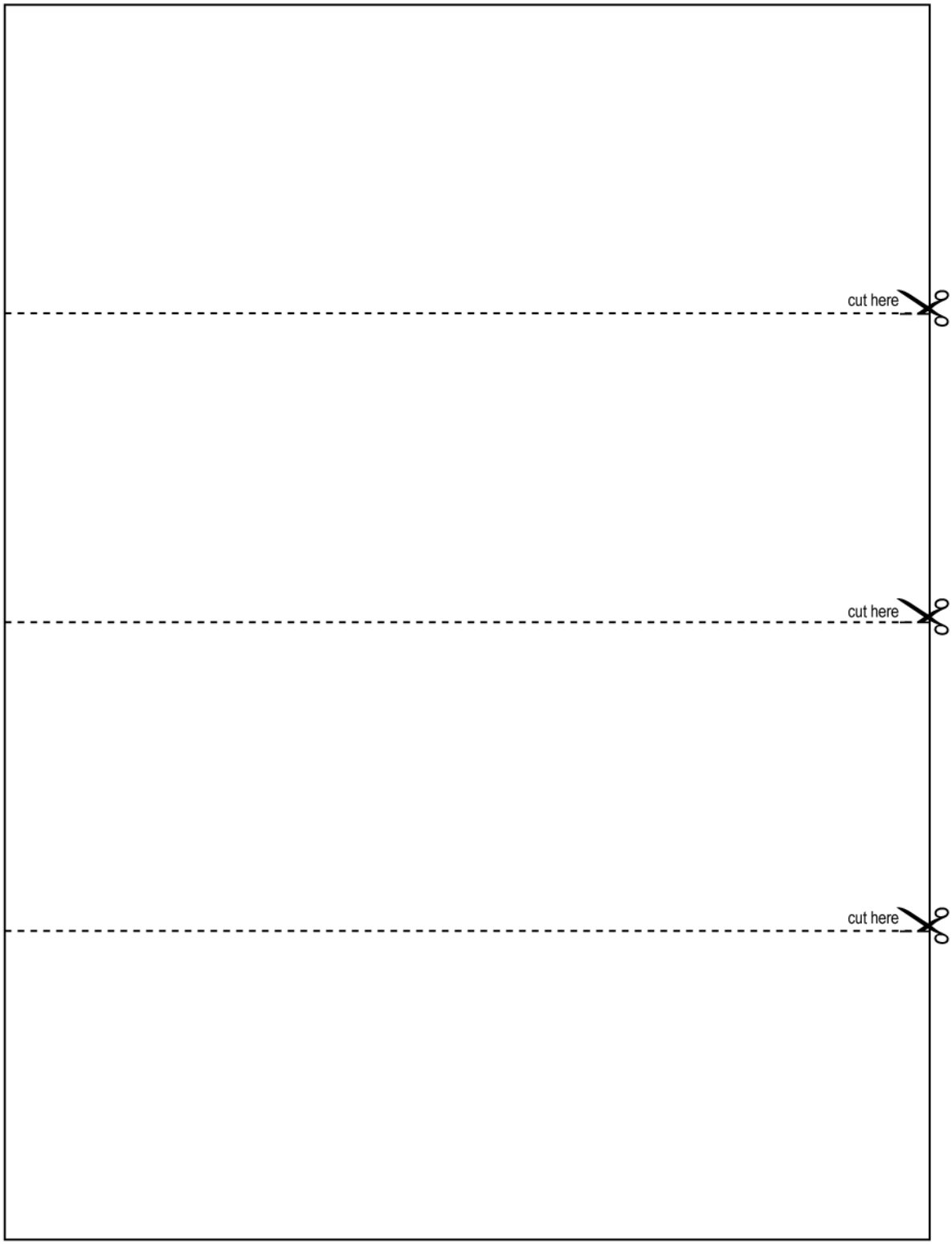
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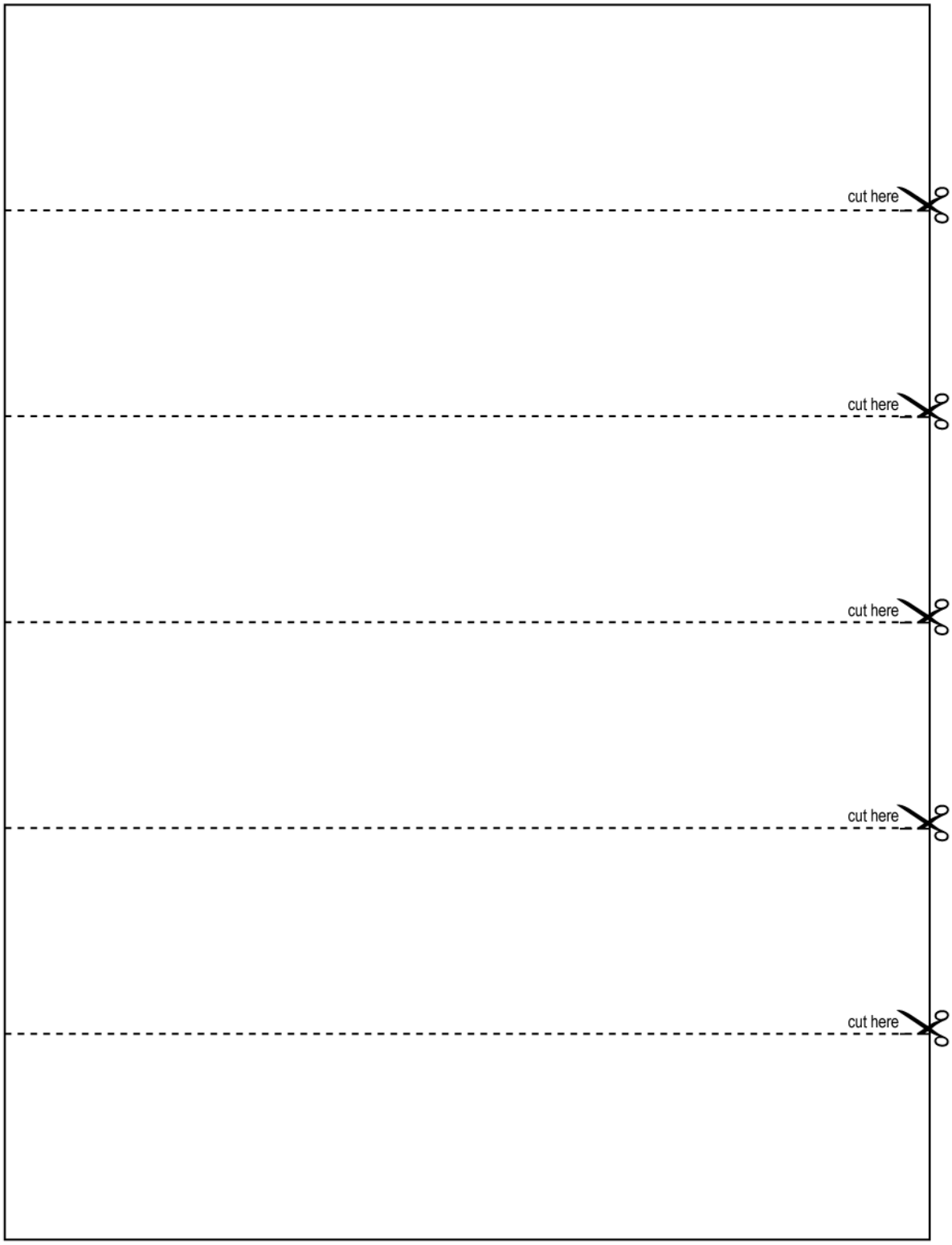
Unit 1, Activity 4, Fraction Pieces 4

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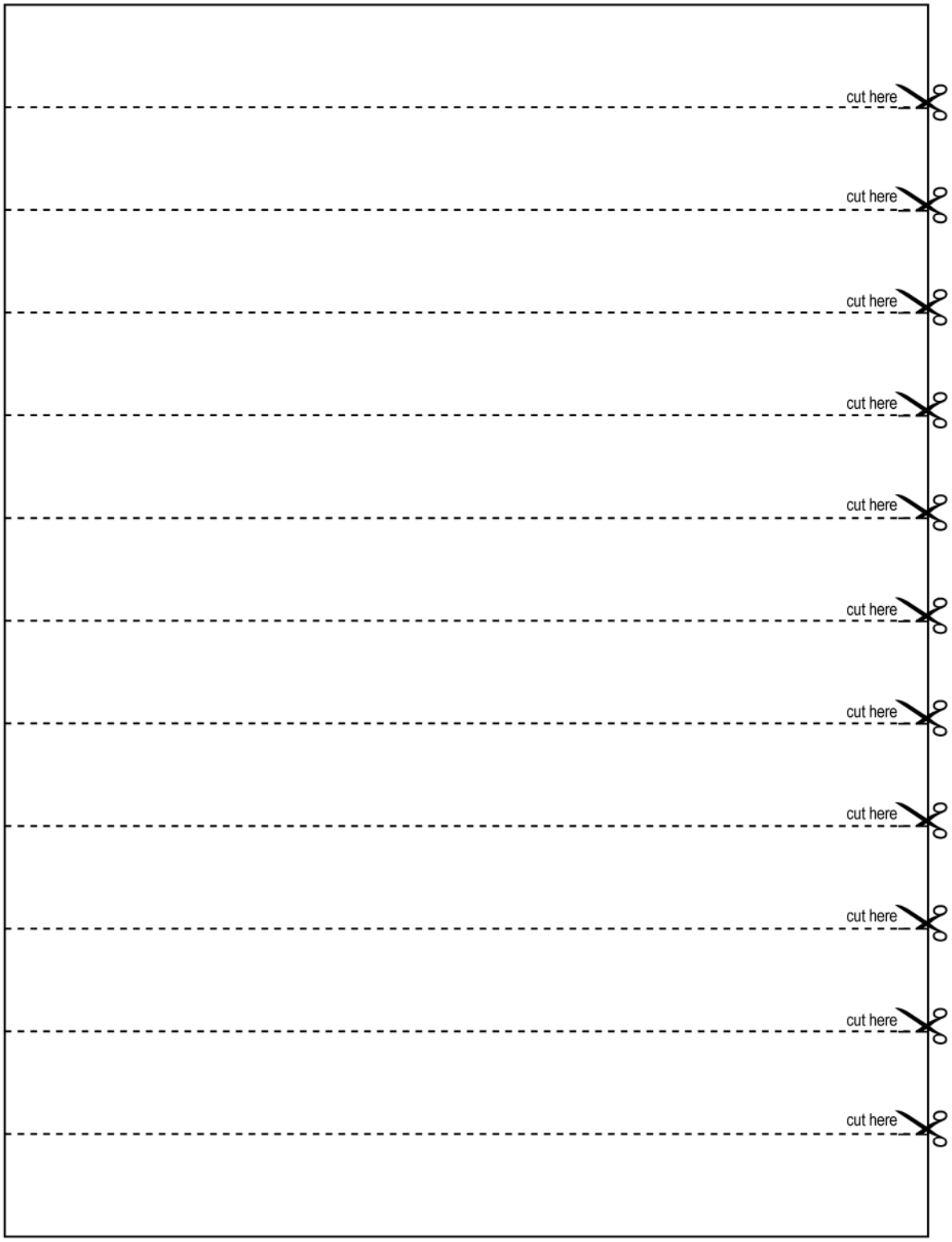
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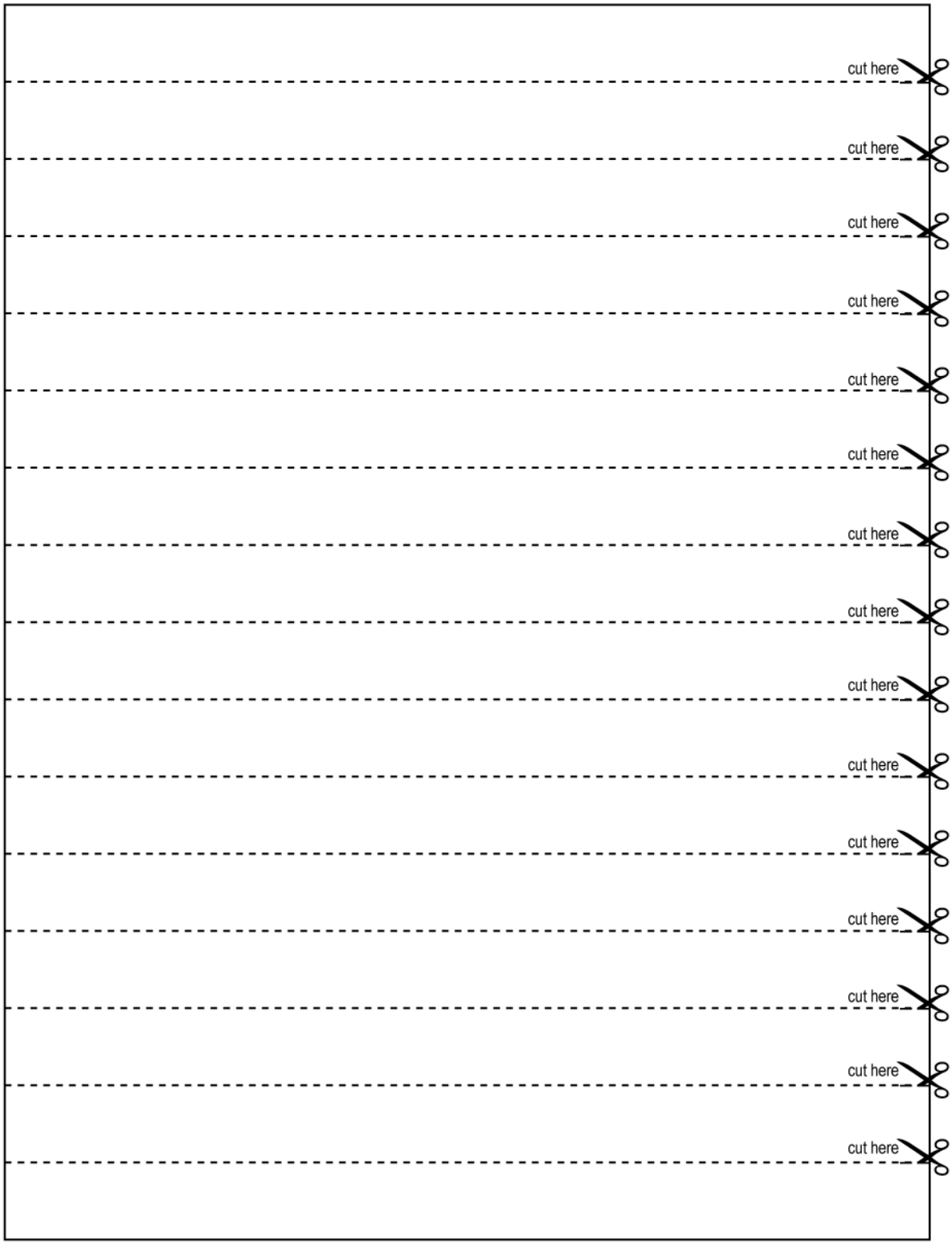
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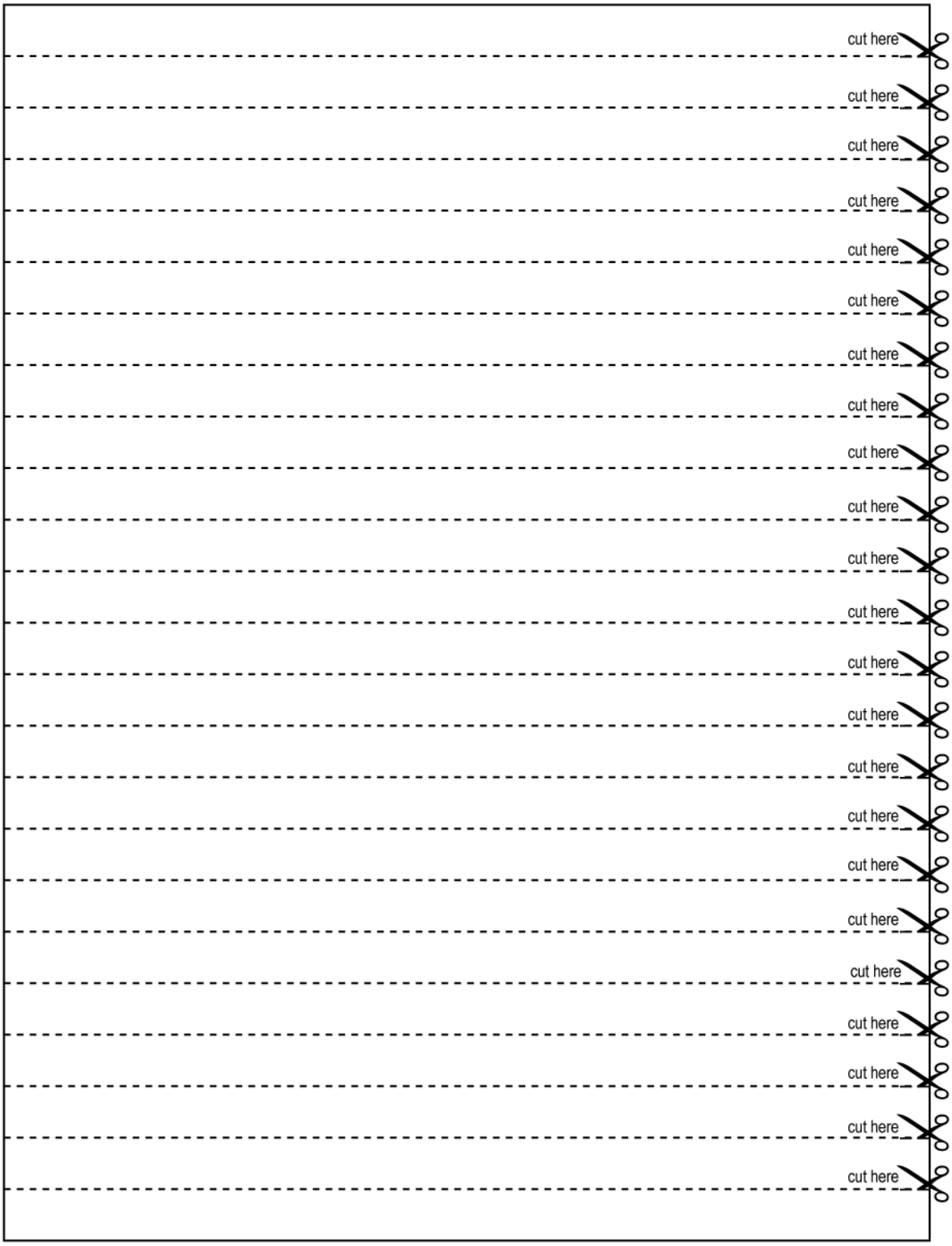
Unit 1, Activity 4, Fraction Pieces 8



Unit 1, Activity 5, Greater Than, Less Than, or Equal To

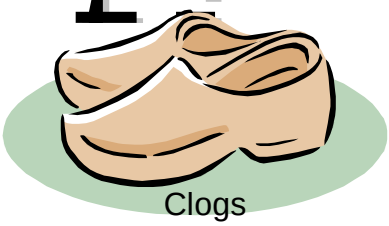
Name: _____ Date: _____

	$> \frac{1}{2}$	$\leq \frac{1}{2}$	$= \frac{1}{2}$	$> 20\%$	< 0.75
0.15		✓			✓

Enter the values provided to you in the left column. Then put a ✓ mark in the box if the value in the left column and the information in the top row make a true statement. In the example, 0.15 is less than ½ so the statement $0.15 \leq \frac{1}{2}$ is a true statement.

B's Shoe

Ballet Slippers
$35



Clogs
$16.99

$74.9

$69.99

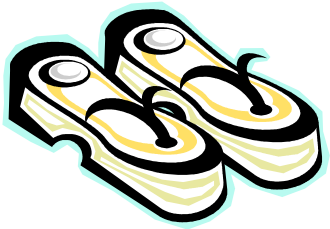
Flip Flops
$10.99

Cleats
$39.99

Jr. Fashion
$24.95

$54

$39.99



$17.95

Cowboy Boots
$129

$ 84.65

Unit 1, Activity 9 Tipping at a Restaurant

Name: _____ Date: _____

1. Kimberly works at a local restaurant. Last Wednesday night, she waited on three tables between 6:00 p.m. and 7:00 p.m. In the chart, you will find the total bill for each table. Estimate Kimberly's tip if the patrons leave a 10%, 15%, or 20% tip.

Table 1 **Total Bill = $19.83**	**Estimate**	**Calculate**	**Was the estimate reasonable?**	**Explain**
10%			yes no	
15%			yes no	
20%			yes no	

Table 2 **Total Bill = $72.14**	**Estimate**	**Calculate**	**Was the estimate reasonable?**	**Explain**
10%			yes no	
15%			yes no	
20%			yes no	

Table 3 **Total Bill = $107.01**	**Estimate**	**Calculate**	**Was the estimate reasonable?**	**Explain**
10%			yes no	
15%			yes no	
20%			yes no	

2. Kimberly is paid $4/hour plus 100% of her tips. If each table she waited on between 6:00 p.m. and 7:00 p.m. left a 15% tip, how much did Kimberly earn?

3. Kimberly worked a total of 5 hours Wednesday night. In addition to the three tables she waited on earlier, she waited on only one other table. The bill for 16 people was $242.67. The gentleman who paid the bill left Kimberly a 25% tip. How much did Kimberly earn last Wednesday?

Unit 1, Activity 9, Tipping at a Restaurant with answers

1. Kimberly works at a local restaurant. Last Wednesday night, she waited on three tables between 6:00 p.m. and 7:00 p.m. In the chart, you will find the total bill for each table. Estimate Kimberly's tip if the patrons leave a 10%, 15%, or 20% tip.

Table 1 **Total Bill = $19.83**	**Estimate**	**Calculate**	**Was the estimate reasonable?**	**Explain**
10%	*~ $2*	*$1.98*	yes no	
15%	*~ $3*	*$2.97*	yes no	
20%	*~ $4*	*$3.97*	yes no	

Table 2 **Total Bill = $72.14**	**Estimate**	**Calculate**	**Was the estimate reasonable?**	**Explain**
10%	*~ $7*	*$7.21*	yes no	
15%	*~ $10.50*	*$10.82*	yes no	
20%	*~ $ 14*	*$14.43*	yes no	

Table 3 **Total Bill = $107.01**	**Estimate**	**Calculate**	**Was the estimate reasonable?**	**Explain**
10%	*~ $10*	*$10.70*	yes no	
15%	*~ $15*	*$16.05*	yes no	
20%	*~ $20*	*$21.40*	yes no	

2. Kimberly is paid $4/hour plus 100% of her tips. If each table she waited on between 6:00 p.m. and 7:00 p.m. left a 15% tip, how much did Kimberly earn?

   4 + 2.97 + 10.82 + 16.05 = $33.84

3. Kimberly worked a total of 5 hours Wednesday night. In addition to the three tables she waited on earlier, she waited on only one other table. The bill for 16 people was $242.67. The gentleman who paid the bill left Kimberly a 25% tip. How much did Kimberly earn last Wednesday?

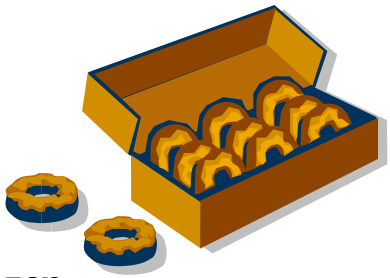
   (5•4) + (2.97 + 10.82 + 16.05) + (.25 • 242.67) = $1

PJ's Grocery

$ 1.99
How much per ounce?

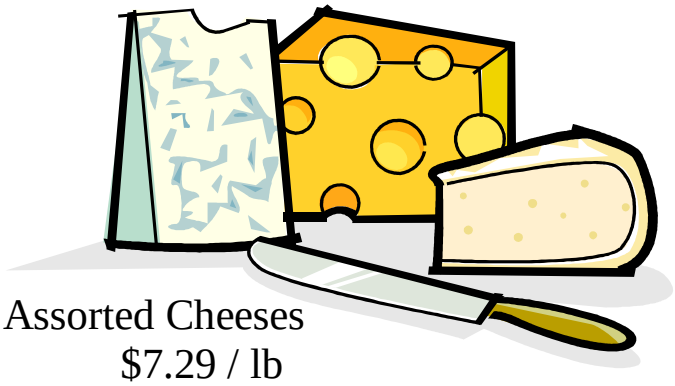
7 bananas for $1.32
How much for 1 banana?

Strawberry Jam
32 oz jar $3.54
What is the cost per ounce?



Donuts
$2.79 / dozen
How much for 1 donut?

3 kiwi for $1.19
How much for 1 kiwi?



Assorted Cheeses
$7.29 / lb
How much per ounce?

17 Apples for $5.95
How much for 1 apple?

Unit 1, Activity 12, What's the Recipe

Chocolate Chip Cookies

Ingredients
1 cup shortening
1 cup brown sugar
1 cup sugar
2 eggs
1 teaspoon vanilla
2 ¼ cups flour (all purpose)
1 teaspoon baking soda
½ teaspoon salt
1 package chocolate chips

Directions
Cream shortening and sugars together, then add eggs and vanilla. Mix and add sifted flour, baking soda and salt. Mix and add chocolate chips. Mix again. Drop by tablespoonfuls onto greased cookie sheet. Bake at 320^0 until golden brown (about 14 minutes). Recipe makes 3 dozen cookies.

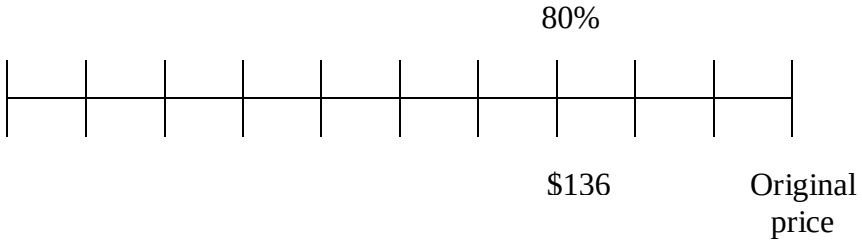
Instant Hot Chocolate Mix

1 (25.6 oz.) pkg. instant nonfat milk
1 (6 oz.) jar creamer
2 c. powdered sugar
1 (16 oz.) box instant chocolate drink mix
Combine in bowl. Store in air tight container. Use within 6 months. Makes 17 cups. Use 3 tablespoons to one cup hot water.

Unit 1, Activity 13, What's the Situation GROUP CARDS

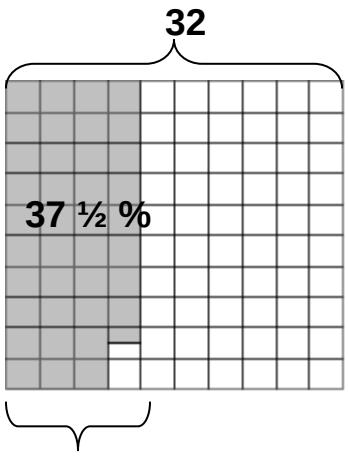
SITUATION 1: ASHLEIGH'S BIKE

On chart paper, describe in words the situation modeled, then write 2-3 questions that can be answered using the model. Estimate the answers to your questions, then solve. Justify why your answer is reasonable when compared to your estimate.



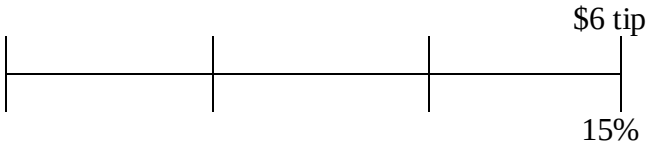
SITUATION 2: KERRY'S 32 FREE THROWS

On chart paper, describe in words the situation modeled, then write 2-3 questions that can be answered using the model. Estimate the answers to your questions, then solve. Justify why your answer is reasonable when compared to your estimate.



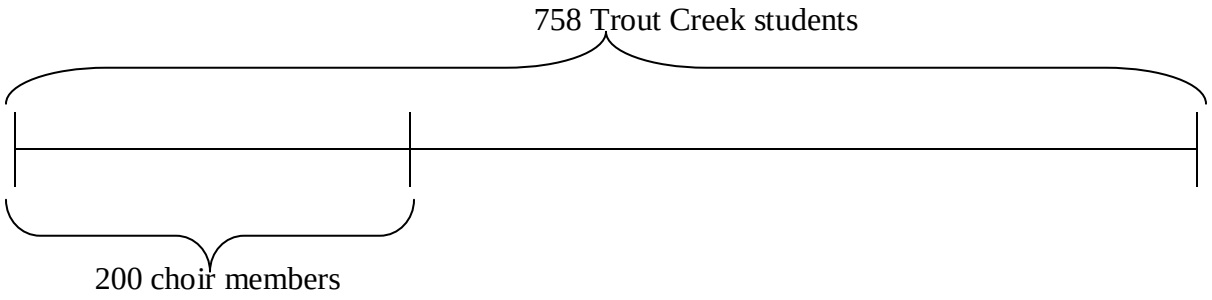
SITUATION 3: SHARA'S DINNER

On chart paper, describe in words the situation modeled, then write 2-3 questions that can be answered using the model. Estimate the answers to your questions, then solve. Justify why your answer is reasonable when compared to your estimate.



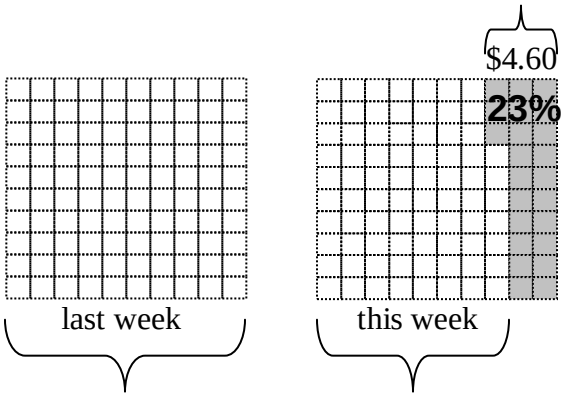
SITUATION 4: TROUT CREEK MUSIC

On chart paper, describe in words the situation modeled, then write 2-3 questions that can be answered using the model. Estimate the answers to your questions, then solve. Justify why your answer is reasonable when compared to your estimate.



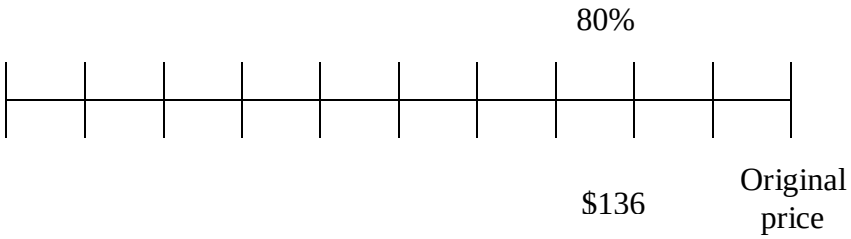
SITUATION 5: LATITIA'S BABY-SITING

On chart paper, describe in words the situation modeled, then write 2-3 questions that can be answered using the model. Estimate the answers to your questions, then solve. Justify why your answer is reasonable when compared to your estimate.



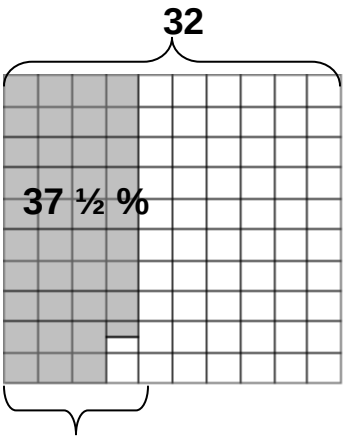
Unit 1, Activity 13, What's the Situation GROUP CARDS with answers

SITUATION 1: Ashleigh's bike



See Activity 13 for detailed solution.

SITUATION 2: Kerry's 32 free throws



Situation: Kerry made 37 ½% of her 32 free throws last year. Possible questions:

- *How many free throws did she make?*

$\frac{37.5}{100} = \frac{x}{32}$ or 12 free throws were made

- *What percentage of free throws did she miss?*

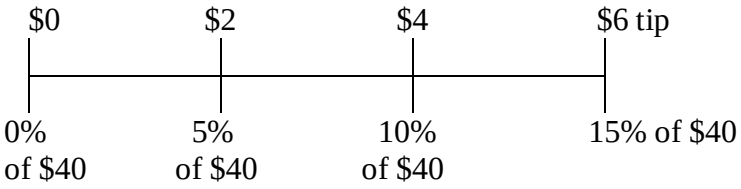
100% - 37% (est. from 37.5 because you can't have ½ of a free throw) ≈ 63% missed

- *How many free throws did she miss?*

$\frac{63}{100} = \frac{x}{32}$ or 20 free throws missed.

To check: 32 total – 12 made = 20 missed

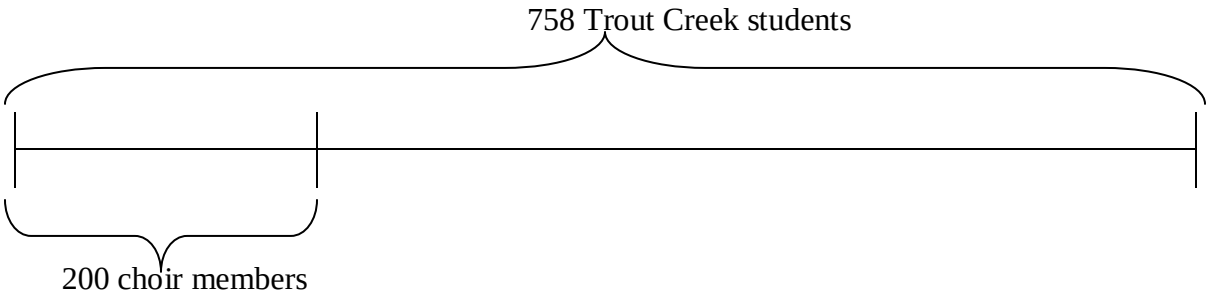
SITUATION 3: SHARA'S DINNER



Situation: Shara paid a $6 tip, which was 15% of her bill. Possible questions:

- *What was the amount of her bill?* $\frac{15}{100} = \frac{6}{x}$ or $40 . *(To help students see the proportional relationships, label the model)*
- *What was the total amount she paid, including the tip?$40 + $6 tip = $46 total*

SITUATION 4:



Situation: There are 200 students in the choir at Trout Creek Middle School. There are 758 students in the school.

Possible questions:

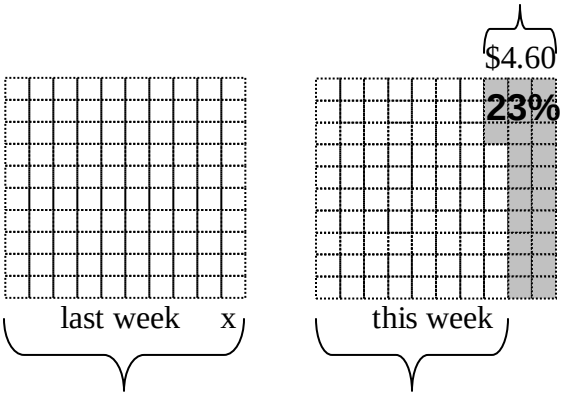
- *What percentage of the students are in the choir? (This is an easy problem for students to estimate using what they know about equivalent fractions:* $\frac{200}{800} = \frac{1}{4}$ *which is the same as 25%, so about 25% of the students are in the choir. A table could help students see the proportional relationship:*

ESTIMATE	
Percent	*Number of Students*
25%	*200*
50%	*400*
75%	*600*
100%	*800*

Exact answer: $\frac{200}{758} = \frac{x}{100}$, which is 26%.

- *What percentage are not in the choir? If 26% are in the choir then 100% - 26% = 74% are not in the choir.*

SITUATION 5: LATITIA'S BABYSITTING



Situation: Latitia's earnings from babysitting decreased by 23% from last week to this week. She earned $4.60 less this week than last week.

Possible questions:

- *How much did Latitia earn last week?(A possible estimate might be:* $\frac{25}{100} = \frac{5}{x}$ or $\frac{1}{4} = \frac{5}{x}$ which is $20)

Exact answer: $\frac{23}{100} = \frac{4.60}{x}$ which is \$20. *Discuss with students how the estimate and exact answer could be the same.*

- *How much did she earn this week?\$20 - \$4.60 = \$15.40*

Unit 1, Activity 14, Proportional or Not?

Name_____ Date_____

1) The WhoDat Taxicab Company has no base fee. The meter starts at 0 and for each mile traveled, the fare increases by $3.00. How much would a 12-mile ride cost? Fill in the table to help you answer this question.

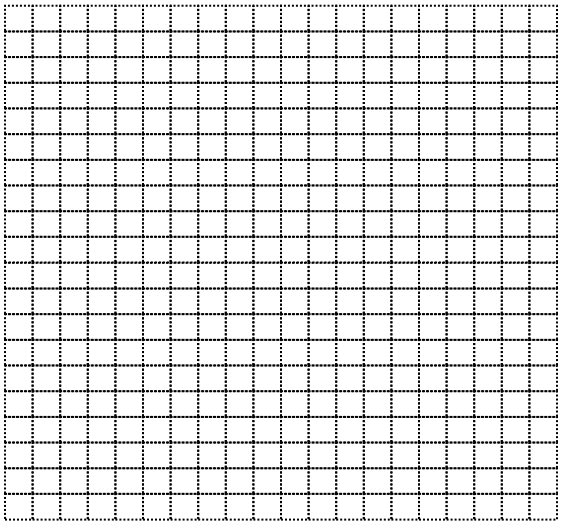
Distance in miles						
Cost in dollars						

Make 2-3 thoughtful observations from the table about the relationships you see between the distance and cost.

1. _____
2. _____
3. _____

Next, graph the relationship between distance and cost below.

Cost ($)



Distance (mi.)

Compare your observations about the relationship between distance and cost in the table to the graph. How is the table and graph related? Is the relationship between distance and cost proportional? Explain why or why not.

2) The Cowboy Taxicab Company charges a base fee of $1.50, and adds $2.00 for each mile traveled. How much would a 12-mile ride cost? Fill in the table to help you answer this question.

Distance in miles						
Cost in dollars						

Make 2-3 thoughtful observations from the table about the relationships you see between the distance and cost.

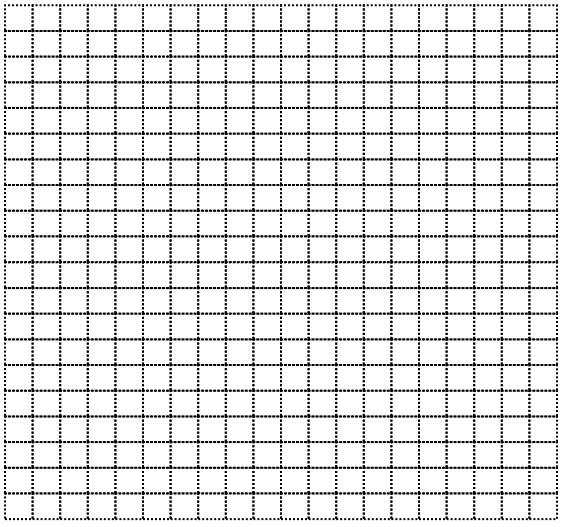
4. _____

5. _____

6. _____

Next, graph the relationship between distance and cost below.

Cost ($)

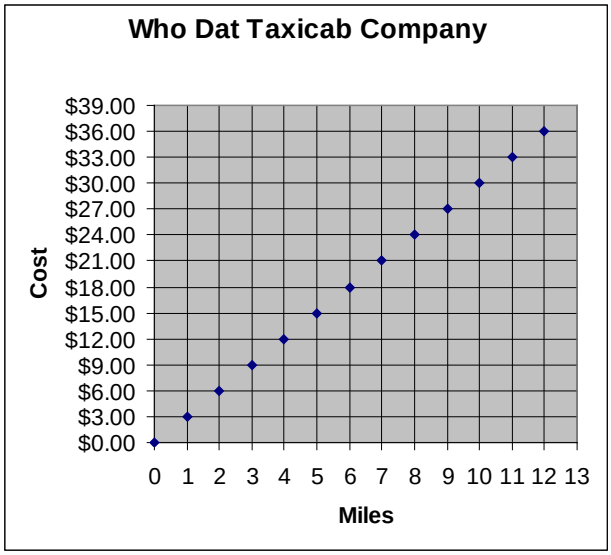


Distance (mi.)

Compare your observations about the relationship between distance and cost in the table to the graph. How are the table and graph related? Is the relationship between distance and cost proportional? Explain why or why not.

Distance in miles	0	1	2	3	4	5
Cost in dollars	$0	$3.00	$6.00	$9.00	$12.00	$15.00

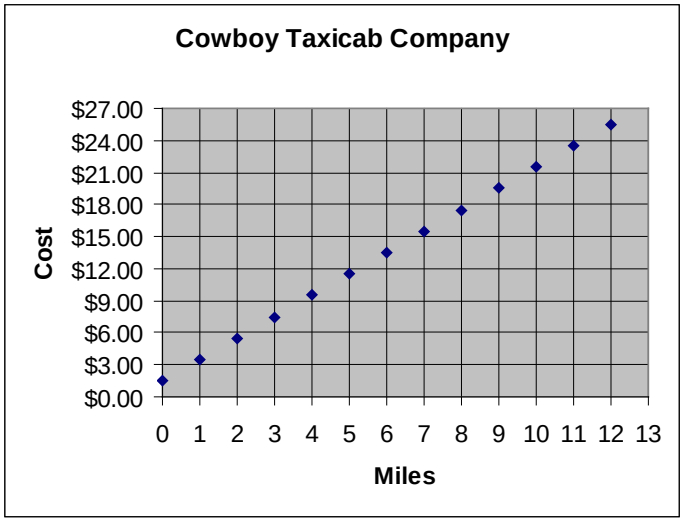
Distance in miles	6	7	8	9	10	11
Cost in dollars	$18.00	$21.00	$24.00	$27.00	$30.00	$33.00



The Who Dat Taxicab Company is proportional. In the table, the cost increases by a constant amount of $3 as the number of miles increases by 1 mile. Multiplication defines the relationship between miles and cost, making it proportional. All rates describing a proportional situation are equivalent and can be seen in the table as 1/3, 2/3, 3/9, etc. Graphically, all points fall on a straight line passing through the origin, also making it proportional.

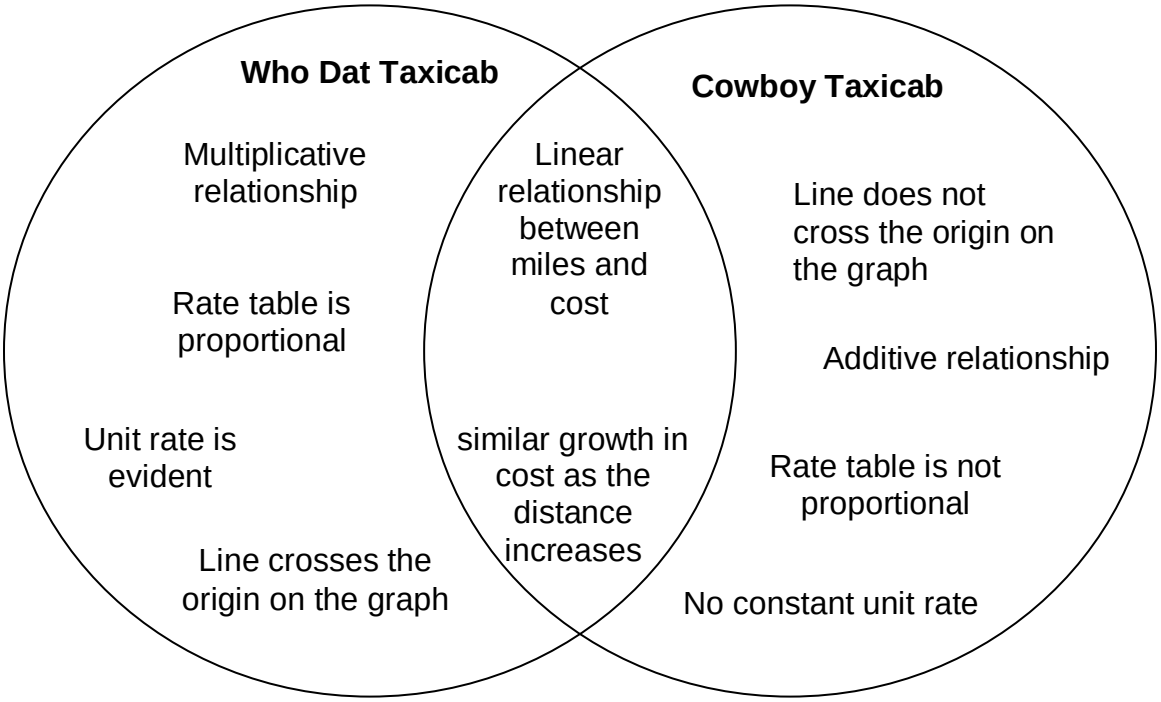
Distance in miles	0	1	2	3	4	5
Cost in dollars	$1.50	$3.50	$5.50	$7.50	$9.50	$11.50

Distance in miles	6	7	8	9	10	11
Cost in dollars	$13.50	$15.50	$17.50	$19.50	$21.50	$23.50



The Cowboy Taxicab Company is not proportional. The rates in the table are not equivalent and graphically, the line does not pass through the origin. Addition or subtraction of the base fee of $1.50 partly defines the relationship between miles and cost; therefore, the relationship is not proportional. The situation also involves no constant unit rates.

Possible Venn diagram: make sure these relationships come out.



Unit 2, Activity 2, Multiplying Fractions

Name: _____ Date: _____ Hour _____

Situations involving multiplication of fractions. Show all work.

1. Each child wanted $\frac{1}{2}$ of a cookie cake. There were 24 children. How many cookie cakes do they need? Justify your answer.

2. Susan needed to triple a recipe for cookies. The recipe called for $2\frac{1}{2}$ cups of flour and $1\frac{3}{4}$ cups sugar. How much of each will she need? Prove your answer. Explain how this problem illustrates multiplication of fractions.

3. Monica's mom said that it takes $\frac{3}{8}$ of a yard of fabric to make an apron, but it will only take $\frac{1}{2}$ of that amount to make a kitchen towel. How much fabric will it take to make a kitchen towel? How does this problem illustrate multiplication of fractions? Explain.

4. Brittany wanted to give each of her 5 friends a friendship bracelet. Each bracelet takes 2/5 of a bag of beads. How many bags of beads does she need? Explain with diagram and a mathematical sentence.

5. The middle school was selling brownies. Mr. Vincent only had money to buy 1/3 of the 2 ¼ pans of brownies that his wife had baked for the fund-raiser. How much of the pan of brownies was he able to buy? Explain with a diagram and a mathematical sentence.

6. At the student council booth, a customer wanted to buy 1/3 of a pan that was 1/3 full. What fraction of the original pan of brownies did this person want? Explain with a diagram and a mathematical sentence.

7. Miguel's mother builds and sells houses. She wants to buy a piece of land on which to build several houses. The rectangular plot is 3/8 of a mile by 2/3 of a mile. How much land is this? (extension: How many square feet or yards would this be?)

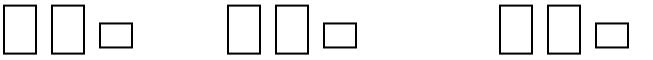
Unit 2, Activity 2, Multiplying Fractions with Answers

Name: _____ Date: _____

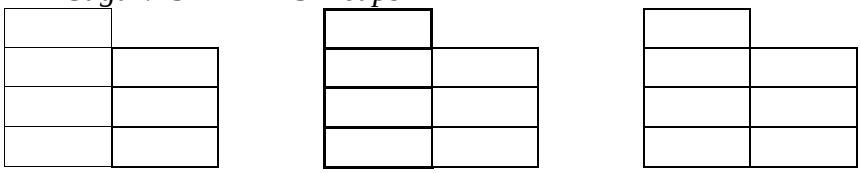
Situations involving multiplication of fractions. Show all of your thinking. Sample answers:

1. Each child wanted $\frac{1}{2}$ of a cookie cake. There were 24 children. How many cookie cakes do they need? Justify your answer.
   24 groups of ½ cake = 12 cakes
   If each child wants ½ of a cake, then each cake will feed two children. You will need 12 cakes.

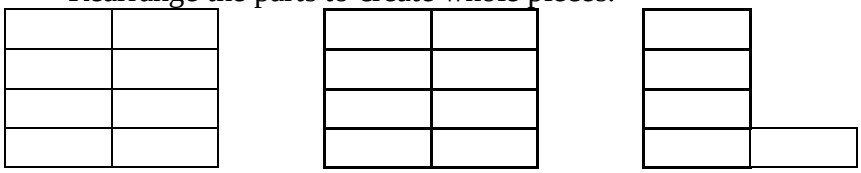
2. Susan needed to triple a recipe for cookies. The recipe called for $2\frac{1}{2}$ cups of flour and $1\frac{3}{4}$ cups sugar. How much of each will she need? Prove your answer. Explain how this problem illustrates multiplication of fractions.
   Flour: 3 x 2 ½ = add three groups of two and a half = 7 ½ cups



Sugar: 3 x 1¾ = 5¼ cups

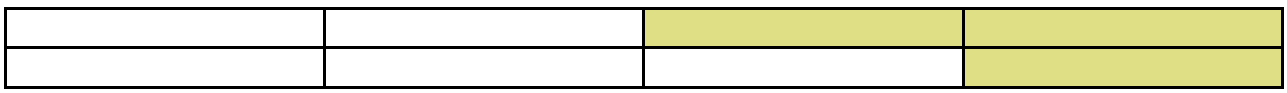


Rearrange the parts to create whole pieces.

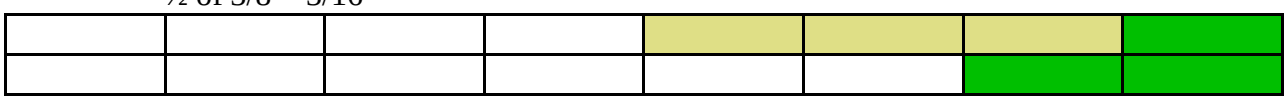


3. Monica's mom said that it takes $\frac{3}{8}$ of a yard of fabric to make an apron but it will only take $\frac{1}{2}$ of that amount to make a kitchen towel. How much fabric will it take to make a kitchen towel? How does this problem illustrate multiplication of fractions? Explain.

3/8



½ of 3/8 = 3/16



4. Brittany wanted to give each of her 5 friends a friendship bracelet. Each bracelet takes 2/5 of a bag of beads. How many bags of beads does she need? Explain with a diagram and a mathematical sentence.

$$5 \times \frac{2}{5} = \frac{5}{1} \times \frac{2}{5} = \frac{10}{5} = 2$$

5. The middle school was selling brownies. Mr. Vincent only had money to buy 1/3 of the 2 ¼ pans of brownies that his wife had baked for the fund-raiser. How much of the pan of brownies was he able to buy? Explain with a diagram and a mathematical sentence.

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

6. At the student council booth, a customer wanted to buy 1/3 of a pan that was 1/3 full. What fraction of the original pan of brownies did this person want? Explain with diagram and a mathematical sentence.

$$\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$$

8. Miguel's mother builds and sells houses. She wants to buy a piece of land in their area on which to build several houses. The rectangular plot is 3/8 of a mile by 2/3 of a mile. How much land is this? (extension: How many square feet or yards would this be?)

$$\frac{3}{8} \times \frac{2}{3} = \frac{6}{24} = \frac{1}{4} mi^2 \quad \text{or } 27{,}878{,}400 \text{ ft}^2 \quad \text{or } 3{,}097{,}600 \text{ yd}^2$$

Unit 2, Activity 3, Dividing Fractions

Name: _____ Date:_____

Model each situation using a diagram or fraction pieces. Draw a sketch of your model. Write a mathematical sentence that illustrates the situation.

1. You have 5 pizzas. Each person wants $\frac{2}{3}$ of a pizza.

2. Jamie has 7 yards of ribbon. She needs $\frac{3}{4}$ yard to make a spirit ribbon for the football game. How many spirit ribbons can she make?

3. Ms. Phillips brought a jar of jellybeans to be shared by members of the student teams winning each game. How much of a pound of candy will each student get if a four-person team wins one-half pound of jellybeans?

4. A local candy store donated big chocolate bars that were used for prizes in a team competition. What fraction of a whole bar will each team member get if a two-person team wins $\frac{3}{4}$ of a bar as a prize and shares it equally?

5. Snow cones are a popular summer treat. Each snow cone requires $\frac{1}{6}$ cup of syrup. Find how many snow cones can be made with $\frac{1}{2}$ cup of syrup.

6. Suppose you have half a chocolate bar, and you want to make some brownies. The brownie recipe calls for $\frac{1}{8}$ of the chocolate bar. The chocolate bar you have is enough for how many batches of brownies?

Unit 2, Activity 3, Dividing Fractions with Answers

Name: _____ Date:_____

Model each situation using a diagram or fraction pieces. Draw a sketch of your model. Write a mathematical sentence that illustrates the situation.

1. You have 5 pizzas. Each person wants $\frac{2}{3}$ of a pizza.

$5 \div \frac{2}{3} = \frac{5}{1} \times \frac{3}{2} = 7\frac{1}{2}$ *Since this situation has no question, ask students what 7 ½ stands for (the number of people that can have* $\frac{2}{3}$ *of a pizza). The discussion should then take place about the remainder of ½ since you can't have ½ of a person.*

2. Jamie has 7 yards of ribbon; she needs $\frac{3}{4}$ yard to make a spirit ribbon for the football game. How many spirit ribbons can she make?

$7 \div \frac{3}{4} = \frac{7}{1} \times \frac{4}{3} = \frac{28}{3} = 9\frac{1}{3}$ *ribbons*

3. Ms. Phillips brought a jar of jellybeans to be shared by members of the student teams winning each game. How much of a pound of candy will each student get if a four-person team wins one-half pound of jellybeans?

$\frac{1}{2} \div 4 = \frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ *pound*

4. A local candy store donated big chocolate bars that were used for prizes in a team competition. What fraction of a whole bar will each team member get if a two-person team wins $\frac{3}{4}$ of a bar as a prize and shares it equally?

$\frac{3}{4} \div 2 = \frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$ *bar*

5. Snow cones are a popular summer treat. Each snow cone requires $\frac{1}{6}$ cup of syrup. Find how many snow cones can be made with $\frac{1}{2}$ cup of syrup.

$\frac{1}{2} \div \frac{1}{6} = \frac{1}{2} \times \frac{6}{1} = \frac{6}{2} = 3$ *snowcones*

6. Suppose you have half a chocolate bar, and you want to make some brownies. The brownie recipe calls for $\frac{1}{8}$ of the chocolate bar. The chocolate bar you have is enough for how many batches of brownies?

$\frac{1}{2} \div \frac{1}{8} = \frac{1}{2} \times \frac{8}{1} = \frac{8}{2} = 4$ *batches*

Name: _____ ***Date:*** _____ ***Hour:*** _____

1. Nikki has $25.

A. How many 50-cent pieces are in $25? Write this as a division problem and solve it.

B. How many quarters are in $25? Write this as a division problem and solve it.

C. How many dimes are in $25? Write this as a division problem and solve it.

D. How many nickels are in $25? Write this as a division problem and solve it.

E. How many pennies are in $25? Write this as a division problem and solve it.

2. Kenneth has $0.50.

A. How many 50-cent pieces are in $0.50? Write this as a division problem and solve it.

B. How many quarters are in $0.50? Write this as a division problem and solve it.

C. How many dimes are in $0.50? Write this as a division problem and solve it.

D. How many nickels are in $0.50? Write this as a division problem and solve it.

E. How many pennies are in $0.50? Write this as a division problem and solve it.

3. How many one dollars are in a quarter? Does the pattern you found earlier fit this situation? Justify your thoughts.

Unit 2, Activity 5, Decimal Division with Answers

Name: _____ ***Date:*** _____ ***Hour:*** _____

1. Nikki has $25.

A. How many 50-cent pieces are in $25? Write this as a division problem and solve it.

25 ÷ 0.50 = 50

B. How many quarters are in $25? Write this as a division problem and solve it.

25 ÷ 0.25 = 100

C. How many dimes are in $25? Write this as a division problem and solve it.

25 ÷ 0.10 = 250

D. How many nickels are in $25? Write this as a division problem and solve it.

25 ÷ 0.05 = 500

E. How many pennies are in $25? Write this as a division problem and solve it.

25 ÷ 0.01 = 2,500

2. Kenneth has $0.50.

A. How many 50-cent pieces are in $0.50? Write this as a division problem and solve it.

0.50 ÷ 0.50 = 1

B. How many quarters are in $0.50? Write this as a division problem and solve it.

0.50 ÷ 0.25 = 2

C. How many dimes are in $0.50? Write this as a division problem and solve it.

0.50 ÷ 0.10 = 5

D. How many nickels are in $0.50? Write this as a division problem and solve it.

0.50 ÷ 0.05 = 10

E. How many pennies are in $0.50? Write this as a division problem and solve it.

0.50 ÷ 0.01 = 50

3. How many one dollars are in a quarter? Does the pattern you found earlier fit this situation? Justify your thoughts.

0.25 ÷ 1 = 0.25

Unit 2, Activity 6, Is It Possible?

Name: _____ ***Date:*** _____ ***Hour:*** _____

Roll a number cube or spin a spinner to pick 4 numbers. Use each of the 4 numbers only once, along with any operations symbols or grouping symbols, to write mathematical expressions that are equal to each of the numbers 1-9.

Game 1

numbers to be used _____ _____ _____ _____

_____ =1 _____ =6

_____ =2 _____ =7

_____ =3 _____ =8

_____ =4 _____ =9

_____ =5

Game 2

numbers to be used _____ _____ _____ _____

Pick a 5th number to be used with the last number as the denominator; this will give you 3 whole numbers and 1 fraction.

_____ =1 _____ =6

_____ =2 _____ =7

_____ =3 _____ =8

_____ =4 _____ =9

_____ =5

Game 3

numbers to be used _____ _____ _____ _____

Pick a 5th number to be used with the last number; place this number in the tenths position; this will give you 3 whole numbers and 1 decimal.

_____ =1 _____ =6

_____ =2 _____ =7

_____ =3 _____ =8

_____ =4 _____ =9

_____ =5

Name_____ Date_____

Let's Figure It!

Situations with rational numbers. Show all work.

1. On a certain test, each correct answer scores 5 points, each incorrect answer scores -2 points, and each unanswered question scores 0 points. Suppose a student answers 15 questions correctly, 4 incorrectly, and does not answer 1 question. What is the student's final score?

2. Suppose a play shot a -5, +2, -3, and -2 in four rounds of a golf tournament. What was the player's final score?

3. Joseph and David had identical boxes of candy with 24 pieces of candy in the box. Joseph ate ½ of his box before lunch and then 4 pieces after lunch. David ate ¾ of his box at one time. Who has the most candy left in his box?

4. The Junior Beta Convention is being held in Lafayette. There are 120 students at the conference. Of all of the students at the conference, $\frac{1}{2}$ are from Louisiana. Of the remaining students, $\frac{1}{5}$ are from Mississippi and $\frac{1}{4}$ are from Arkansas. All others are from Texas. How many students are from Texas?

5. There were 1500 travelers that flew out of New Orleans, LA to cities outside the country. 25% of these travelers flew to London, 28% flew to Rome, 36% flew to Paris, and 11% flew to Madrid. How many travelers flew to each city outside the country?

Name_____ Date_____

Let's Figure It!

Situations with rational numbers. Show all work.

1. On a certain test, each correct answer scores 5 points, each incorrect answer scores -2 points, and each unanswered question scores 0 points. Suppose a student answers 15 questions correctly, 4 incorrectly, and does not answer 1 question. What is the student's final score?

Answer: 15(5) + 4(-2) + 0 = 75 + (-8) = 67 points

2. Suppose a play shot a -5, +2, -3, and -2 in four rounds of a golf tournament. What was the player's final score?

Answer: 8 under par (-8)

3. Joseph and David had identical boxes of candy with 24 pieces of candy in the box. Joseph ate ½ of his box before lunch and then 4 pieces after lunch. David ate ¾ of his box at one time. Who has the most candy left in his box?

Answer: Joseph has 8 pieces left and David has 6 pieces left. Joseph has the most left.

4. The Junior Beta Convention is being held in Lafayette. There are 120 students at the conference. Of all of the students at the conference, $\frac{1}{2}$ are from Louisiana. Of the remaining students, $\frac{1}{5}$ are from Mississippi and $\frac{1}{4}$ are from Arkansas. All others are from Texas. How many students are from Texas?

Answer: 33 students are from Texas

5. There were 1500 travelers that flew out of New Orleans, LA to cities outside the country. 25% of these travelers flew to London, 28% flew to Rome, 36% flew to Paris, and 11% flew to Madrid. How many travelers flew to each city outside the country?

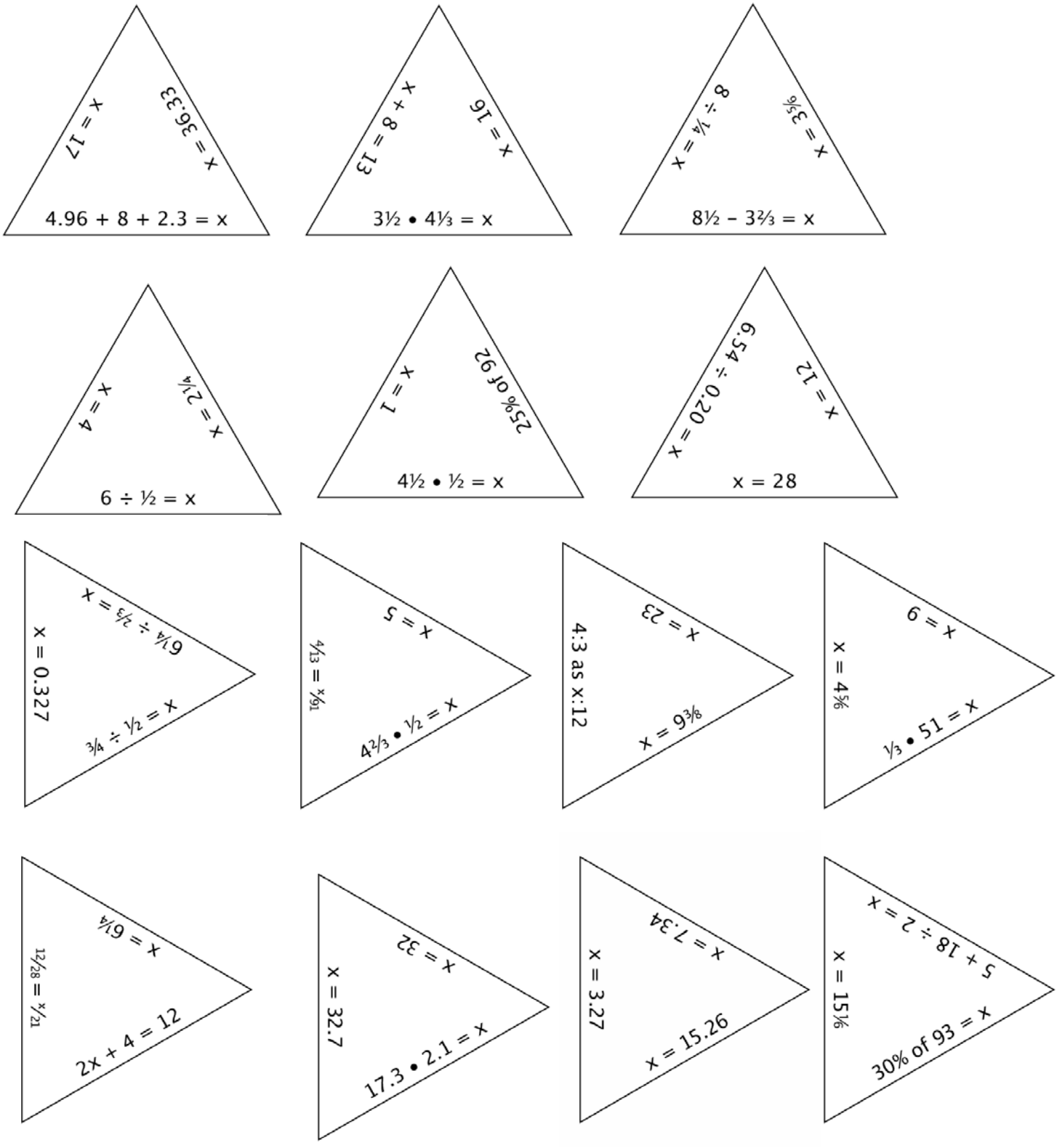
Answer: 375 travelers flew to London, 420 flew to Rome, 540 flew to Paris, and 165 flew to Madrid

$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
1	5	10
13	16	25
27	31	34
39	42	45
48	52	55
63	64	67
70	72	75
79	80	81
89	92	97

( )	÷	÷
( )	÷	÷
( )	÷	÷
( )	X	X
( )	X	X
( )	X	X
-	-	-
-	-	-
+	+	+
+	+	+

Unit 2, Activity 9, Triangle Puzzle

Directions: Cut the triangles apart on the darkened lines. Match each problem written on one triangle edge to the solution on the matching edge of another triangle. The triangles will form a symmetrical geometrical shape when each problem is answered correctly.



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

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

Name_____ **Date**_____

Which Direction?

Round 1:

Integer cards drawn: _____, _____, _____ Operations rolled: _____, _____

Student 1: Number sentence:

Describe your action in words: _____

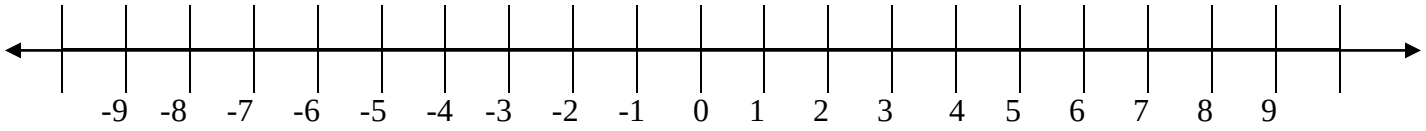
Student 2: Show how to model the first part of the number sentence on the number line and describe your action in words: _____

Student 3: Show how to model the next part of the number sentence on the number line and describe your action in words: _____

Student 4: Describe in words below whether or not your problem helps to prove the statement, "Subtracting 2 from a number is the same as adding -2 to a number."

_____

_____



Round 2:

Integer cards drawn: _____, _____, _____ Operations rolled: _____, _____

Student 1: Number sentence:

Describe your action in words: _____

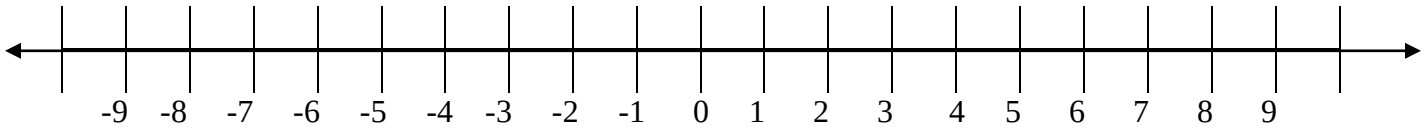
Student 2: Show how to model the first part of the number sentence on the number line and describe your action in words: _____

Student 3: Show how to model the next part of the number sentence on the number line and describe your action in words: _____

Student 4: Describe in words below whether or not your problem helps to prove the statement, "Subtracting 2 from a number is the same as adding -2 to a number."

_____

_____



Round 3:

Integer cards drawn: _____, _____, _____ Operations rolled: _____, _____

Student 1: Number sentence:

Describe your action in words: _____

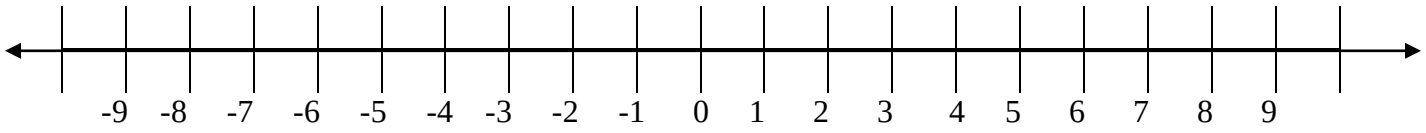
Student 2: Show how to model the first part of the number sentence on the number line and describe your action in words: _____

Student 3: Show how to model the next part of the number sentence on the number line and describe your action in words: _____

Student 4: Describe in words below whether or not your problem helps to prove the statement, "Subtracting 2 from a number is the same as adding -2 to a number."

_____

_____



Round 4:

Integer cards drawn: _____, _____, _____ Operations rolled: _____, _____

Student 1: Number sentence:

Describe your action in words: _____

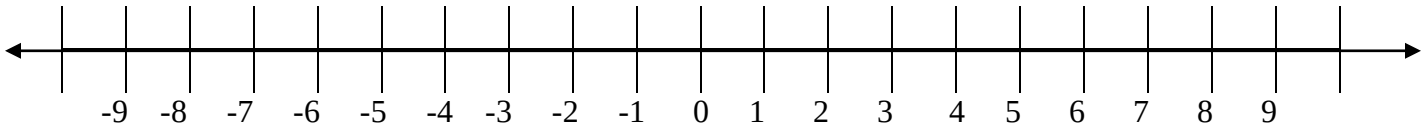
Student 2: Show how to model the first part of the number sentence on the number line and describe your action in words: _____

Student 3: Show how to model the next part of the number sentence on the number line and describe your action in words: _____

Student 4: Describe in words below whether or not your problem helps to prove the statement, "Subtracting 2 from a number is the same as adding -2 to a number."

_____

_____



Integer Target

Objective: "hit" the target on your number line by making the sum of the cards in your hand equal to your target number.

Absolute Value of Target Number	≤ 5	6 – 11	12 – 17	18 – 23	24 - 30
Hits Required to Win	5	4	3	2	1
# of "Hits"					

Choose a target number between -30 and 30. My target number is _____.
Place your red marker on your target number.

Place the cards in the bag and shake up the bag. Each player will choose 4 cards from the bag, without looking, and place them face-up on the table.

Players: Find the sum of the four cards, and place your green marker on that number.

1. Roll the die to determine the action you will take. (see table below)
2. Take the action.
3. Move your green marker to show the new sum of your cards. (If an opposing player's sum is affected, he/she will move his/her green marker, too.)
4. Add the cards again to check that all players' green markers are in the correct location.
5. If the green marker lands on the red marker, count this as one target "hit"!

Play continues until someone wins by hitting his/her target the number of times shown in the table above.

Die	Action	Description
1	Draw	Draw a card from the top of the deck.
2	Discard	Choose a card from your hand, and place it in the discard pile.
3	Exchange	Draw a card from the deck, then discard another (different) card.
4	Give	Give one of your cards to the player of your choice.
5	Take	Take any card from the player of your choice.
6	Trade	Trade one of your cards for a card of any other player.

REMEMBER:

The green marker is always on your current sum.

Your red marker is always on your "target" number; it never moves.

Additional Rules

- Players will always have between 0 and 6 cards.
  If a player has 6 cards and rolls for an action that increases the number to more than 6, the player continues to roll, without taking the action until he/she gets a discard, gives, or trades.

- If a player receives a card as a result of another player's action and it brings the count to more than 6, the "over 6" is handled as indicated above during this player's next regular turn.

- If a player has no cards when it is his/her turn, the player continues to roll, without taking any of the actions, until he/she rolls for a take or a draw.

- Players get credit for a "target hit" ONLY on his/her turn.
  If another player's action moves you to your target, you may still get credit for a hit if you can stay on the target during your own next turn. (Ex. Discard a 0 card or trade one of your cards for another player's card of the same value.)

- Each player gets an equal number of turns. Ties are broken by awarding the victory to the person whose chosen target number is the farthest from zero.

A The seventh graders are planning to sell cups of hot chocolate at the basketball games this winter.	A If 6 spoonfuls of mix make a cup of hot chocolate.	A How many spoonfuls of mix will be needed to make 42 cups of hot chocolate?
B Jared has an economy car. He figures that it costs him $30 to make a trip of 120 miles.	B Jared's sister's car costs a bit more to operate. She figures that she spends five cents more than Jared to drive each mile.	B How many miles can the sister travel for the cost of $18.00?
C A certain recipe calls for 2 teaspoons of vanilla and 1/3 cup of oil.	C You want to make a large batch of brownies for your class using 10 $\frac{1}{2}$ cups of oil.	C How much vanilla would you need?
D Bastrop High School has a big football game this week, and several businesses have asked Miranda to paint the windows to show their support of the team.	D Miranda can paint 3 business windows for the upcoming football game in 2 hours.	D How long will it take her to paint 10 business windows?

E Blue whales eat tons of krill, a type of small shrimp.	E A single blue whale may eat 4.5 tons of krill per day.	E At this rate, how many tons of krill would a blue whale eat in two weeks?
F Jane is taking a trip and wants to know how much gas she'll need for her car.	F She can go 152 miles on 8 gallons of gasoline.	F How many miles to the gallon will she get?
G Kayla wants to call her sister who lives in Texas.	G Long distance phone calls cost 18¢ for 3 minutes.	G How much does it cost for one minute?
H Juanita is typing a report for her science project.	H She can type 156 words in 4 minutes.	H What is her typing rate?
I Ashleigh is participating in a race for a school fundraiser.	I Suppose she can maintain a pace of 7.5 minutes per mile for a distance of 13 miles.	I How long will it take her to run 13 miles?
J Danika's parents want to know who has the most fuel efficient car. Both parents work Monday through Friday.	J Her mother drives 26 miles to work every day and 26 miles back home. Her father travels back and forth to work 22 miles each way.	J Danika's mother puts 19 gallons of gas in her car every 2 weeks, and her father puts 15.5 gallons in his car every 2 weeks. Who has the most fuel efficient car?

K Shawna is marching in a parade down Ryan Street in Lake Charles with the band.	K A drawing of Lake Charles uses a scale of 1 cm = 2 miles. On the drawing, the length of Ryan Street is 2.5 cm.	K What is the actual length of Ryan Street?
L Sue and James are standing together in a photograph.	L Sue is 5 feet tall and James is 6 feet tall. In the photograph, James is 3 $\frac{1}{2}$ cm tall.	L How tall is Sue in the photograph?
M Nelly wants to compete for the Physical Fitness Award in race-walking.	M To receive this award, a person must race-walk a total of 200 miles at an average rate of no slower than 12 minutes per mile.	M How many hours would it take to race-walk a total of 200 miles at a rate of 12 miles per minute?

A. 252 spoonfuls

B. Since Jared spends $30.00 to go 120 miles, it costs him $0.25 to go one mile. His sister spends $0.05 more to go one mile, so she spends $0.30 per mile. Dividing $18.00 by $0.30 gives you 60 miles that his sister can travel.

C. 63 teaspoons of vanilla

D. $6\frac{2}{3}$ hours or 6 hours and 40 minutes

E. 63 Tons

F. 19 miles per gallon

G. $0.06 / minute

H. 39 words per minute

I. 97.5 minutes or 1 hour 37 and ½ minutes

J. Danika's mother's car @ 27.4 mpg (dad's car = 28.4 mpg)

K. 5 miles

L. $2\frac{11}{12}$ cm

M. 2400 minutes or 40 hours

Unit 2, Activity 15, Common Ratios

Name: _____ ***Date:*** _____ ***Hour:*** _____

Have someone measure your described distances to complete the chart. Distances should be measured to the nearest millimeter.

Small measurement	**Large measurement**	**Ratio ($\frac{small}{large}$)**
Ankle to knee	Total height	
Wrist to elbow	Index finger to shoulder	
Chin to top of head	Waist to chin	
Tip of nose to top of head	Chin to top of head	

1. Compare your measurement results with your partners. Do the ratios form a common ratio? Explain.

2. You can now use this relationship to predict measurements.
   A. What is the approximate height of a person whose waist is 100 cm off the ground?

   B. What is the approximate height of a person if the distance from his/her waist to the top of his/her head measures 57 cm?

   C. Michael Jordan is about 6 feet 7 inches. What would be his index finger to shoulder measurement?

Unit 2, Activity 16, In Another World

Name: _____ ***Date:*** _____***Hour:*** _____

You are a 65-inch tall Earthling who has landed on the world of Gianormas. Immediately upon arrival, you meet Leonardo who is 50 ft tall! As you look around, you notice that everything in this new world is Leonardo's size. You assume that everything is to the same scale as it is on Earth.

Measure the following items in your classroom to the nearest quarter-inch. Then use a proportion to find the measurement of each item on Gianormas.

	Measurement on Earth	Proportion used to find the measurement on Gianormus	Measurement on Gianormas
height of desk			
length of a pencil			
height of door or window			
shoe length			
arm length			

Write a couple of sentences describing how you would complete an everyday task while on Gianormas.

Suppose the height of a visiting Lilliputian woman is 15 inches. Use proportions to find the measurement of the items in the world of the Lilliputians.

	Measurement on Earth	Proportion used to find the measurement on Lilliputian	Measurement on Lilliputian
height of desk			
length of a pencil			
height of door or window			
shoe length			
arm length			

Write a couple of sentences describing how you would complete an everyday task while visiting Lilliputian.

Unit 2, Activity 18, Scale Drawings

Name _____ Date _____ Hour _____

Complete each of the following situations:

1. Draw a diagram of a rectangular bedroom with dimensions of 24 feet by 15 feet. Use a scale of $\frac{1}{2}$ inch = 6 feet.

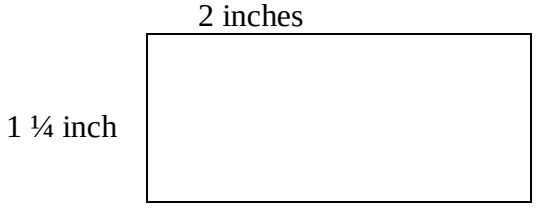
2. Sandy was given the assignment during a summer job to draw a map from the city recreational complex to the high school. Sandy started from the recreational complex and walked north 3.5 miles, west 10 miles, north 5.3 miles, and then east 3 miles. Sandy was given a space $3\frac{1}{2}$ inches x 4 inches to sketch the route on a brochure being made by the staff at the complex. Determine a scale that Sandy will be able to use and draw a map that can be used in the space provided. Explain how the scale was determined.

3. The picture of the amoeba at the right shows a width of 2 centimeters. If the actual amoeba's length is 0.005 millimeter, what is the scale of the drawing?

Unit 2, Activity 18, Scale Drawings with Answers

Complete each of the following situations:

1. Draw a diagram of a rectangular bedroom with dimensions of 24 feet by 15 feet. Use a scale of $\frac{1}{2}$ inch = 6 feet.



2. Sandy was given the assignment during a summer job to draw a map from the city recreational complex to the high school. Sandy started from the recreational complex and walked north 3.5 miles, west 10 miles, north 5.3 miles, and then east 3 miles. Sandy was given a space $3\frac{1}{2}$ inches x 4 inches to sketch the route on a brochure being made by the staff at the complex. Determine a scale that Sandy will be able to use and draw a map that can be used in the space provided. Explain how the scale was determined.

   North 3.5 miles + 5.3 miles = 8 . 8 miles
   West 10 miles and east 3 miles, so she needs to show 10 miles east-west.

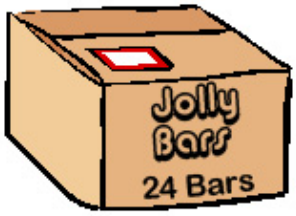
   If 1 inch represents 3 miles, then the map can be centered on the brochure with margins between ¾ and 1 inch. If 1 inch represents 2.75 miles, then there will be a margin of about ½ inch around the map.

3. The picture of the amoeba at the right shows a width of 2 centimeters. If the actual amoeba's length is 0.005 millimeter, what is the scale of the drawing?

   1 cm = 10 mm so .1 cm = 1 mm and 2 cm = 20 mm

Unit 3, Activity 2, Candy Bars

Name: _____ Date: _____



1) At Tasty Candy Co. different types of candy bars are packaged with different numbers of bars in each box. Jolly bars are packaged with 24 bars in each box, Nutty Bars with 20, and Cocoa Bars with 32. Write an expression that illustrates buying 5 boxes of each type of candy bar.

2) Use the distributive property to find the total number of candy bars. Show your work.

3) If you sell 3 boxes of Jolly Bars, 5 boxes of Nutty Bars, and 1 box of Cocoa Bars, how many bars did you sell? Show your work.

4) George sold 3 boxes of each kind of candy bar. Write an expression and evaluate it to find how many candy bars George sold.

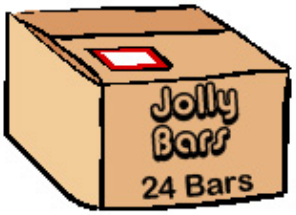
5) Kandice sold 4 boxes of Jolly Bars, 4 boxes of Cocoa Bars, and 2 boxes of Nutty Bars. Write an expression and evaluate it to find how many candy bars Kandice sold.

6) If you sell more than three boxes of Nutty Bars, the company will give you an extra bar for each box. Write the expression that represents the number of Nutty Bars you will have if you sold 4 boxes. How many candy bars is this? Show your work.

7) The different bars can cost different amounts. If Cocoa Bars sell for $0.50 each, how much would 5 boxes of Cocoa Bars cost?

Unit 3, Activity 2, Candy Bars with Answers

Name: _____ D



1) At Tasty Candy Co. different types of candy bars are packaged with different numbers of bars in each box. Jolly Bars are packaged with 24 bars in each box, Nutty Bars with 20, and Cocoa Bars with 32. Write an expression that illustrates buying 5 boxes of each type of candy bar.
5 (24 + 20 + 32)

2) Use the distributive property to find the total number of candy bars. Show your work.
5 (24 + 20 + 32) = ___380___

3) If you sell 3 boxes of Jolly bars, 5 boxes of Nutty Bars, and 1 box of Cocoa Bars, how many bars did you sell? Show your work. $3(24)+5(20)+1(32)=$ *__204___*

4) George sold 3 boxes of each kind of candy bar. Write an expression and evaluate it to find how many candy bars George sold.
3 (24 + 20 + 32) = ___228___

5) Kandice sold 4 boxes of Jolly Bars, 4 boxes of Cocoa Bars, and 2 boxes of Nutty Bars. Write an expression and evaluate it to find how many candy bars Kandice sold.
4 (24 + 32) + 2 (20) = ___264____

6) If you sell more than three boxes of Nutty Bars, the company will give you an extra bar for each box. Write the expression that represents the number of Nutty Bars you will have if you sold 4 boxes. How many candy bars is this? Show your work.
4 (20 + 1) = __84___

7) The different bars can cost different amounts. If Cocoa Bars sell for $0.50 each, how much would 5 boxes of Cocoa Bars cost?
5(32 x .50) = $80

What is the approximate value of $\sqrt{15}$	Estimate $\sqrt{200}$	What is the value of $\sqrt{25}$	Estimate $\sqrt{130}$	What is the approximate value of $\sqrt{50}$
What is the value of $\sqrt{121}$	What is the approximate value of $\sqrt{175}$	What is the value of $\sqrt{100}$	What is the approximate value of $\sqrt{350}$	What is the value of $\sqrt{289}$
Estimate $-\sqrt{102}$	What is the value of $\sqrt{324}$	What is the approximate value of $-\sqrt{53}$	Estimate $\sqrt{227}$	Estimate $-\sqrt{301}$
What is the approximate value of $\sqrt{205}$	Estimate $-\sqrt{400}$	Estimate $\sqrt{98}$	What is the value of $-\sqrt{225}$	What is the approximate value of $-\sqrt{47}$
What is the value of $-\sqrt{81}$	What is the value of $\sqrt{196}$	What is the approximate value of $\sqrt{6}$	Estimate $-\sqrt{13}$	Estimate $-\sqrt{28}$
What is the approximate value of $\sqrt{314}$	What is the value of $-\sqrt{36}$	Estimate $-\sqrt{141}$	What is the approximate value of $-\sqrt{260}$	What is the value of $-\sqrt{169}$
Estimate $-\sqrt{333}$	What is the approximate value of $-\sqrt{360}$	What is the value of $\sqrt{64}$	What is the approximate value of $-\sqrt{391}$	What is the value of $-\sqrt{324}$

Unit 3, Activity 7, What's My Value?

Name: _____ Date: _____

Determine which replacement values in the second column should be used to produce the given value for each expression in the first column.

_____	1. $\sqrt{x} + 5 = 7$	*x = 1*
_____	2. $x^2 + 5 = 30$	*x = 2*
_____	3. $x^3 + \sqrt{4} = 29$	*x = 3*
_____	4. $x^2 + x^3 = 810$	*x = 4*
_____	5. $\sqrt{100} - x^2 = 9$	*x = 5*
_____	6. $\frac{\sqrt{9}}{3} + x^2 = 65$	*x = 6*
_____	7. $x^2 - \sqrt{9} = 46$	*x = 7*
_____	8. $x^2 + \frac{\sqrt{81}}{3} = 39$	*x = 8*
_____	9. $x^3 - \sqrt{4} = 6$	*x = 9*
_____	10. $2x^2 + \sqrt{25} = 205$	*x = 10*

Unit 3, Activity 7, What's My Value? with Answers

Name: _____ Date: _____

Determine which replacement values from the second column should be used to make the equation from the first column true.

x=4	1. $\sqrt{x} + 5 = 7$	*x = 1*
x=5	2. $x^2 + 5 = 30$	*x = 2*
x=3	3. $x^3 + \sqrt{4} = 29$	*x = 3*
x=9	4. $x^2 + x^3 = 810$	*x = 4*
x=1	5. $\sqrt{100} - x^2 = 9$	*x = 5*
x=8	6. $\frac{\sqrt{9}}{3} + x^2 = 65$	*x = 6*
x=7	7. $x^2 - \sqrt{9} = 46$	*x = 7*
x=6	8. $x^2 + \frac{\sqrt{81}}{3} = 39$	*x = 8*
x=2	9. $x^3 - \sqrt{4} = 6$	*x = 9*
x=10	10. $2x^2 + \sqrt{25} = 205$	*x = 10*

Unit 3, Activity 8, What's My Number?(Part 1)

Name_____ Date_____

Complete the number puzzle below following the steps given. Record each step in the box to determine the final result.

Puzzle 1:

Step 1: Choose a two-digit number.
Step 2: Add that number to itself.
Step 3: Add 20.
Step 4: Subtract 12.
Step 5: Subtract the original number.
Step 6: Add 5.
Step 7: Subtract the original number.
Step 8: What is the final result?

Next, write an algebraic expression that describes what happened to the original number, *n*, in each step.

Step 1: Choose a two-digit number.	Step 1: _____
Step 2: Add that number to itself.	Step 2: _____
Step 3: Add 20	Step 3: _____
Step 4: Subtract 12	Step 4: _____
Step 5: Subtract the original number.	Step 5: _____
Step 6: Add 5	Step 6: _____
Step 7: Subtract the original number.	Step 7: _____
	What is the final result?

Puzzle 2:

Step 1: Write down any whole number.	Step 1: _____
Step 2: Add the number that is 1 less than the original number.	Step 2: _____
Step 3: Add 9 to this result.	Step 3: _____
Step 4: Divide the sum by 2.	Step 4: _____
Step 5: Subtract the original number.	Step 5: _____
Step 6: What is the final result?	Step 6: _____

Puzzle 3:

Step 1: Write down any whole number.	Step 1: _____
Step 2: Multiply this number by 6.	Step 2: _____
Step 3: Add 10.	Step 3: _____
Step 4: Subtract 4.	Step 4: _____
Step 5: Take half.	Step 5: _____
Step 6: Multiply by 4	Step 6: _____
Step 7: Divide by 12.	Step 7: _____
Step 8: Subtract your original number.	Step 8: _____

Unit 3, Activity 8, What's My Number?(Part 1) with answers

Puzzle 1 with solutions:

Step 1: Choose a two-digit number.	Step 1: n
Step 2: Add that number to itself.	Step 2: $n + n = 2n$
Step 3: Add 20	Step 3: $2n + 20$
Step 4: Subtract 12	Step 4: $2n + 20 - 12 = 2n + 8$
Step 5: Subtract the original number.	Step 5: $2n + 8 - n = n + 8$
Step 6: Add 5	Step 6: $n + 8 + 5 = n + 13$
Step 7: Subtract the original number.	Step 7: $n + 13 - n = 13$ *(final result)*
Step 8: What is the final result?	

Puzzle 2 with solutions:

Step 1: Write down any whole number.	Step 1: n
Step 2: Add the number that is 1 less than the original number.	Step 2: $n + n - 1 = 2n - 1$
Step 3: Add 9 to this result.	Step 3: $2n - 1 + 9 = 2n + 8$
Step 4: Divide the sum by 2.	Step 4: $(2n + 8) \div 2 = n + 4$
Step 5: Subtract the original number.	Step 5: $n + 4 - n = 4$ *(final result)*
Step 6: What is the final result?	Step 6: *shown as the result of step 5*

Puzzle 3 with solutions:

Step 1: Write down any whole number.	Step 1: n
Step 2: Multiply this number by 6.	Step 2: $n \times 6 = 6n$
Step 3: Add 10.	Step 3: $6n + 10$
Step 4: Subtract 4.	Step 4: $6n + 10 - 4 = 6n + 6$
Step 5: Take half.	Step 5: $\frac{6n+6}{2} = 3n + 3$
Step 6: Multiply by 4	Step 6: $4(3n + 3) = 12n + 12$
Step 7: Divide by 12.	Step 7: $\frac{12n+12}{12} = n + 1$
Step 8: Subtract your original number.	Step 8: $n + 1 - n = 1$ (final result)

Unit 3, Activity 9, What's My Number? (Part 2)

Name_____Date_____

Examine the following puzzle. Do you think that the result of 4 will work if you used numbers besides whole numbers?

Step 1: Write down any whole number. Step 2: Add the number that is 1 less than the original number. Step 3: Add 9 to this result. Step 4: Divide the sum by 2. Step 5: Subtract the original number. Step 6: What is the final result?	Step 1: n Step 2: $n + n - 1 = 2n - 1$ Step 3: $2n - 1 + 9 = 2n + 8$ Step 4: $(2n + 8) \div 2 = n + 4$ Step 5: $n + 4 - n = 4$ *(final result)* Step 6: *shown as the result of step 5*

Make your prediction below:

Now try it! Complete the grid to determine if the final result will be the same with all the numbers given.

Step 1:	5	$\frac{1}{2}$	0.75	-3
Step 2:				
Step 3:				
Step 4:				
Step 5:				
Step 6:				

Unit 3, Activity 9, What's My Number? (Part 2) with Answers

Name_____Date_____

Examine the following puzzle. Do you think that the result of 4 will work if you used numbers besides whole numbers?

Step 1: Write down any whole number. Step 2: Add the number that is 1 less than the original number. Step 3: Add 9 to this result. Step 4: Divide the sum by 2. Step 5: Subtract the original number. Step 6: What is the final result?	Step 1: n Step 2: $n + n - 1 = 2n - 1$ Step 3: $2n - 1 + 9 = 2n + 8$ Step 4: $(2n + 8) \div 2 = n + 4$ Step 5: $n + 4 - n = 4$ *(final result)* Step 6: *shown as the result of step 5*

Make your prediction below:

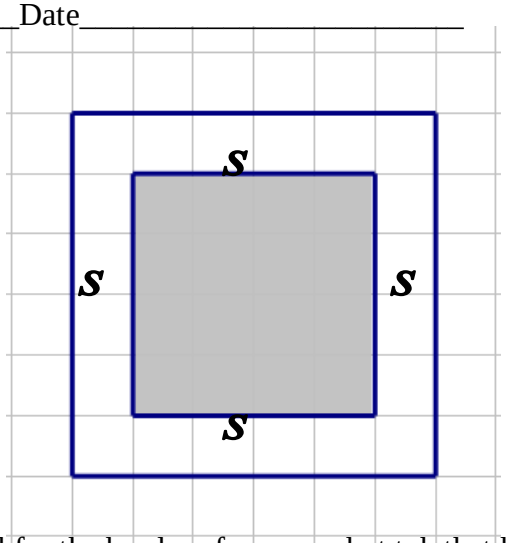
Now try it! Complete the grid to determine if the final result will be the same with all the numbers given.

Solutions:

Step 1:	5	$\frac{1}{2}$	0.75	-3
Step 2:	5 + 5 – 1 = 9	$\frac{1}{2} + \frac{1}{2} - 1 = 0$	0.75 + 0.75 – 1 = 0.50	-3 + -3 – 1 = -6 - 1
Step 3:	9 + 9 = 18	0 + 9 = 9	0.50 + 9 = 9.50	-6 – 1 + 9 = -7 + 9 = 2
Step 4:	18 ÷ 2 = 9	$9 \div 2 = \frac{9}{2}$	9.50 ÷ 2 = 4.75	2 ÷ 2 = 1
Step 5:	9 – 5 = 4	$\frac{9}{2} - \frac{1}{2} = \frac{8}{2}$	4.75 - 0.75 = 4	1 – (-3) = 4
Step 6:	4	4	4	4

Name_____Date_____

Hot tubs and in-ground swimming pools are sometimes surrounded by borders of tiles. This drawing shows a square hot tub with sides of length *s* feet. This tub is surrounded by a border of square tiles. Each border tile measures 1 foot on each side.



1. How many 1-foot square tiles will be needed for the border of a square hot tub that has edge length *s* feet? _____

2. Express the total number of tiles in as many ways as you can.

_____

_____

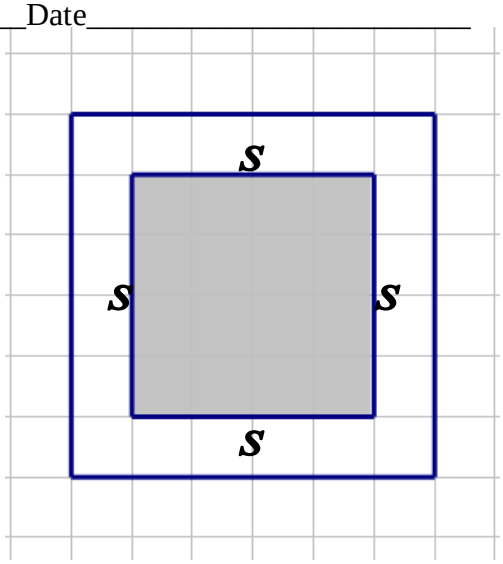
_____

_____

3. Be prepared to convince your classmates that the expressions are equivalent.

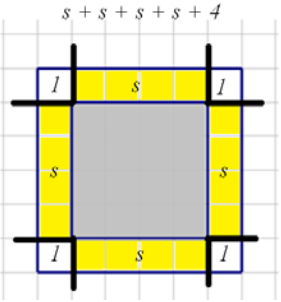
Unit 3, Activity 10, Tiling Tubs with Answers

Name_____Date_____

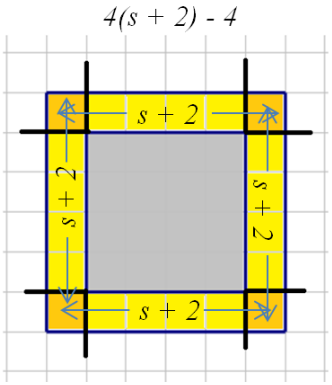


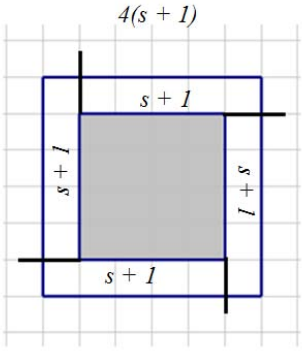
Hot tubs and in-ground swimming pools are sometimes surrounded by borders of tiles. This drawing shows a square hot tub with sides of length *s* feet. This tub is surrounded by a border of square tiles. Each border tile measures 1 foot on each side.

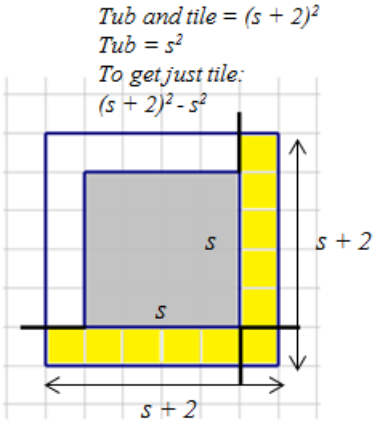
1. How many 1-foot square tiles will be needed for the border of a square hot tub that has edge length *s* feet? *One possible way: s + s + s + s + 4*



2. Express the total number of tiles in as many ways as you can. *4(s+ 2) – 4; 4(s + 1); $(s + 2)^2 - s^2$*







3. Be prepared to convince your classmates that the expressions are equivalent.

4(s + 1) = s + s + s + s + 4 using the distributive property

4(s + 2) – 4
4s + 8 – 4
4s + 4 which is the same as 4(s + 1)

Unit 3, Activity 11, Equation Relationships

Name_____Date_____

Substitute the given values for a in the equations in the word grid.

a	$6 - 3a$	$3(2 - a)$	$-3a + 6$	$-6a$	$a + 14$
-5					
-4					
-3					
-2					
-1					
0					
1					
2					
3					
4					
5					

What do you notice about how some of the equations (columns) are related? Make three observations about how the quantities are related.

1. _____
2. _____
3. _____

For what value of a is $-6a = a + 14$? _____

For what value of a is $a + 14 = 6 - 3a$? _____

What are some other questions that can be asked from the relationships you observed in the grid?

Unit 3, Activity 11, Equation Relationships with Answers

Name_____Date_____

Substitute the given values for a in the equations in the table.

a	$6 - 3a$	$3(2 - a)$	$-3a + 6$	$-6a$	$a + 14$
-5	*21*	*21*	*21*	*30*	*9*
-4	*18*	*18*	*18*	*24*	*10*
-3	*15*	*15*	*15*	*18*	*11*
-2	*12*	*12*	*12*	*12*	*12*
-1	*9*	*9*	*9*	*6*	*13*
0	*6*	*6*	*6*	*0*	*14*
1	*3*	*3*	*3*	*-6*	*15*
2	*0*	*0*	*0*	*-12*	*16*
3	*-3*	*-3*	*-3*	*-18*	*17*
4	*-6*	*-6*	*-6*	*-24*	*18*
5	*-9*	*-9*	*-9*	*-30*	*19*

What do you notice about how some of the equations (columns) are related? Make three observations about how the quantities are related. *Observations will vary; Make sure there is discussion about the equivalence of the first three expressions and how they are related through the distributive and commutative properties.*

For what value of a is $-6a = a + 14$? *-2*

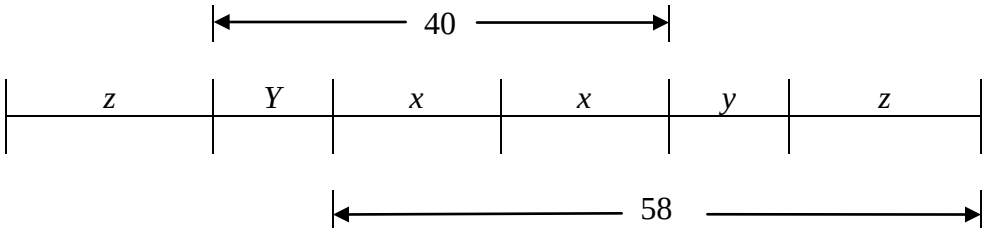
For what value of a is $a + 14 = 6 - 3a$? *-2*

What are some other questions that can be asked from the relationships you observe in the table?

Name_____ Date_____

The Mystery Line

In this diagram, sections labeled with the same letter have the same length.

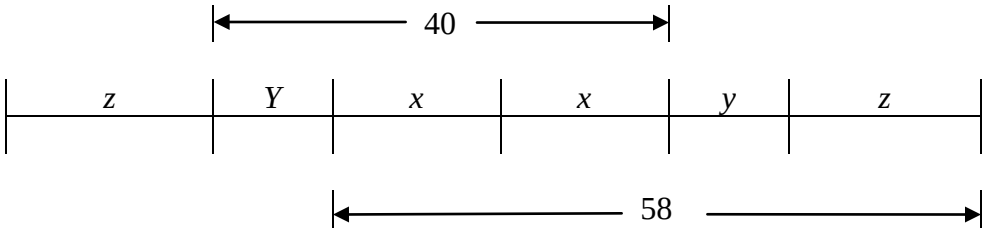


Can you find the length of section z? Write your answer below. *Hint: It might help to set up a series of equations.*

Name_____ Date_____

The Mystery Line

In this diagram, sections labeled with the same letter have the same length.



Can you find the length of section z? Write your answer below. *Hint: It might help to set up a series of equations.*

Solution:
The section that is 40 units in length can be represented as $y + x + x$ or $2x + y = 40$.
The section that is 58 units in length can be represented by $x + x + y + z$ or $2x + y + z = 58$.
Next, substitute 40 for $2x + y$ in the first equation: $40 + z = 58$ so $z = 18$

$3p + 2 = 23$	$3n + 1 = 10$
$1 + 4g = 13$	$2t + 3 = -3$
$4m - 6 = 22$	$6 + 3g = 0$
$2j + 7 = 1$	$3y + 1 = 7$
$2f - 4 = 2$	$-2x - 7 = 3$
$4 + 5r = -11$	$5h + 4 = 19$
$1 + 2r = -3$	$4x + 5 = 13$
$-6y + 1 = -17$	$4 + 2c = 8$
$-3c + 9 = 3$	$-3n - 8 = 7$

$3p + 2 = 23$ $p = 7$	$3n + 1 = 10$ $n = 3$
$1 + 4g = 13$ $g = 3$	$2t + 3 = -3$ $t = -3$
$4m - 6 = 22$ $m = 7$	$6 + 3g = 0$ $g = -2$
$2j + 7 = 1$ $j = -3$	$3y + 1 = 7$ $y = 2$
$2f - 4 = 2$ $f = 3$	$-2x - 7 = 3$ $x = -5$
$4 + 5r = -11$ $r = -3$	$5h + 4 = 19$ $h = 3$
$1 + 2r = -3$ $r = -2$	$4x + 5 = 13$ $x = 2$
$-6y + 1 = -17$ $y = 3$	$4 + 2c = 8$ $c = 2$
$-3c + 9 = 3$ $c = 2$	$-3n - 8 = 7$ $n = -5$

Unit 3, Activity 15, Inequality Chart

Name_____ Date_____

Read the inequality verbal phrases in the chart below and indicate whether you understand by placing a (+) if you know the meaning and the symbolic notation, a (✓) if you know just the meaning, or a (-) if you do not know the meaning or the symbolic notation. Next, write what you think the meaning and symbolic notation might be.

Verbal Phrase	+	✓	-	Meaning	Symbolic
More than 5 buses					
Up to 5 buses					
Spend at least $5					
Spend less than $5					

Name_____ Date_____

Read the inequality verbal phrases in the chart below and indicate whether you understand by placing a (+) if you know the meaning and the symbolic notation, a (✓) if you know just the meaning, or a (-) if you do not know the meaning or the symbolic notation. Next, write what you think the meaning and symbolic notation might be.

Verbal Phrase	+	✓	-	Meaning	Symbolic
More than 5 buses					
Up to 5 buses					
Spend at least $5					
Spend less than $5					

Unit 3, Activity 15, Inequality Chart with Answers

Name_____ Date_____

Read the inequality verbal phrases in the chart below and indicate whether you understand by placing a (+) if you know the meaning and the symbolic notation, a (✓) if you know just the meaning, or a (-) if you do not know the meaning or the symbolic notation. Next, write what you think the meaning and symbolic notation might be.

Verbal Phrase	**+**	**✓**	**-**	**Meaning**	**Symbolic**
More than 5 buses				Can have 6 buses or more	$x > 5$
Up to 5 buses				Can have 5 buses or less	$x \leq 5$
Spend at least $5				Can spend $5 or more	$x \geq 5$
Spend less than $5				Can spend $4 or less	$x < 5$

Unit 3, Activity 15, Verbal Inequalities

Use with Inequality Bingo version 1. Cut apart.

1. 6 less than James	$<$
2. Children under 13 are not permitted without an adult	$<$
3. 12 less than 2 times Sam's amount	$<$
4. Kenneth has fewer checkers than Ronald	$<$
5. 5 times a number is greater than 25	$>$
6. 4 more than Kerri	$>$
7. Marci has more than Timothy	$>$
8. Kaci had to spend more than $50 to get the discount	$>$
9. The swing's maximum capacity is 50 pounds	$\leq$
10. No more than 6 people can ride at the same time	$\leq$
11. A scooter has a maximum speed of 12mph	$\leq$
12. The bench will accommodate up to 7 people	$\leq$
13. At least 2 hours of homework	$\geq$
14. The sum of 3 and a number is at least 9	$\geq$
15. You must be at least 18 to register to vote	$\geq$
16. A grade of no less than 90 is considered an A	$\geq$

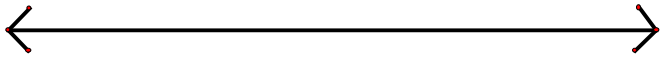
Unit 3, Activity 16, Inequality Situations and Graphs

Use with Inequality Bingo version 2. Cut apart. Have students write one of the inequalities in each block

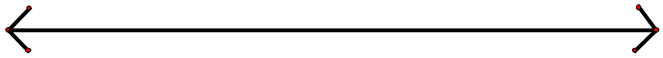
$x+2y>26$	Joe's age, *x*, added to twice Morgan's age, *y*, is greater than 26
$3x+y<7$	3 times the number of pennies, *x*, plus the number of dimes, *y*, is less than 7
$l \geq 5$	Greg must run at least 5 laps around the track after practice.
$q \leq 4$	Deon cannot miss more than 4 questions on the test.
$c \leq 35$	The cost can be no more than $35.
$b \leq 150$	The building is no more than 150 ft tall.
$n+7 \leq 27$	A number increased by 7 is no more than 27.
$n-2>17$	A number decreased by 2 is more than 17.
$3n \geq 24$	Three times a number is no less than 24.
$w<8$	The baby weighed less than 8 pounds at birth.
$w \leq 15$	Kirby's family waited no more than 15 minutes to be seated at the restaurant.
$d<13$	TJ drives less than 13 miles to school everyday.
$w>6$	Mandi walks more than 6 miles everyday
$s \geq 24$	Cedric swims at least 24 laps every day in his pool.

Name _____ Date _____ Hour _____

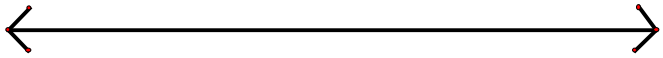
a. Jamie went to the mall and found a pair of in-line skates that he wanted to buy for $88. He makes $5.50/hour babysitting his little brother. He already has $13.25. Write and solve an inequality to find how many hours and minutes he must baby-sit to buy the skates. Graph the solution set.



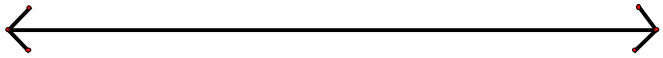
b. A group of 8 students could not spend more than $78.50 when they went to the movies. If the tickets cost $6.50 each and snacks were $1.50 each, how many snacks could the students buy?



c. Coach told the team members that they must each earn at least $30 this week for a weekend tournament. Tim knows his dad will give him $12 to mow his grandmother's lawn and $8 for each car he washes. If Tim mows his grandmother's lawn, write and solve an inequality to find how many cars he needs to wash to earn at least $30. Graph the solution set.



d. Sam wants to go to Washington D.C. in the spring. The trip will cost him $380 to go with his 8th grade class. Sam has saved $150 and he makes $5.25/hour when he works with his dad after school. Write and solve an inequality to find how many hours Sam must work with his dad to have at least $380. Graph the solution set.



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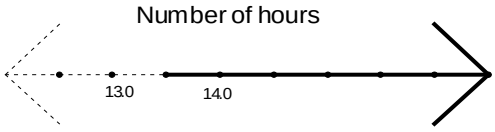
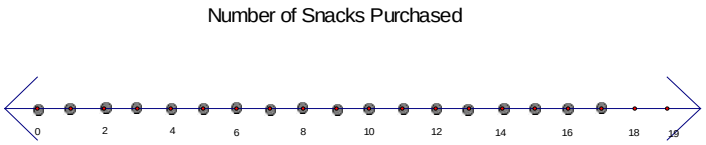
5.5 x ≥88 – 13.25
x ≥74.75/5.5
x ≥ 13.59 hours
He must work at least 13 hours and 35 minutes.



b. A group of 8 students could not spend more than $78.50 when they went to the movies. If the tickets cost $6.50 each and snacks were $1.50 each, how many snacks could the students buy?

$78.50 ≤ 8(6.50) + 1.5x
$78.50 – 52.00 ≤ 1.5x
26.50 ≤ 1.5x
17.7 ≤ x
x≥ 17.7 snacks



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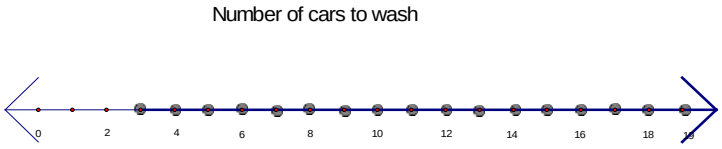
12 + 8x ≥ 30
8x ≥ 30 – 12
8x ≥ 18
x ≥ 2 1/9 or he must wash at least 3 cars
He must wash at least 3 cars.



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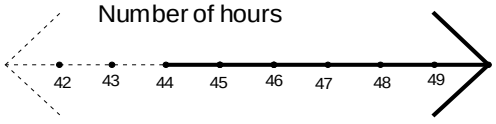
150 +5.25x ≥380
5.25x ≥ 380 – 150
5.25x ≥ 230
x≥ 230 /5.25
x ≥43.80952381
He must work at least 44 hours to have enough money.



Unit 4, Activity 2, Samples and Representation

Name_____ Date_____

Ask these questions in your small group. From your results, predict what you think will be true for the whole class.

1. Do you have a pet?

   Group results: _____
   Class prediction:

2. When do you usually go to bed on weeknights?

   Group results:_____
   Class prediction:

3. Do you have a little sister?

   Group results:_____
   Class prediction:

4. Have you ever gone fishing?

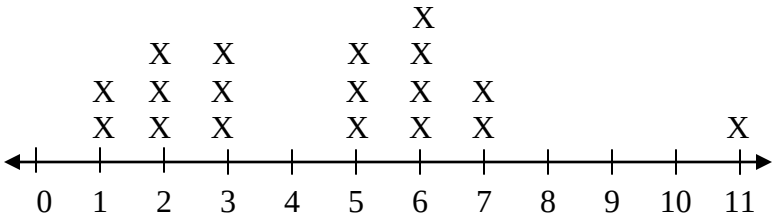
   Group results:_____
   Class prediction:

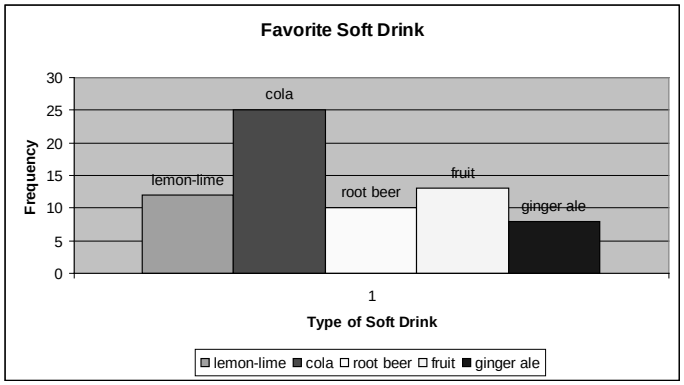
Unit 4, Activity 4, Describe the Data

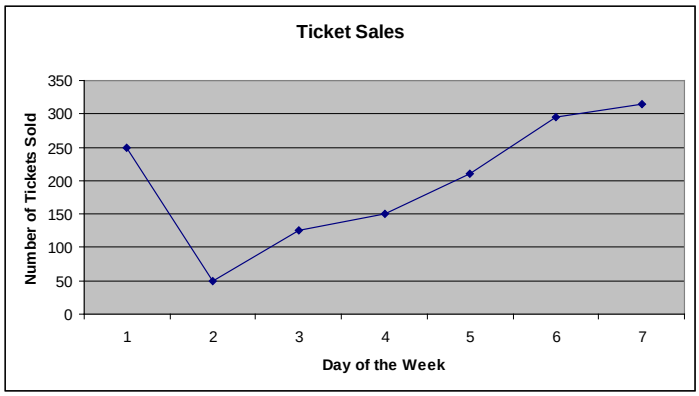
Name: _____

Describe each set of data in terms of patterns, clusters, gaps, and outliers.

Kind of Music	Tally	Frequency
Pop	𝍸 𝍸 |||	13
Rap	𝍸 𝍸 ||	12
R&B	𝍸 𝍸 |	11
Country	𝍸 𝍸	10
Gospel	|||	3







Name_____ Date_____

Which student has more variation in his/her math test scores?

John: 80, 80, 85, 75, 95
Mary: 65, 90, 90, 75, 95

To solve the problem, you can find the mean deviation for each student.

1. Find the mean of the data.
2. Find the positive difference of each value from the mean.
3. Find the average of the deviation from mean.

JOHN'S MATH SCORES	
Mean score = 415 ÷ 5 = 83	
Score	**Deviation from Mean**
75	
80	
80	
85	
95	
Mean deviation	

MARY'S MATH SCORES	
Mean score = 415 ÷ 5 = 83	
Score	**Deviation from Mean**
65	
75	
90	
90	
95	
Mean deviation	

Describe below what the *mean deviation* results indicate in this situation:

Name_____ Date_____

Which student has more variation in his/her math test scores?

John: 80, 80, 85, 75, 95
Mary: 65, 90, 90, 75, 95

To answer the question, you can find the mean deviation for each student.

1. Find the mean of the data.
2. Find the positive difference of each value from the mean.
3. Find the average of the deviation from mean.

JOHN'S MATH SCORES	
Mean score = 415 ÷ 5 = 83	
Score	**Deviation from Mean**
75 - *83*	*3*
80 - *83*	*3*
80 - *83*	*2*
85 - *83*	*8*
95 - *83*	*12*
Mean deviation	*28 ÷ 5 =5.6*

MARY'S MATH SCORES	
Mean score = 415 ÷ 5 = 83	
Score	**Deviation from Mean**
65 - *83*	*18*
75 - *83*	*8*
90 - *83*	*7*
90 - *83*	*7*
95 - *83*	*12*
Mean deviation	*52 ÷ 5 = 10.4*

Describe below what the *mean deviation* results indicate in this situation and how it relates to your original prediction and line plot:

There is more variability in Mary's scores. Students should make the connection that a low deviation (John) shows that his scores are closer to the mean (also seen in the line plot) and that a high deviation (Mary) shows that her scores are spread apart from the mean (also seen in the line plot). Mary's scores differ more from the mean than John's.

Name_____ Date_____

PULSE RATES

Use the following questions to guide your investigation:
For which pulse rate is there more variation—resting or exercising? How do you know?
How much faster is your average exercise pulse rate than your average resting pulse rate?

RESTING PULSE RATE	
Mean = ____ ÷ ____ = ____	
Pulse rate for each student	**Deviation from Mean**
Mean deviation	

EXERCISE PULSE RATE	
Mean = ____ ÷ ____ = ____	
Pulse rate for each student	**Deviation from Mean**
Mean deviation	

Name_____ Date_____

How much greater is the mean height of the basketball players when compared to the soccer players?
Which group of players shows the greater variability in height?

Soccer Players (Mean = *72 in*)	
Height (in)	Deviation from Mean (in)
65	
67	
69	
69	
69	
70	
70	
71	
71	
71	
72	
72	
72	
72	
73	
73	
73	
73	
73	
73	
74	
74	
74	
74	
76	
76	
76	
78	
Mean deviation:	

1. Find the mean of the data.
2. Deviations are like distance—always positive. So, find the positive difference, or deviation, of each value from the mean. The mean of the deviations is the average or mean deviation.

Basketball Players (Mean =)	
Height (in)	Deviation from Mean (in)
73	
75	
76	
78	
78	
79	
79	
80	
80	
81	
81	
82	
82	
84	
84	
84	
Mean deviation:	

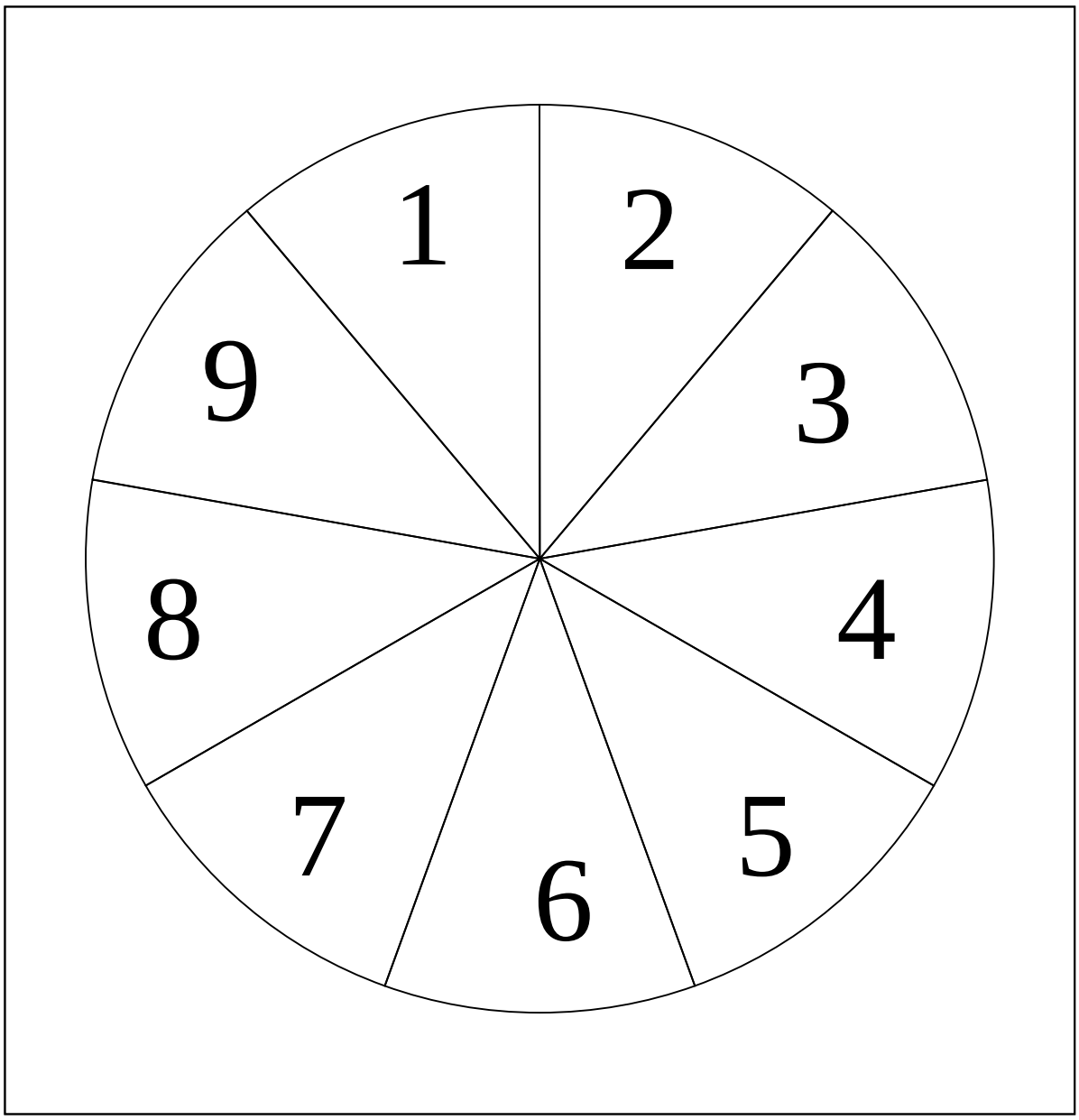
Name_____ Date_____

How much greater is the mean height of the basketball players when compared to the soccer players?
Which group of players shows the greater variability in height?

Soccer Players (Mean = *72 in* **)**	
Height (in)	Deviation from Mean (in)
65	*7*
67	*5*
69	*3*
69	*3*
69	*3*
70	*2*
70	*2*
71	*1*
71	*1*
71	*1*
72	*0*
72	*0*
72	*0*
72	*0*
73	*1*
73	*1*
73	*1*
73	*1*
73	*1*
73	*1*
74	*2*
74	*2*
74	*2*
74	*2*
76	*4*
76	*4*
76	*4*
78	*6*
Mean deviation:	*62 ÷ 29= 2.14 in*

1. Find the mean of the data.
2. Deviations are like distance—always positive. So, find the positive difference, or deviation, of each value from the mean. The mean of the deviations is the average or mean deviation.

Basketball Players (Mean =*80 in***)**	
Height (in)	Deviation from Mean (in)
73	*7*
75	*5*
76	*4*
78	*2*
78	*2*
79	*1*
79	*1*
80	*0*
80	*0*
81	*1*
81	*1*
82	*2*
82	*2*
84	*4*
84	*4*
84	*4*
Mean deviation:	*40 ÷ 16 = 2.53 in*


1
2
3
4
5
6
7
8
9

Name _____ Date_____

Who Did It?

Devise a plan to sample contents of the bags without replacement in order to make the best prediction based on experimental probability without looking at the contents of the bags.

When samples are examined without replacement, the sample size is constantly changing. Suppose a red tile is selected from Bag A on the first selection, a red tile from Bag B on the first selection, a green tile from Bag 3 on the first selection and a red tile from Bag 4 on the first selection. Based on the information collected so far, can a good prediction be made as to the matching bags?

1. Students record their results in the chart below by placing the color drawn from each bag and make a prediction after the 6^{th} selection from each bag, justifying which bag would be identical to Bag A.

2. Are six trials or draws enough to give enough information to make a valid prediction? Why or why not?

3. Do all four bags have to be completely empty to make a valid prediction? Explain your thinking and results.

Number of Trails	Bag A	Bag B	Bag C	Bag D
1				
2				
3				
4				
5				
6				

Name: _____

Chip Color	Theoretical Probability	Tally	Frequency	Experimental Probability
blue				
red				
green				

Compare each color's theoretical probability to its experimental probability. Describe your findings.

Unit 4, Activity 17, Jumanji

Name: _____

1. a. Create a list of the different ways two dice could land to create a sum.

b. How many ways are there?

2. Could the number of outcomes be found another way? Explain.

3. a. Find the theoretical probability of rolling each sum 2 through 12.

Sum	Theoretical probability	Experimental probability
2		
3		
4		
5		
6		
7		

Sum	Theoretical probability	Experimental probability
8		
9		
10		
11		
12		

b. Roll the pair of dice 12 times and record the sum of the roll each time, then find the experimental probability of getting each sum and record it in the table.

4. Write 2 to 3 sentences to compare the experimental and theoretical probabilities of getting each sum.

5. Suppose the sums and events were those listed below. Write the *theoretical probability* that each misfortune will happen during the course of one game.

Sum	Result	Theoretical Probability	We would experience these things.
2	Spiders get inside the backpack		
3	Volcano erupts		
4	Monsoon season		
5	Guide gets lost		
6	Tsetse fly bites		
7	Lion attacks		
8	Monkeys eat all food		
9	Rhinoceros stampede		
10	Quicksand on trail		
11	Python sneaks into camp		
12	You find a short cut		

6. Using *experimental probability* you found earlier by rolling the 2 dice, check to see which of the misfortunes you and your partner would experience. Write it in the table.

7. How did this compare to the *theoretical probability*? Why do you think the results were like this?

Unit 4, Activity 17, Jumanji with Answers

Name: _____

1. a. Create a list of the different ways two dice could land to create a sum.

1, 1	*2, 1*	*3, 1*	*4, 1*	*5, 1*	*6, 1*
1, 2	*2, 2*	*3, 2*	*4, 2*	*5, 2*	*6, 2*
1, 3	*2, 3*	*3, 3*	*4, 3*	*5, 3*	*6, 3*
1, 4	*2, 4*	*3, 4*	*4, 4*	*5, 4*	*6, 4*
1, 5	*2, 5*	*3, 5*	*4, 5*	*5, 5*	*6, 5*
1, 6	*2, 6*	*3, 6*	*4, 6*	*5, 6*	*6, 6*

b. How many ways are there? *36*

2. Could the number of outcomes be found another way? Explain.
By using the fundamental counting principle.

3. a. Find the theoretical probability of rolling each sum 2 through 12.

Sum	Theoretical probability	Experimental probability
2	*1/36*	
3	*2/36 = 1/18*	
4	*3/36 = 1/12*	
5	*4/36 = 1/9*	
6	*5/36*	
7	*6/36 = 1/6*	

Sum	Theoretical probability	Experimental probability
8	*5/36*	
9	*4/36 = 1/9*	
10	*3/36 = 1/12*	
11	*2/36 = 1/18*	
12	*1/36*	

b. Roll the pair of dice 12 times, and record the sum of the roll each time; then find the experimental probability of getting each sum, and record it in the table.

5. Write 2 to 3 sentences to compare the experimental and theoretical probabilities of getting each sum. *Answers will vary*

5. Suppose the sums and events were those listed below. Write the *theoretical probability* that each misfortune will happen during the course of one game.

Sum	Result	Theoretical Probability	We would experience these things.
2	Spiders get inside the backpack		
3	Volcano erupts		
4	Monsoon season		
5	Guide gets lost		
6	Tsetse fly bites		
7	Lion attacks		
8	Monkeys eat all food		
9	Rhinoceros stampede		
10	Quicksand on trail		
11	Python sneaks into camp		
12	You find a short cut		

6. Using *experimental probability* you found earlier by rolling the 2 dice, check to see which of the misfortunes you and your partner would experience. Write it in the table.

7. How did this compare to the *theoretical probability*? Why do you think the results were like this?

Player 1 _____

Sums:	2	3	4	5	6	7	8
Combinations:							

Player 2 _____

Sums:	2	3	4	5	6	7	8
Combinations:							

Name_____ Date_____

Find that Angle!

Work with a partner to complete the problem below using the process guide to help you through the steps.

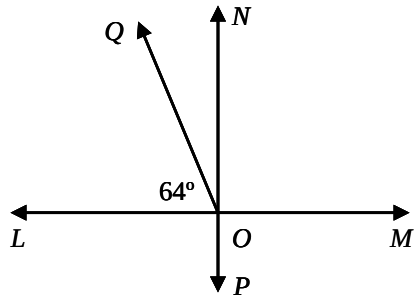
Two angles are complementary. The measure of one angle is 4 times the measure of the other angle. Write an equation and solve to find the measures of each angle.

1) Write an algebraic term to represent the measure of the smaller angle.	
2) Write an algebraic term to represent the measure of the larger angle.	
The sum of two complementary angles is _____º.	
3) Write a simple equation that would help you find the measures of each angle.	_____ + _____ = _____º
4) Combine like terms. Write the resulting equation.	
5) Divide both sides of the equation by _____ to solve. Show this step.	
How can you use the value of *x* to find the measures of each angle? *Your explanation should include the measures of each angle.*	
Describe how you can prove the reasonableness of your solution. How do you know that it makes sense?	

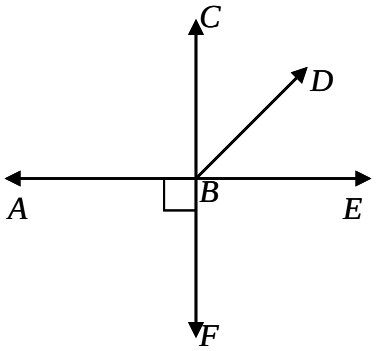
Work the following problems independently using the process guide if you are stuck.

1) The measure of an angle is 50º more than the measure of its supplement. Write an equation and solve to find the measure of the smaller angle.

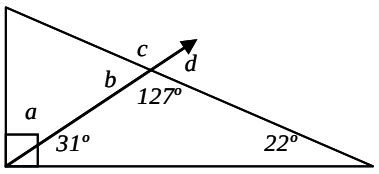
2) If $\overline{LM} \perp \overline{NP}$, what is the measure of $\angle QON$? Write an equation that can be used to solve for the missing angle measure.



3) In the figure below, $\overline{BD}$ bisects $\angle CBE$. What is the measure of $\angle ABD$? Write an equation that can be used to solve for the missing angle measure.



4) Mr. Jones is building a sandbox that looks like the figure below. Find the measure of angles *a*, *b*, *c*, and *d* to help him figure out the angles that the boards must be placed. Describe the angle relationships used to help you determine the measures of the missing angles.



Name_____ Date_____

Find that Angle!

Work with a partner to complete the problem below using the process guide to help you through the steps.

Two angles are complementary. The measure of *Angle A* is 4 times the measure of *Angle B*. Write an equation and solve to find the measures of each angle.

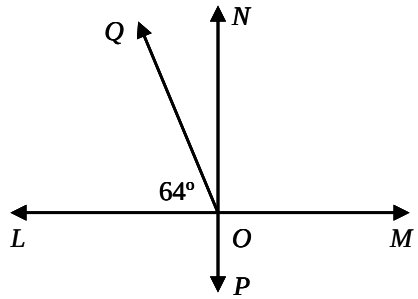
1) Write an algebraic term to represent the measure of the *Angle A*.	*4x*
2) Write an algebraic term to represent the measure of *Angle B.*	*x*
The sum of two complementary angles is *90º*.	
3) Write a simple equation that would help you find the measures of each angle.	*4x + x = 90*
4) Combine like terms. Write the resulting equation.	*5x = 90*
5) Divide both sides of the equation by __*5*___ to solve. Show this step.	$\frac{5x}{5} = \frac{90}{5}$ *x = 18*
How can you use the value of *x* to find the measures of each angle? *Your explanation should include the measures of each angle.*	*Solving the equation gives us the measure of the smaller angle. To find the measure of the larger angle, substitute 18 in the expression 4x to get 72°.*
Describe how you can prove the reasonableness of your solution. How do you know that it makes sense?	*Angles that are complementary have a sum of 90°. The answer is reasonable because the sum of 18° and 72° is 90°.*

Work the following problems independently using the process guide if you are stuck.

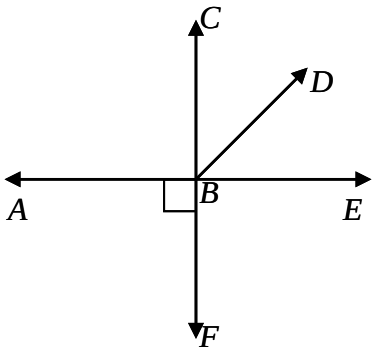
1) The measure of one angle is 50º more than the measure of its supplement. Write an equation and solve to find the measure of the smaller angle.

x + 50 + x = 180
2x + 50 = 180
2x + 50 – 50 = 180 – 50
$\frac{2x}{2} = \frac{130}{2}$
x = 65°

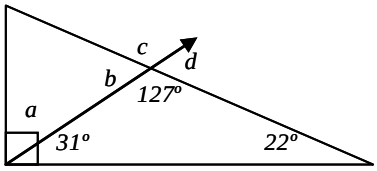
2) If $\overline{LM} \perp \overline{NP}$, what is the measure of $\angle QON$? Write an equation that can be used to solve for the missing angle measure. *x + 64 = 90; x = 26°*



3) In the figure below, $\overline{BD}$ bisects $\angle CBE$. What is the measure of $\angle ABD$? Write an equation that can be used to solve for the missing angle measure. *x + 45 + 45 = 180; x = 90° so the measure of ∠ABD is 90 + 45 = 135°*



4) Mr. Jones is building a sandbox that looks like the figure below. Find the measure of angles *a*, *b*, *c*, and *d* to help him figure out the angles that the boards must be placed. Describe the angle relationships used to help you determine the measures of the missing angles.



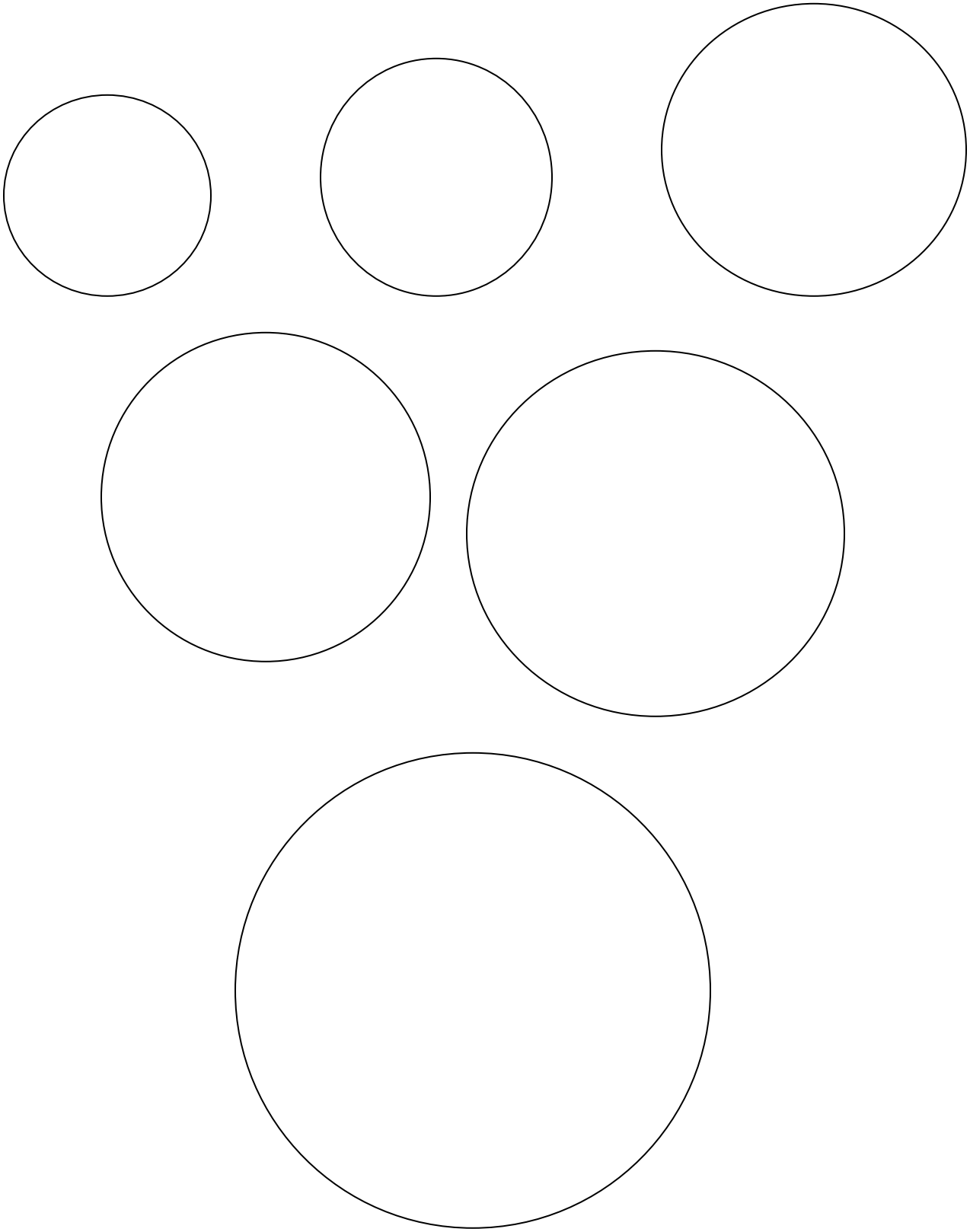
m ∠ a = 59°
Angle a is complementary to the angle that is 31° so x + 31 = 90 is the equation used to find the missing angle.

m ∠ b = 53°
Angle b is supplementary to the angle that is 127° so x + 127 = 180 is the equation used to find the missing angle.

m ∠ c = 127°
Angle c is supplementary to Angle b so x + 53 = 180 is the equation used to find the missing angle.

m ∠ d = 53°
Angle d is supplementary to Angle c so x + 127 = 180 is the equation used to find the missing angle.

Name: _____



Name: _____

Lid Number	**Diameter**	**Circumference**	**Ratio** $\frac{C}{d}$	**Decimal Value**

Write three observations that can be made from the information in the table.

Name_____ Date_____

Pricing Pizza

The Sole D'Italia Pizzaria sells small, medium, and large pizzas. A small is 9 inches in diameter, a medium is 12 inches in diameter, and a large is 15 inches in diameter. Prices for the pizzas are shown below:

Sole D'Italia Pizzaria Prices

Small (9-in.).....$ 6.00
Medium (12-in.).....$ 9.00
Large (15-in.).....$12.00

A. Draw a 9-inch, a 12-inch, and a 15-inch pizza on centimeter grid paper. Let 1 centimeter of the grid paper represent 1 inch on the pizza. Estimate the radius, circumference, and area of each pizza and record your findings in the table below. (You may want to use string to help you find the circumference).

Size	Diameter	Radius	Circumference	Area
Small				
Medium				
Large				

B. Which measurement—radius, diameter, circumference, or area—seems most closely related to price? Explain your answer.

Name_____ Date_____

Pricing Pizza

The Sole D'Italia Pizzaria sells small, medium, and large pizzas. A small is 9 inches in diameter, a medium is 12 inches in diameter, and a large is 15 inches in diameter. Prices for the pizzas are shown below:

Sole D'Italia Pizzaria Prices

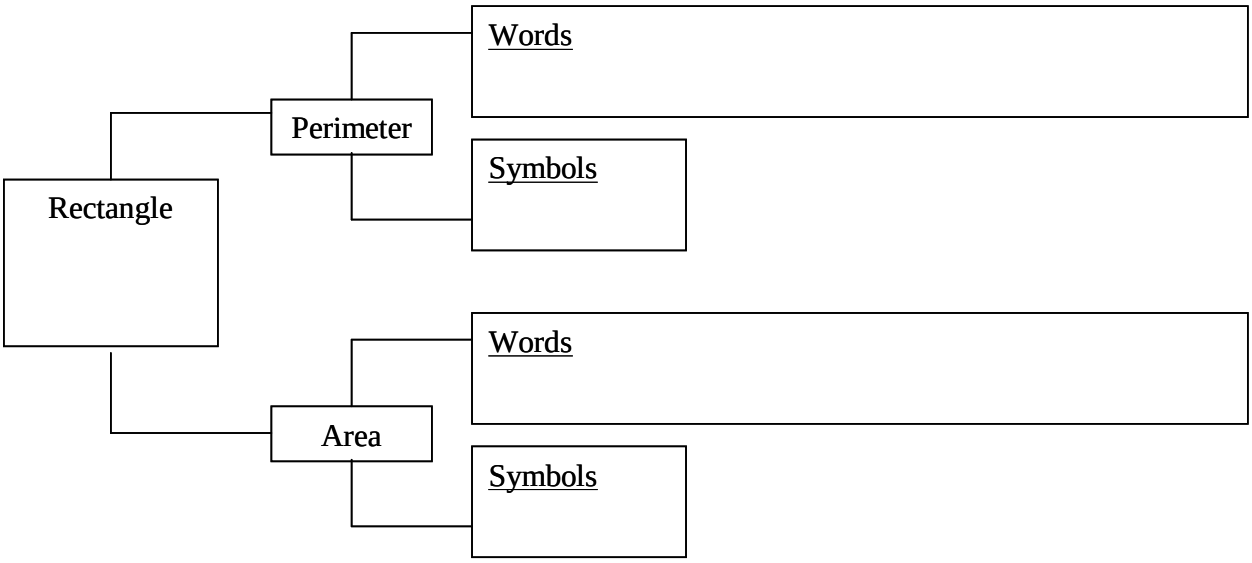
Small (9-in.).....$ 6.00
Medium (12-in.).....$ 9.00
Large (15-in.).....$12.00

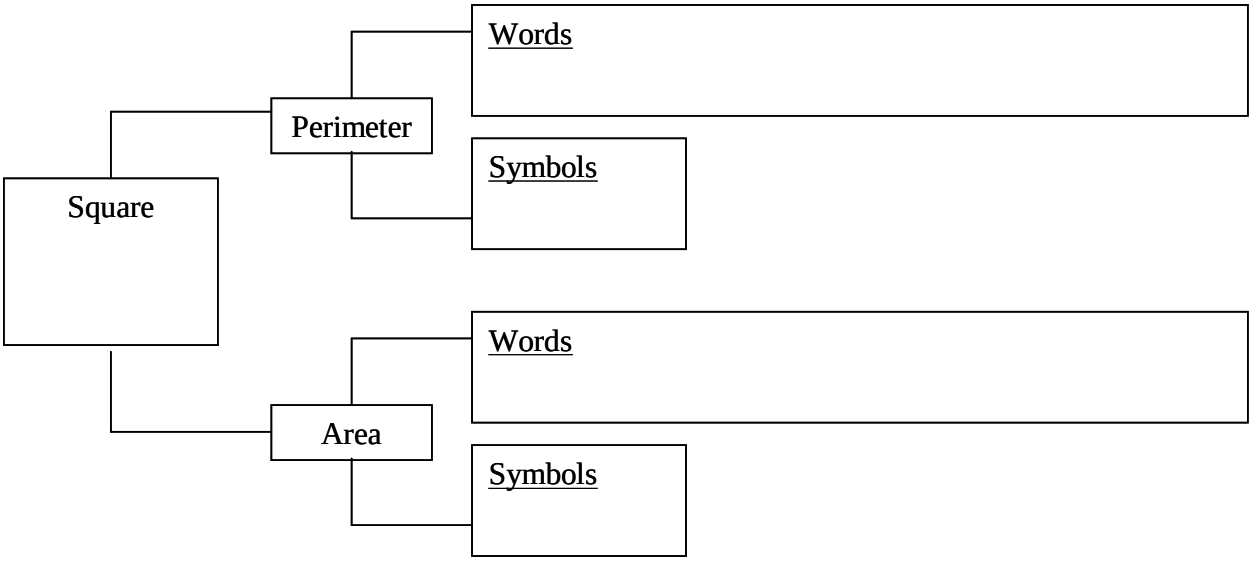
A. Draw a 9-inch, a 12-inch, and a 15-inch pizza on centimeter grid paper. Let 1 centimeter of the grid paper represent 1 inch on the pizza. Estimate the radius, circumference, and area of each pizza and record your findings in the table below. (You may want to use string to help you find the circumference). *Students' measurements should be close to those in this table*

Size	Diameter	Radius	Circumference	Area
Small	*9 in*	*4 ½ in*	*28.3 in*	*63.6 sq in*
Medium	*12 in*	*6 in*	*37.7 in*	*113.1 sq in*
Large	*15 in*	*7 ½ in*	*47.1 in*	*176.7 sq in*

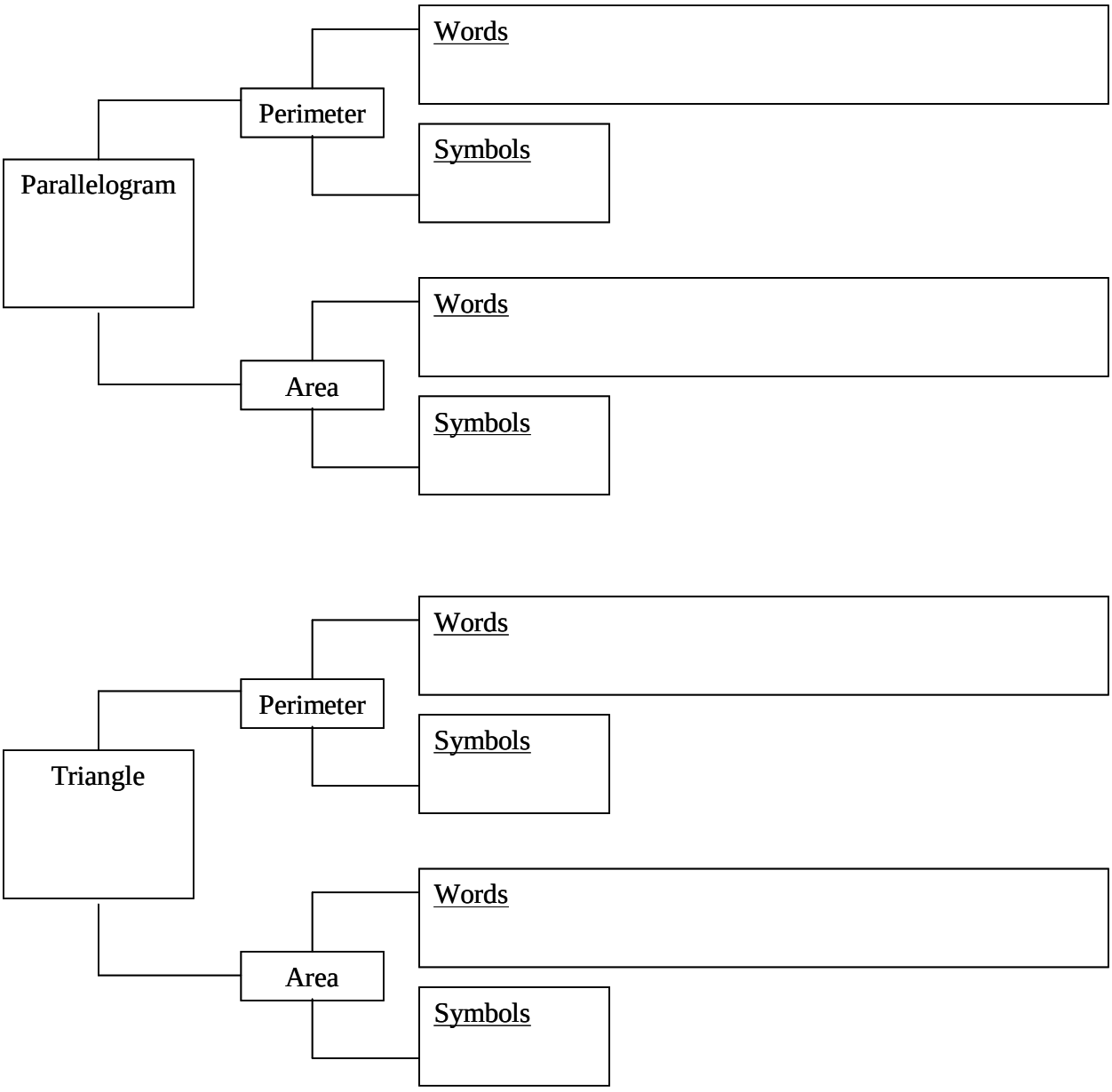
B. Which measurement—radius, diameter, circumference, or area—seems most closely related to price? Explain your answer. *Answers will vary. Most students will say that the diameter is most closely related to the price because, as the diameter changes by 3 inches, the price changes by $3.*

Unit 5, Activity 7, Graphic Organizer

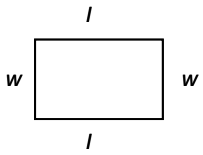
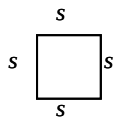
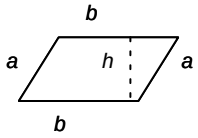
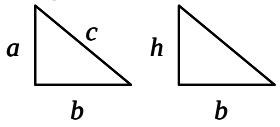




Unit 5, Activity 7, Graphic Organizer



Describe what you know about how to find the perimeter of a circle below. Use pictures, words, and symbols.

Shape	Perimeter	Area
Rectangle 	Words: Add the lengths of the four sides, or add the lengths of two touching sides and multiply by 2.	Words: Multiply the length by the width.
	Symbols: $P = l + w + l + w$, $P = 2\ (l \times w)$, or $P = 2l + 2w$.	Symbols: $A = lw$
Square 	Words: Add the lengths of the four sides, or multiply the length of one side by 4.	Words: Multiply the length of a side by itself.
	Symbols: $P = s + s + s + s$, or $P = 4s$	Symbols: $A = s \times s$, or $A = s^2$
Parallelogram 	Words: Add the lengths of the four sides, or add the lengths of two touching sides and multiply by 2.	Words: Multiply the base by the height.
	Symbols: $P = a + a + b + b$, $P = 2a + 2b$, or $P = 2(a + b)$	Symbols: $A = bh$
Triangle 	Words: Add the lengths of the three sides.	Words: Multiply the base by the height and take half the result.
	Symbols: $P = a + b + c$	Symbols: $A = \frac{1}{2}bh$

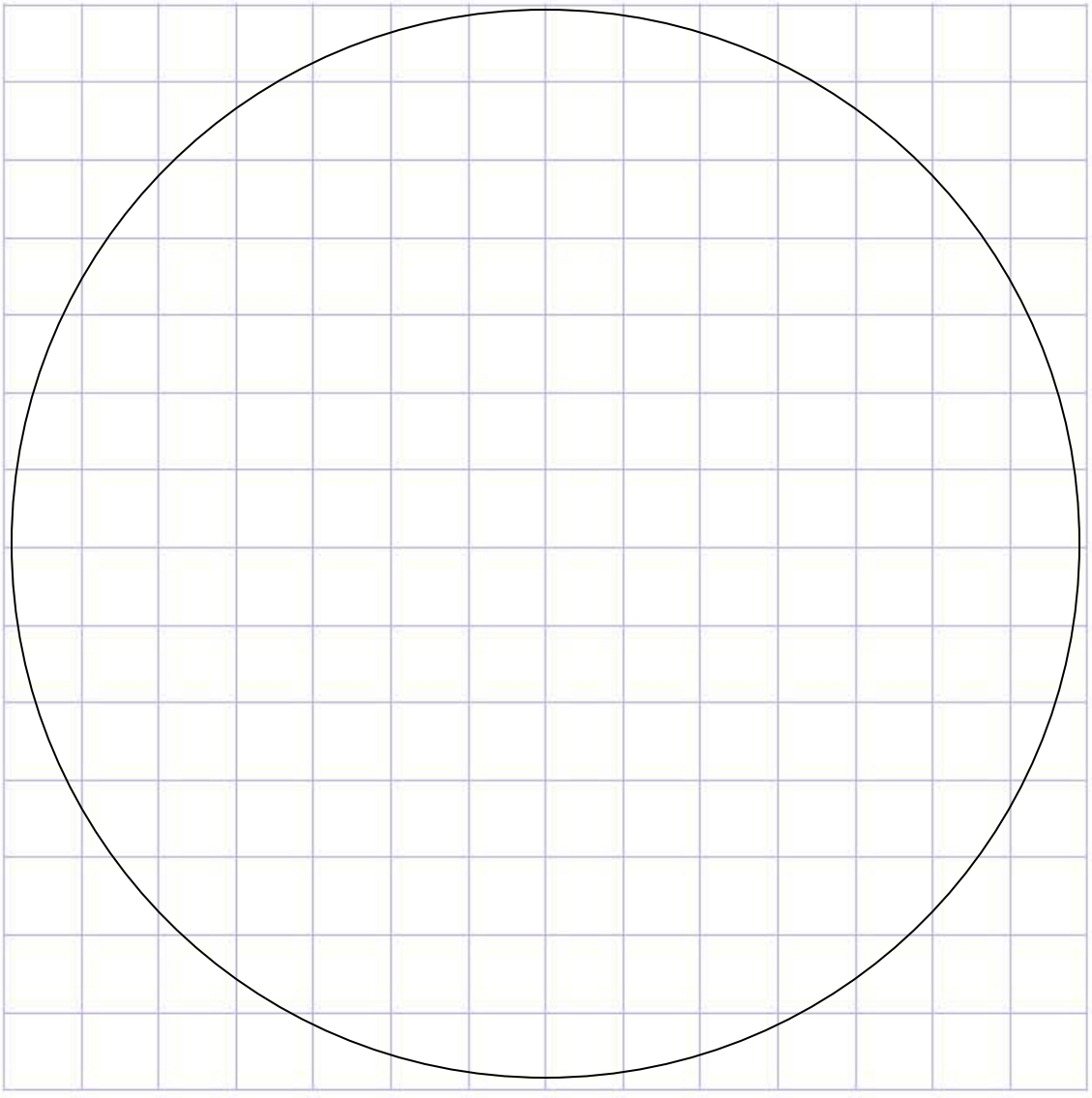
Describe what you know about how to find the perimeter of a circle below. Use pictures, words, and symbols.

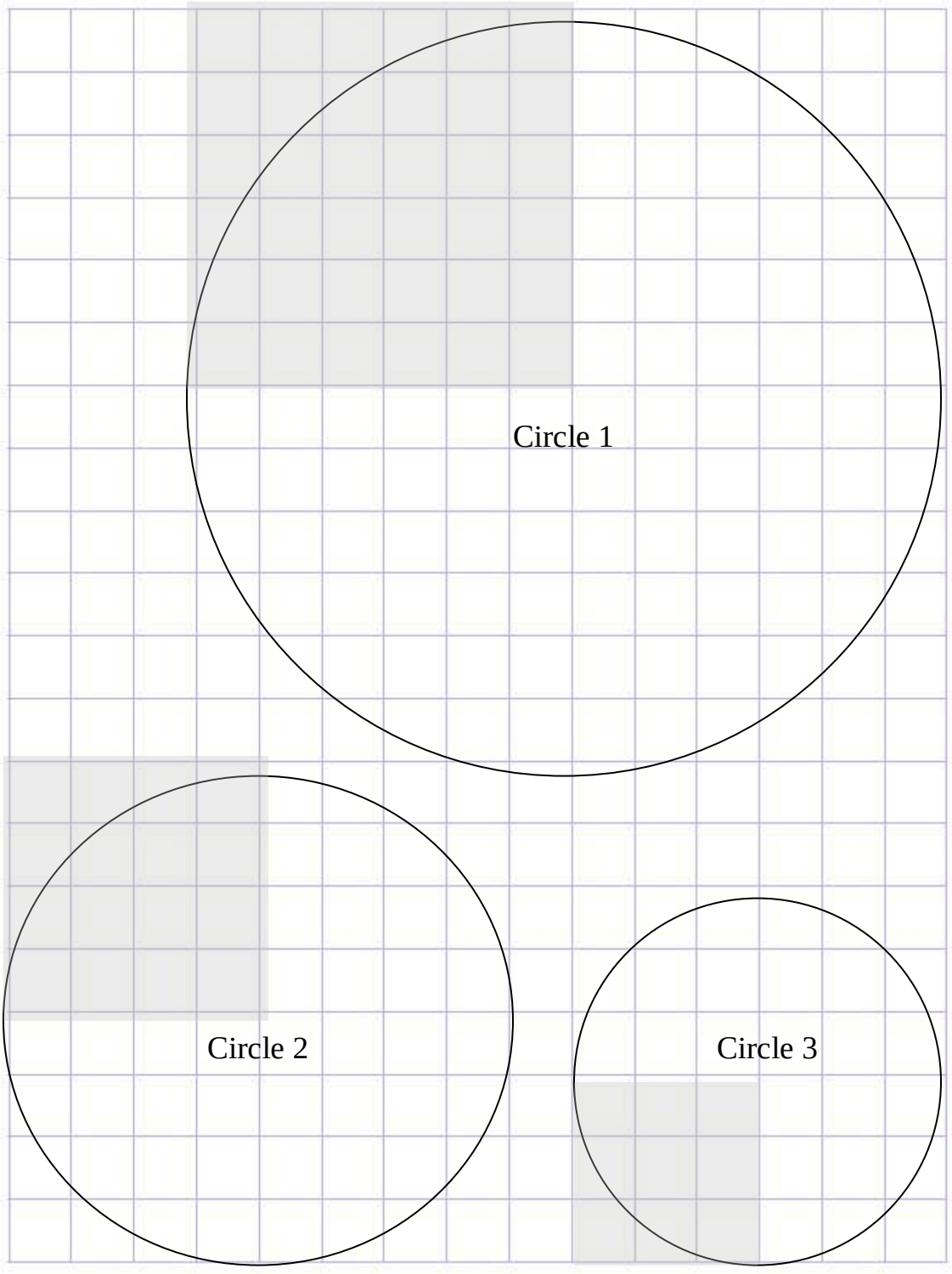
Answers will vary. Students should say that the perimeter of a circle is a little more than 3 times the length of the diameter.

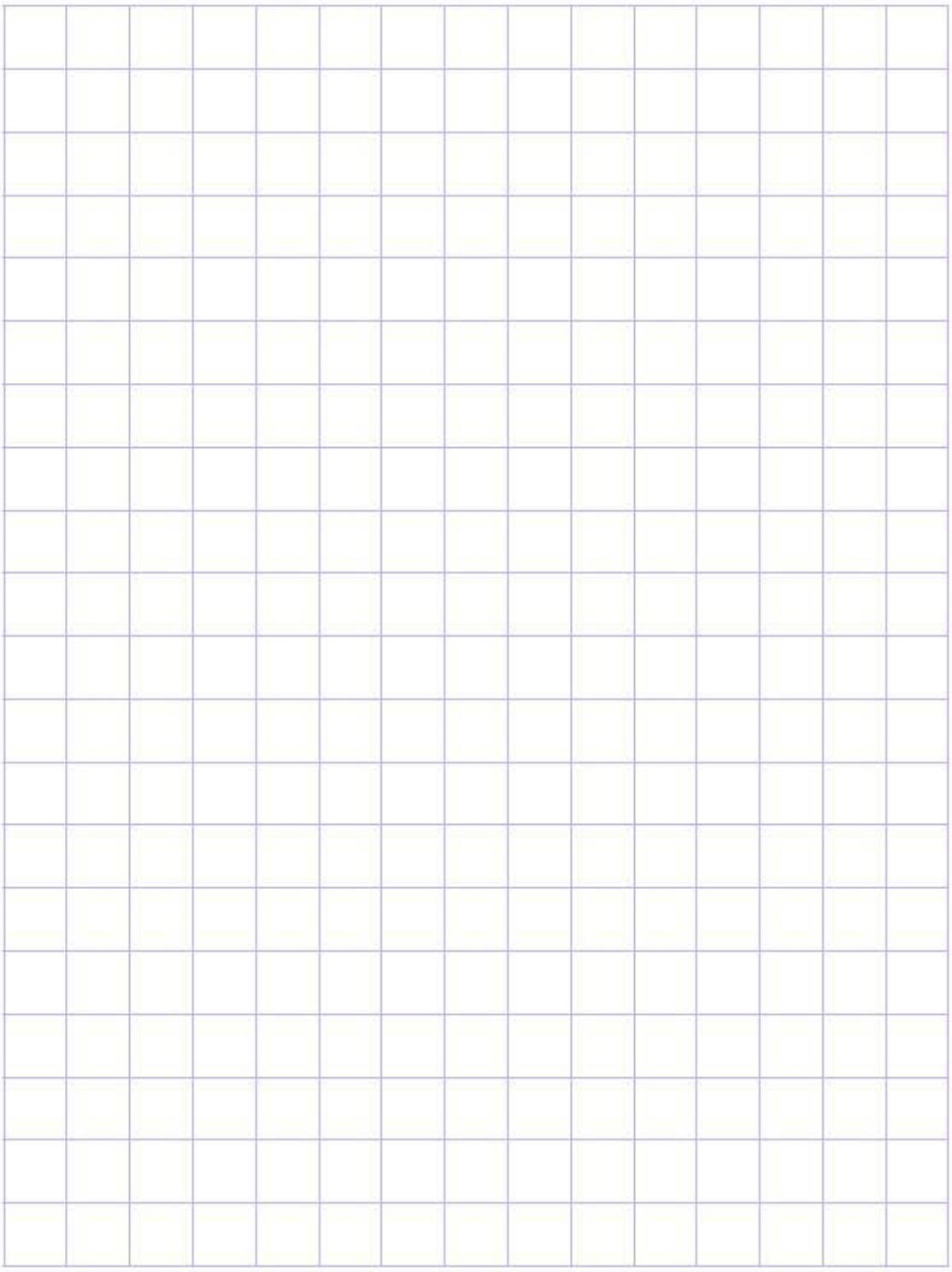
Name_____ Date_____

Covering a Circle

Find as many different ways as you can to estimate the area of the circle below. For each method, give your area estimate and carefully describe how you found it. Include drawings in your description if they help show what you did.

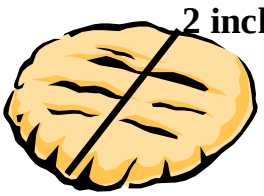



Circle 1
Circle 2
Circle 3



Name: _____

1. Miessha is baking cookies. Find the area of one of her cookies.



2. Carl wants to buy a cover for his swimming pool. The swimming pool is 12 feet across. Find the area of the top of his swimming pool.

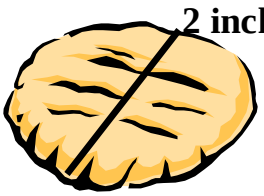
3. Ruby is cooking dinner. Find the circumference and area of the plate she will use.

4. Silmon has a magnifying glass that is in the shape of a circle. Find the circumference and area of the glass.

Unit 5, Activity 10, Circles in Real Life with Answers

Name: _____

1. Miessha is baking cookies. Find the area of one of her cookies. *3.14 in^2*



2. Carl wants to buy a cover for his swimming pool. The swimming pool is 12 feet across. Find the area of the top of his swimming pool. *113.04 ft^2*

3. Ruby is cooking dinner. Find the circumference and area of the plate she will use.
circumference = 62.8 cm *area = 314 cm^2*

4. Silmon has a magnifying glass that is in the shape of a circle. Find the circumference and area of the glass.
circumference = 25.12 cm *area = 50.24 cm^2*

Name: _____

Radius	Area	Diameter	Circumference

How do the radii compare?

How do the areas compare?

Do you think the patterns are the same for the other sets of radii used by the other groups? Explain your reasoning.

How do the circumferences compare?

How do the diameters compare?

Do you think the patterns are the same for the other sets of diameters used by the other groups? Explain your reasoning.

Name: _____

(sample answers)

Radius	Area	Diameter	Circumference
2 cm	*12.56cm²*	*4cm*	*12.56cm*
4 cm	*50.24cm²*	*8 cm*	*25.12cm*
8 cm	*200.96cm²*	*16 cm*	*50.24cm*

How do the radii compare?
(The radii double each time)

How do the areas compare?
(The areas are 4 times bigger each time the radii doubles.)

Do you think the patterns are the same for the other sets of radii used by the other groups? Explain your reasoning.

How do the circumferences compare?
(The circumferences double each time the radius is doubled.)

How do the diameters compare?
(The circumferences double each time the diameters are doubled.)

Do you think the patterns are the same for the other sets of diameters used by the other groups? Explain your reasoning.

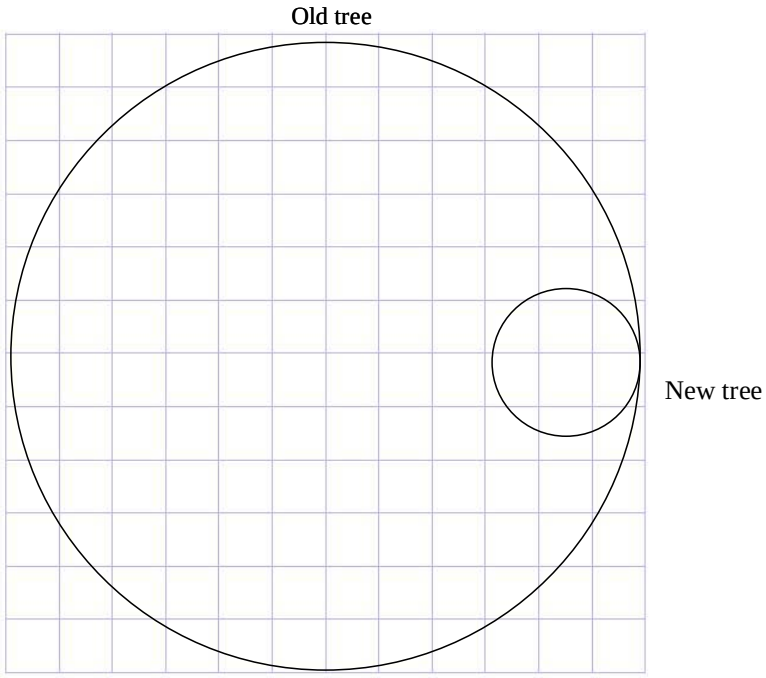
Unit 5, Activity 12, Replacing Trees

Name_____ Date_____

In large cities filled with streets and concrete buildings, trees are a valuable part of the environment. In some cities, people who damage or destroy a tree are required by law to plant new trees as community service. Two replacement rules have been used:

- *Diameter rule*—The total *diameter* of the new tree(s) must equal the diameter of the tree(s) that were damaged or destroyed.
- *Area rule*—The total *area of the cross section* of the new tree(s) must equal the area of the cross section of the tree(s) that were damaged or destroyed.

The diagram to the right shows the cross section of a damaged tree and the cross section of the new trees that will be planted to replace it.



A. How many new trees must be planted if the diameter rule is applied? Explain your answer using words and/or drawings.

B. How many new trees must be planted if the area rule is applied? Explain your answer using words and/or drawings.

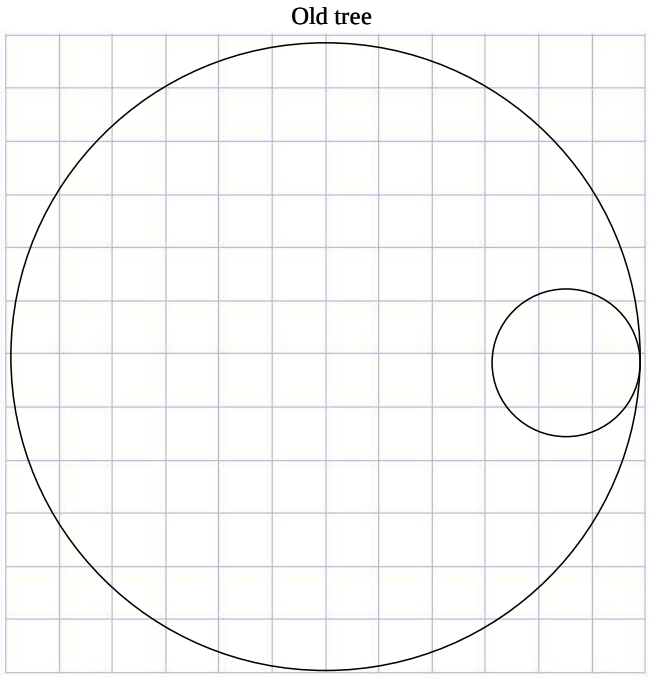
C. Which rule do you think is more fair? Use mathematics to explain your answer.

Unit 5, Activity 12, Replacing Trees with Answers

In large cities filled with streets and concrete buildings, trees are a valuable part of the environment. In some cities, people who damage or destroy a tree are required by law to plant new trees as community service. Two replacement rules have been used:

- *Diameter rule*—The total *diameter* of the new tree(s) must equal the diameter of the tree(s) that were damaged or destroyed.
- *Area rule*—The total *area of the cross section* of the new tree(s) must equal the area of the cross section of the tree(s) that were damaged or destroyed.

The diagram to the right shows the cross section of a damage tree and the cross section of the new trees that will be planted to replace it.



A. How many new trees must be planted if the diameter rule is applied? Explain your answer using words and/or drawings.

Using the diameter rule, only four new trees would be needed to replace the old tree because the diameter of the old tree is four times the diameter of each new tree. Students can verity this by observing that the diameter of the new tree is 3 units, and the diameter of the old tree is 12 units.

B. How many new trees must be planted if the area rule is applied? Explain your answer using words and/or drawings.

Using the area rule, about $\frac{113}{7}$ *= 16 trees would be needed to replace the old tree.*

The small circle has a radius of 1.5 units, so its area is about 7 square units. The large tree has a radius of 6 units, so its area is about 113 square units.

C. Which rule do you think is more fair? Use mathematics to explain your answer.

Answers will vary

Unit 6, Activity 1, Measuring Scavenger Hunt

Name: _____

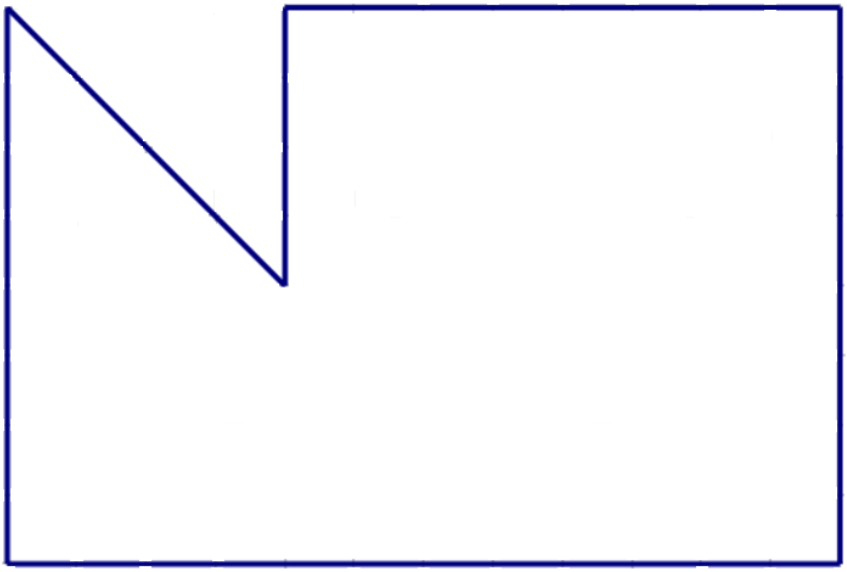
Measurement Descriptions		Object
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Name_____ Date_____

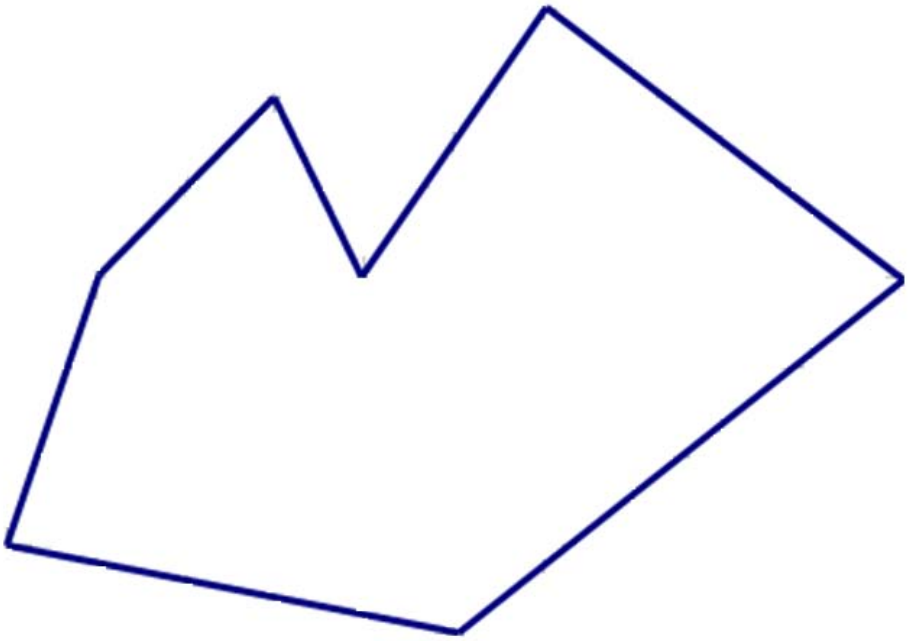
Break it Down

Use centimeter grid paper to determine the area of the shapes on this sheet. If necessary, you can trace the shapes onto the grid to help you with the measuring. Next, determine the area of Shapes A and B. Explain in the space next to the shape how you figured it out.

Shape A
Area _____
How did you figure it out?



Shape B
Area _____
How did you figure it out?



Break it Down with Answers

Use centimeter grid paper to determine the area of the shapes on this sheet. If necessary, you can trace the shapes onto the grid to help you with the measuring. Next, determine the area of Shapes A and B. Explain in the space next to the shape how you figured it out.

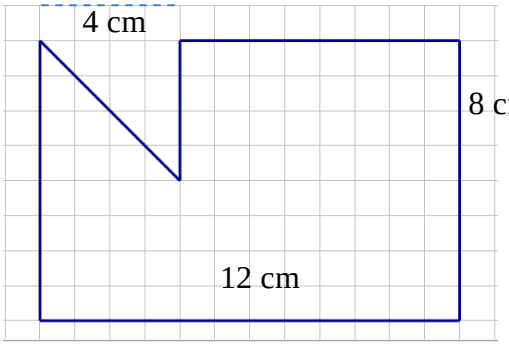
Shape A

Area: 88 cm^2

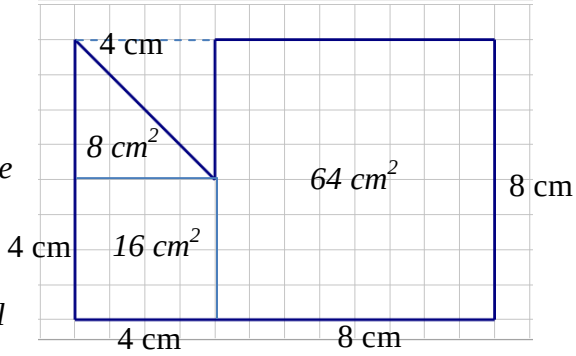
How did you figure it out?

Method 1: Students may have completed the rectangle (8 x 12), and found its area to be 96 cm^2. Then they count the number of square centimeters in the section of the "cutout triangle" and subtract that value (8 cm^2) from 96 cm^2 to get an area of 88 cm^2.

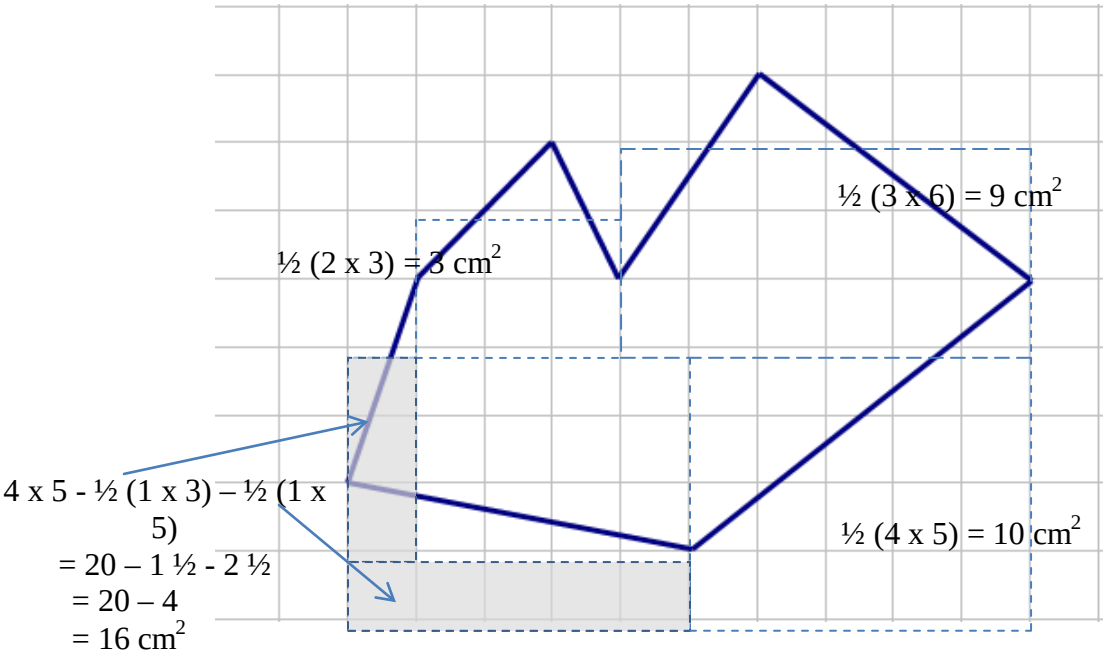
½ (4 x 4) = 8 cm^2

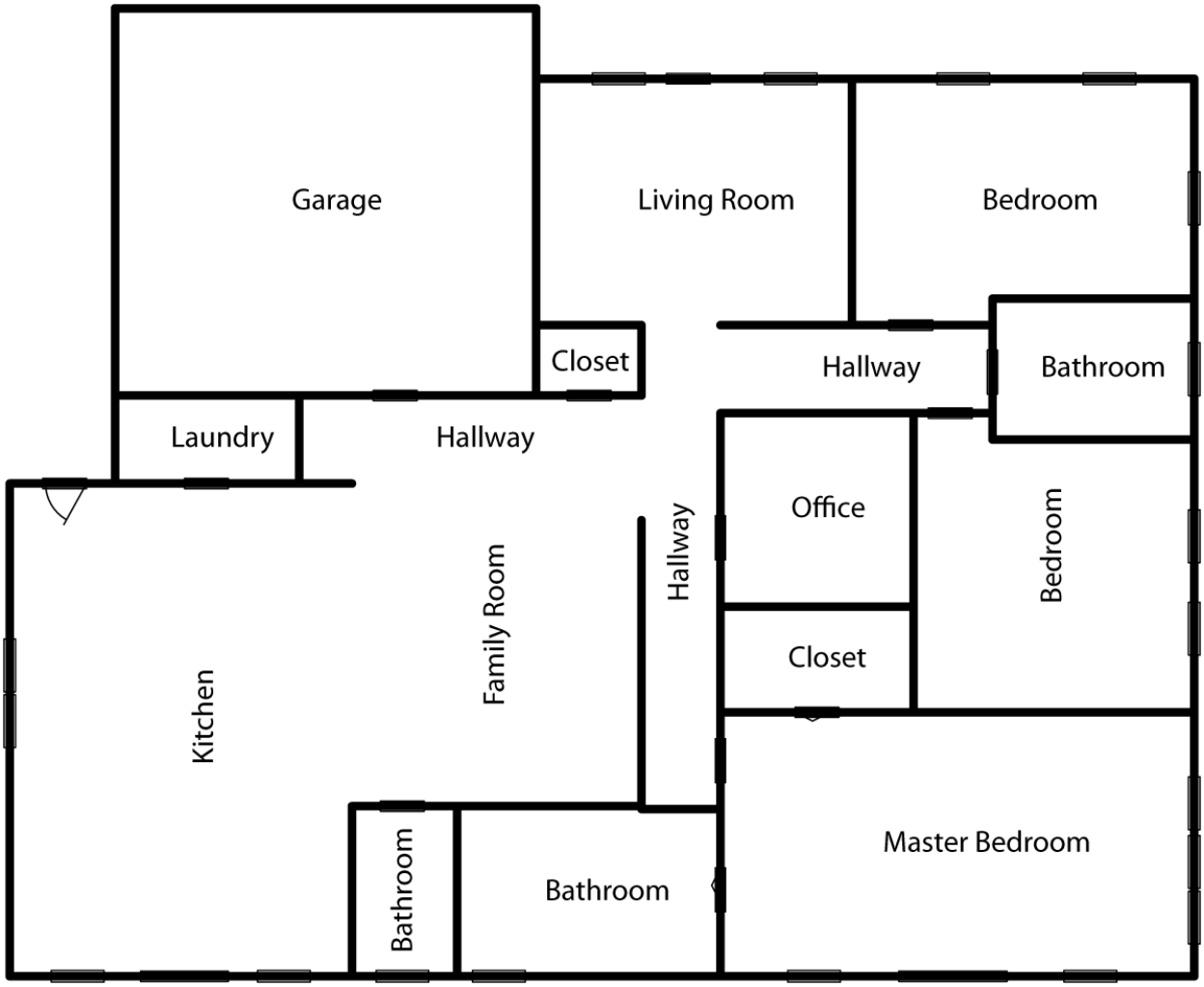


Method 2: Students may have decomposed the figure into smaller squares. The largest square is 8 cm by 8 cm, so its area is 64 square cm. The students divide the "strip" on the left into two smaller squares, each of which is 4 cm by 4 cm. The bottom square, then, has an area of 16 sq. cm. The total area equals the area of the large square (64 cm^2) plus the area of the bottom small square (16 cm^2) plus the area of the triangle (8 cm^2) for a total of 64 + 16 + 8, or 88cm^2.



Shape B
Area: *38 cm^2*
How did you figure it out?
Students may have subdivided the figure into four parts, enclosing each part in a rectangle as shown below.

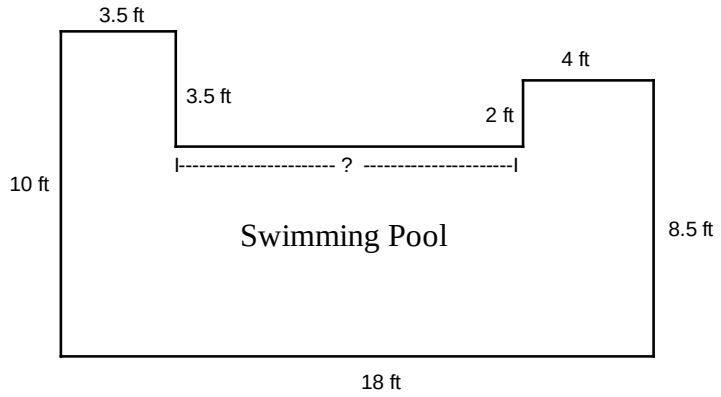



Garage
Living Room
Bedroom
Closet
Hallway
Bathroom
Laundry
Hallway
Office
Bedroom
Hallway
Family Room
Kitchen
Closet
Master Bedroom
Bathroom
Bathroom

Unit 6, Activity 6, Pool and Hot Tub Addition

Name: _____

The swimming pool that is to be put in a back yard has an irregular shape as shown below. A pool cover is needed to keep the leaves out this winter.



1. Find the area of the pool. All corners are 90º. Explain how you arrived at finding the area of the pool.

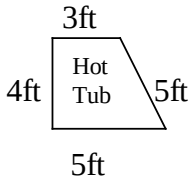
2. Pool covering material costs $4.95 per square yard. How many square yards will you need and how much will the pool cover cost? Explain how you found the cost of the pool cover.

3. You also need to know the perimeter of the pool, so that you can buy bricks to go around the edge of the pool. Find the perimeter. Justify your answer.

4. Bricks are 6 inches long. How many bricks will you need to buy to put one row of bricks end to end around the pool? Justify your answer.

5. Bricks cost 60¢ each. How much will you spend on bricks? Explain and show how you determined the cost of the bricks.

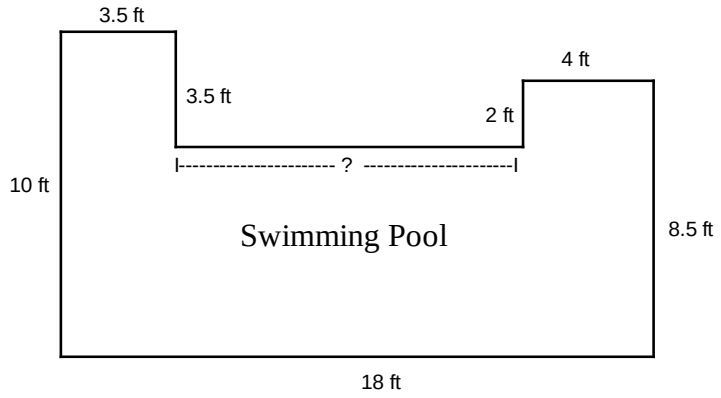
6. A hot tub in the shape of a trapezoid with the dimensions shown will be built along the right side of the pool and adjacent to the bricks. A top view of the hot tub is shown. Find the cost of making a cover for the hot tub.



7. Since the hot tub will be placed next to the swimming pool, the side with length 4 ft. will not be bricked. Find the cost of bricking the remaining three sides. Show all work for determining the cost of the cover and the bricks.

Unit 6, Activity 2, Pool & Hot Tub with Answers

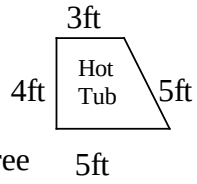
The swimming pool that is to be put in the back yard has an irregular shape as shown below. A pool cover is needed to keep the leaves out this winter.



1. Find the area of the pool. All corners are 90º. Explain how you arrived at finding the area of the pool.
   Divide the pool into smaller rectangles. (3.5•3.5)+(2•4)+(6.5•18)=137.25ft^2

2. Pool covering material costs $4.95 per square yard. How many square yards will you need and how much will the pool cover cost? Explain how you found the cost of the pool cover.
   There are 9 square feet in one square yard so 137.25 square feet = 15.25 square yds. Round 15.25 sq yd to 16 since you can't purchase ¼ yard. Solution: $79.20

3. You also need to know the perimeter of the pool, so that you can buy bricks to go around the edge of the pool. Find the perimeter. Justify your answer.
   ?=18-3.5-4=10.5ft
   10.5+2+4+8.5+18+10+3.5+3.5=60ft
   Perimeter=60ft
4. Bricks are 6 inches long. How many bricks will you need to buy to put one row of bricks end to end around the pool? Justify your answer.
   60ft=720 inches
   720 inches / 6 inches = 120 bricks
5. Bricks cost 60¢ each. How much will you spend on bricks? Explain and show how you determined the cost of the bricks.
   120 bricks ($0.60) = $72
6. A hot tub in the shape of a trapezoid with the dimensions shown will be built along the right side of the pool and adjacent to the bricks. A top view of the hot tub is shown. Find the cost of making a cover for the hot tub.
   Area=½ (4) (3+5) Area=16ft^2
   Cost= 16 (4.95) Cost = $79.20



7. Since the hot tub will be placed next to the swimming pool, the side with length 4 ft. will not be bricked. Find the cost of bricking the remaining three sides. Show all work for determining the cost of the cover and the bricks.

   Perimeter=3+5+5 Perimeter=13ft 13ft = 156 inches
   156 inches / 6 inches = 26 bricks 26 bricks ($0.60) = $15.60

Name_____ Date_____

Designing a Park

Your task is to design a small park for your town that is family and pet friendly. You will submit a design package that includes a scale drawing with the specifications given below; a report that is neat, clear, and easy to follow; and a letter to the city council persuading them to choose your design.

The park design and scale drawing must satisfy the following constraints:

- The park should have a total of 2500 square yards and be a shape that you feel is most appropriate for your park design.
- The border of the park must be designed to be usable.
- No more than 30% of the area of the park can be used for the playground.
- No more than 25% of the area can be paved or cemented.

Your report should be organized so the reader can easily find information about items in the park. The report must contain the following information:

- The size (dimensions) of each item. These items should include, but are not limited to, gardens, picnic tables, playground equipment, and other play areas.
- The amount of land needed for each item and the calculations you used to determine the amount of land needed.

*Note: Be selective about the measurements you include. For example, when you describe a border or fencing needed for your park, you only need to give the **perimeter**. When you specify the amount of space needed for the picnic area, you only need to give the **area**.*
The letter to the city council should explain why your design should be chosen for the park. Include a justification for the choices you made about the size and quantity of items in your park.

Name_____ Date_____

Designing a Park

SCORING RUBRIC

A total of 50 points is possible for the project (23 for the scale drawing, 22 for the report, and 5 points for the letter to the city council.

Scale drawing

Dimensions and measurements—16 points

_____Dimensions are labeled (3 pts)

_____Dimensions are close to dimensions of actual items (9 pts)

_____Scale is included (2 pts)

_____Design meets problem constraints (2 pts)

Complete design—7 points

_____Design is reasonable and logical (4 pts)

_____Design is neat, well-organized, and includes required items (3 pts)

Report

Mathematics—16 points

_____Dimensions are given and correctly match scale drawing (4 pts)

_____Calculations are correct (6 points)

_____Necessary and correct measurements are given with explanations of what the measurements mean and why they are needed (6 pts)

Organization—6 points

_____Work is neat, easy to follow, and meets the requirements of the problem (3 pts)

_____Information is easy to find (3 pts)

Letter

Composition—3 points

_____Letter is easy to read and understand (1 pt)

_____Justifications are given for decisions (1 pt)

_____Reasons are given for why design should be chosen (1 pt)

Structure—2 points

_____Letter is neat (1 pt)

_____Grammar and spelling are correct (1 pt)

☐ TOTAL POINTS

Name_____ Date_____

Similarity and Scaling

Sketch each square described below on your grid paper. Determine the area, side length, and perimeter of each square and record in the table. Be ready to share with your group the reasoning you used to determine the square.

Square A

Square B: The ratio of the area of Square B to the area of Square A is 9 to 1.
Square C: The ratio of the length of an edge of Square B to the length of an edge of Square C is 1 to 2.
Square D: The ratio of the perimeter of Square D to the perimeter of Square A is 5 to 1.
Square E: The ratio of the area of Square D to the area of Square E is 1 to 4.
Square F: The ratio of the perimeter of Square F to the perimeter of Square B is 2 to 3.
Square G: The ratio of the area of Square B to the area of Square G is 1 to 100.
Square H: The ratio of the side length of Square C to the side length of square H is 3 to 7.
Square I: The ratio of the area of Square I to the area of Square C is 9 to 4.

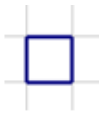
	Area	**Side Length**	**Perimeter**
Square A			
Square B			
Square C			
Square D			
Square E			
Square F			
Square G			
Square H			
Square I			

Name_____ Date_____

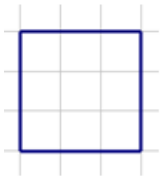
Similarity and Scaling *with Answers*

Sketch each square described below on your grid paper. Determine the area, side length, and perimeter of each square and record in the table. Be ready to share with your group the reasoning you used to determine the square.

Square A

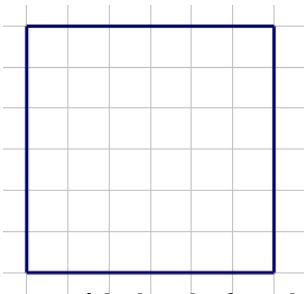


Square B:



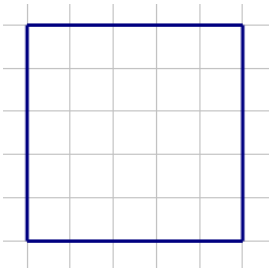
The ratio of the area of Square B to the area of Square A is 9 to 1.

Square C:



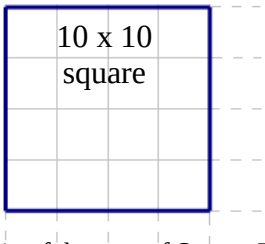
The ratio of the length of an edge of Square B to the length of an edge of Square C is 1 to 2.

Square D



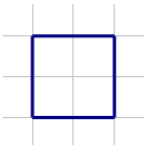
The ratio of the perimeter of Square D to the perimeter of Square A is 5 to 1.

Square E:



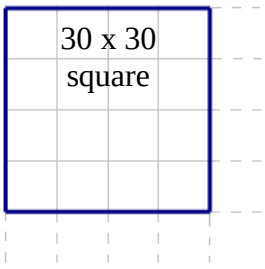
The ratio of the area of Square D to the area of Square E is 1 to 4.

Square F:



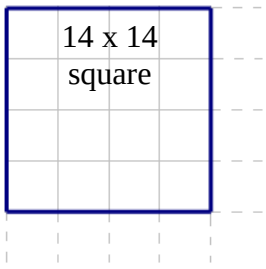
The ratio of the perimeter of Square F to the perimeter of Square B is 2 to 3.

Square G



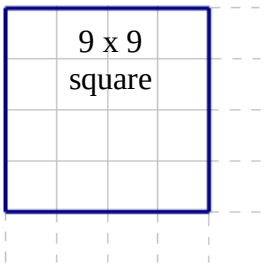
The ratio of the area of Square B to the area of Square G is 1 to 100.

Square H



The ratio of the side length of Square C to the side length of square H is 3 to 7.

Square I



The ratio of the area of Square I to the area of Square C is 9 to 4.

Name_____ Date_____

Similarity and Scaling

Sketch each square described below on your grid paper. Determine the area, side length, and perimeter of each square and record in the table. Be ready to share with your group the reasoning you used to determine the square.

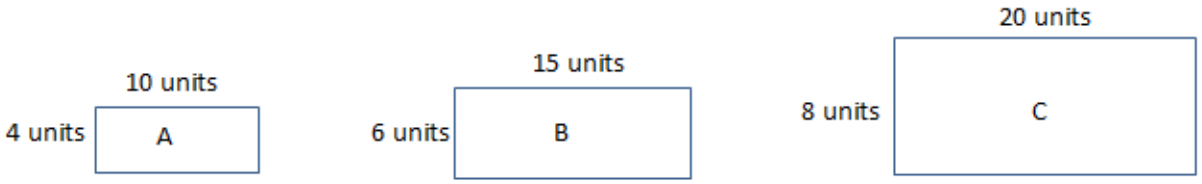
Square A

Square B: The ratio of the area of Square B to the area of Square A is 9 to 1.
Square C: The ratio of the length of an edge of Square B to the length of an edge of Square C is 1 to 2.
Square D: The ratio of the perimeter of Square D to the perimeter of Square A is 5 to 1.
Square E: The ratio of the area of Square D to the area of Square E is 1 to 4.
Square F: The ratio of the perimeter of Square F to the perimeter of Square B is 2 to 3.
Square G: The ratio of the area of Square B to the area of Square G is 1 to 100.
Square H: The ratio of the side length of Square C to the side length of square H is 3 to 7.
Square I: The ratio of the area of Square I to the area of Square C is 9 to 4.

	Area	**Side Length**	**Perimeter**
Square A	*1 sq unit*	*1 unit*	*4 units*
Square B	*9 sq units*	*3 units*	*12 units*
Square C	*36 sq units*	*6 units*	*24 units*
Square D	*25 sq units*	*5 units*	*20 units*
Square E	*100 sq units*	*10 units*	*40 units*
Square F	*4 sq units*	*2 units*	*8 units*
Square G	*900 sq units*	*30 units*	*120 units*
Square H	*196 sq units*	*14 units*	*56 units*
Square I	*81 sq units*	*9 units*	*36 units*

Name_____ Date_____

Scaling Shapes



1. Find the scale factor of each pair of rectangles by writing the ratio of the widths and lengths in the appropriate places in the chart. Then figure the scale factor of width and length. *Leave the last column in the chart blank for now.*

Rectangles	Ratios of Widths	Ratios of Lengths	Scale Factor of Width and Length	Scale Factor of Perimeters
A and B				
A and C				
B and C				

2. Find the perimeter of each rectangle. *Show your work below and write your final answer in the blanks provided.*

Rectangle A = _____ Rectangle B = _____ Rectangle C = _____

3. Find the scale factor for the perimeters of each pair of rectangles. *Show your work below and write your final answer in the last column of the chart above.*

4. How does the scale factor of the length and width compare with the scale factor of the perimeters? Explain why this is so.

5. Find the area of each rectangle. *Show your work below and write your final answer in the blanks provided.*

Rectangle A = _____ Rectangle B = _____ Rectangle C = _____

6. What is the scale factor of the areas of each pair of rectangles?

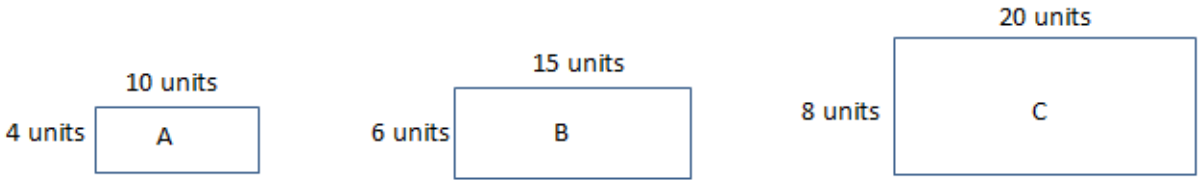
   A and B _____ A and C _____ B and C _____

7. What is the relationship between the scale factor of the areas and the scale factor of the linear measurements?

8. Explain why you think the relationship is true.

Name_____ Date_____

Scaling Shapes *with answers*



1. Find the scale factor of each pair of rectangles by writing the ratio of the widths and lengths in the appropriate places in the chart. Then figure the scale factor of width and length. *Leave the last column in the chart blank for now.*

Rectangles	**Ratios of Widths**	**Ratios of Lengths**	**Scale Factor of Width and Length**	**Scale Factor of Perimeters**
A and B $\frac{A}{B}$	$\frac{4}{6}$	$\frac{10}{15}$	$\frac{2}{3}$	$\frac{28}{42}$ or $\frac{2}{3}$
A and C $\frac{A}{C}$	$\frac{4}{8}$	$\frac{10}{20}$	$\frac{1}{2}$	$\frac{28}{56}$ or $\frac{1}{2}$
B and C $\frac{B}{C}$	$\frac{6}{8}$	$\frac{15}{20}$	$\frac{3}{4}$	$\frac{42}{56}$ or $\frac{3}{4}$

2. Find the perimeter of each rectangle. *Show your work below and write your final answer in the blanks provided.*

Rectangle A = *28 units* Rectangle B = *42 units* Rectangle C = *56 units*

3. Find the scale factor for the perimeters of each pair of rectangles. *Show your work below and write your final answer in the last column of the chart above.*

See chart for solutions. Look for evidence that the student knows that the scale factor is the ratio of the perimeters of each pair reduced to lowest form.

4. How does the scale factor of the sides compare with the scale factor of the perimeters?

The scale factor of the sides and the scale factors of the perimeters are equal.

5. Find the area of each rectangle. *Show your work below and write your final answer in the blanks provided.*

Rectangle A = *40 square units* Rectangle B = *90 square units* Rectangle C = *160 square units*

6. What is the scale factor of the areas of each pair of rectangles?

A and B _____ $\frac{A}{B} = \frac{40}{90} = \frac{4}{9}$

A and C _____ $\frac{A}{C} = \frac{40}{160} = \frac{4}{16} = \frac{1}{4}$

B and C _____ $\frac{B}{C} = \frac{90}{160} = \frac{9}{16}$

7. What is the relationship between the scale factor of the areas and the scale factor of the sides? *Scale factor of the area is the square of the corresponding scale factor of the linear measurements.*
8. Explain why you think the relationship is true.

Rectangle ratio	Scale factor of sides	Scale factor of areas	Relationship
$\frac{A}{B}$	$\frac{2}{3}$	$\frac{4}{9}$	$\frac{2}{3} \times \frac{2}{3} = (\frac{2}{3})^2$ or $\frac{4}{9}$
$\frac{A}{C}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{2} \times \frac{1}{2} = (\frac{1}{2})^2$ or $\frac{1}{4}$
$\frac{B}{C}$	$\frac{3}{4}$	$\frac{9}{16}$	$\frac{3}{4} \times \frac{3}{4} = (\frac{3}{4})^2$ or $\frac{9}{16}$

To help students see that the ratio of the areas is the square of the ratio of the perimeters, ask them to write the ratio of the areas in prime factors, as follows:

$\frac{AreaA}{AreaB} = \frac{40}{90} = \frac{2x2x2x5}{3x3x2x5}$

Students can simplify the ratio by canceling the common factors 2 and 5 as shown. Doing so will help them see that the ratio of the perimeters $\frac{2}{3}$ *appears twice in the ratio of the areas, and they can see that* $\frac{2}{3} \times \frac{2}{3} = (\frac{2}{3})^2$ *or* $\frac{4}{9}$.

Group Activity Cards BLM

A scale drawing shows all dimensions $\frac{1}{16}$ actual size. What is the length of a computer screen that is represented by a line segment $1\frac{3}{4}$ inches long?	A scale model of a building is $\frac{1}{48}$ the size of the actual building. If the actual building is 30 feet wide, how wide is the scale model?
A drawing of a city's downtown area uses a scale of 4 cm = 5 km. On the drawing, the length of a park is 1.8 cm. What is the actual length of the park?	Wanda is 5 feet tall, and her brother William is 6 feet tall. In a photograph of them standing side by side, William is 4.8 inches tall. How tall is Wanda in the photograph?
A map of the United States uses a scale of $\frac{1}{4}$ inch = 80 miles. If the map distance between two cities in Louisiana is $1\frac{5}{8}$ inches, what is the actual distance between the cities?	In a scale drawing of a garden, a distance of 35 feet is represented by a line segment 4 inches long. On the same drawing, what distance is represented by a line segment 14 inches long?

Scaling in the Real World

Name_____ Date_____

A scale drawing shows all dimensions $\frac{1}{16}$ actual size. What is the length of a computer screen that is represented by a line segment $1\frac{3}{4}$ inches long?	
A scale model of a building is $\frac{1}{48}$ the size of the actual building. If the actual building is 30 feet wide, how wide is the scale model?	
A drawing of a city's downtown area uses a scale of 4 cm = 5 km. On the drawing, the length of a park is 1.8 cm. What is the actual length of the park?	
Wanda is 5 feet tall, and her brother William is 6 feet tall. In a photograph of them standing side by side, William is 4.8 inches tall. How tall is Wanda in the photograph?	
A map of the United States uses a scale of $\frac{1}{4}$ inch = 80 miles. If the map distance between two cities in Louisiana is $1\frac{5}{8}$ inches, what is the actual distance between the cities?	
In a scale drawing of a garden, a distance of 35 feet is represented by a line segment 4 inches long. On the same drawing, what distance is represented by a line segment 14 inches long?	

Name_____ Date_____

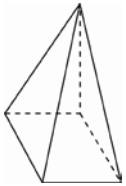
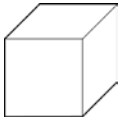
A scale drawing shows all dimensions $\frac{1}{16}$ actual size. What is the length of a computer screen that is represented by a line segment $1\frac{3}{4}$ inches long?	*Answer: The actual length of the computer screen is 28 inches.*
A scale model of a building is $\frac{1}{48}$ the size of the actual building. If the actual building is 30 feet wide, how wide is the scale model?	*Answer: The width of the scale model is $\frac{5}{8}$ of a foot or 7 $\frac{1}{2}$ inches.*
A drawing of a city's downtown area uses a scale of 4 cm = 5 km. On the drawing, the length of a park is 1.8 cm. What is the actual length of the park?	*Answer: The actual length of the park is $2\frac{1}{4}$ km.*
Wanda is 5 feet tall and her brother William is 6 feet tall. In a photograph of then standing side by side, William is 4.8 inches tall. How tall is Wanda in the photograph?	*Answer: The height of Wanda in the photograph is 4 inches.*

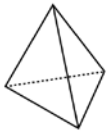
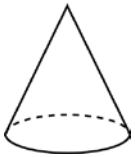
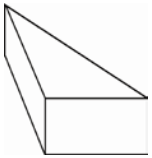
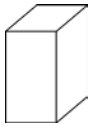
A map of the United States uses a scale of $\frac{1}{4}$ inch = 80 miles. If the map distance between two cities in Louisiana is $1\frac{5}{8}$ inches, what is the actual distance between the cities?	*Answer: The actual distance between the cities is 520 miles.*
In a scale drawing of a garden, a distance of 35 feet is represented by a line segment 4 inches long. On the same drawing, what distance is represented by a line segment 14 inches long?	*Answer: The actual distance represented is* $122\frac{1}{2}$ *feet.*

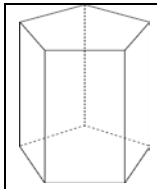
Scaling in the Real World
with Answers

Classifying Solids

Look at the solids shown in the chart below. Mark Xs in each row for the correct descriptions of the shape, then name the solid and describe the properties that helped you to classify them as such.

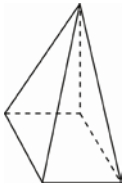
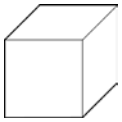
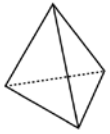
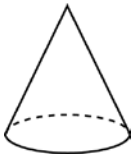
Solid	Polyhedron	Non-Polyhedron	Prism	Pyramid	Cylinder	Cone	Name of Solid and Properties
							
							

							
							
Solid	Polyhedron	Non-Polyhedron	Prism	Pyramid	Cylinder	Cone	Properties
							
							
							

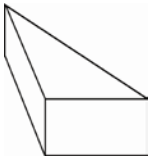
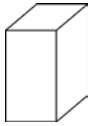
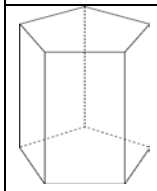
							

Classifying Solids

Look at the solids shown in the chart below. Mark Xs in each row for the correct descriptions of the shape, then name the solid and describe the properties that helped you to classify them as such.

Solid	Polyhedron	Non-Polyhedron	Prism	Pyramid	Cylinder	Cone	Name of Solid and Properties
	x			x			Rectangular pyramid; faces are polygons, lateral faces are triangles, base is a rectangle
	x		x				Cube; faces are polygons, opposite faces are parallel and congruent
	x			x			Triangular pyramid; faces are polygons, lateral faces are triangles, base is a triangle
		x				x	Cone; faces are not polygons, base is a circle

Unit 6, Activity 11, Classifying Solids with Answers

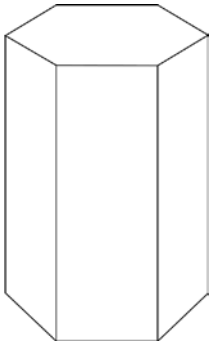
Solid	Polyhedron	Non-Polyhedron	Prism	Pyramid	Cylinder	Cone	Properties
	x		x				Triangular prism; faces are polygons, bases are triangles and are parallel
	x		x				Rectangular prism; faces are polygons, bases are rectangles or squares
		x			x		Cylinder; faces are not polygons, bases are circles and are parallel to one another
	x		x				Pentagonal prism; faces are polygons, bases are pentagons and other faces are rectangles

Name_____ Date_____

What Slice is It?

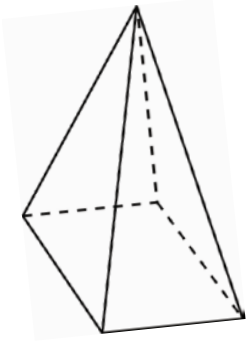
For each of the solids below, name the solid, then sketch two cross sections that can be formed by cuts that are parallel to a base and the other perpendicular to a base. Then identify each of the cross sections with a name (regular pentagon, triangle, rectangle, circle, etc.).

1.



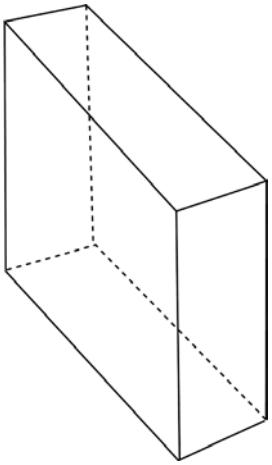
Cross Sections	Name of Cross Section
Parallel to base	
Perpendicular to base	

2.



Cross Sections	Name of Cross Section
Parallel to base	
Perpendicular to base	

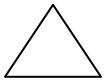
3.



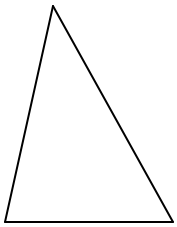
Cross Sections	Name of Cross Section
Parallel to base	
Perpendicular to base	

For each of the exercises below, sketch a solid which could have the given cross sections.

4. Cross section parallel to a base:

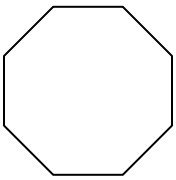


Cross section perpendicular to a base:



Name of Solid: _____
Sketch:

5. Cross section parallel to a base:



Cross section perpendicular to a base:

Name of Solid: _____
Sketch:

6. DESIGN YOUR OWN!

Cross section parallel to a base:

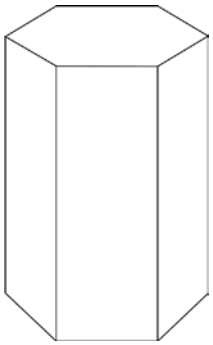
Cross section perpendicular to a base:

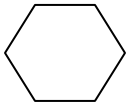
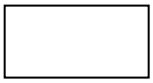
Name of Solid:
Sketch:

What Slice is It?

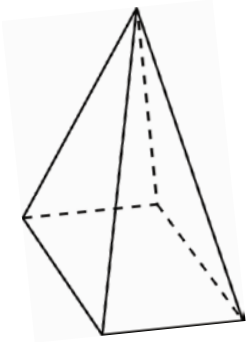
For each of the solids below, name the solid, then sketch two cross sections that can be formed by cuts that are parallel to a base and the other perpendicular to a base. Then identify each of the cross sections with a name (regular pentagon, triangle, rectangle, circle, etc.).

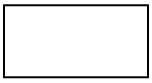
1.



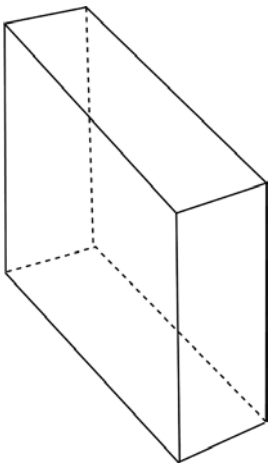
Name of solid: *Hexagonal Prism*	
Cross Sections	Name of Cross Section
Parallel to base 	Regular Hexagon
Perpendicular to base 	Rectangle

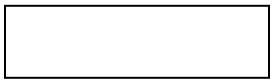
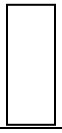
2.



Name of solid: *Rectangular Pyramid*	
Cross Sections	Name of Cross Section
Parallel to base 	Rectangle
Perpendicular to base 	Isosceles triangle

3.

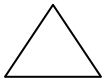


Name of solid: *Rectangular Prism*	
Cross Sections	Name of Cross Section
Parallel to base 	Rectangle
Perpendicular to base 	Rectangle

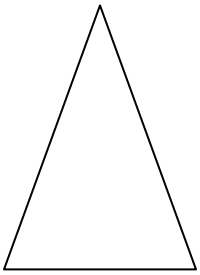
Unit 6, Activity 11, What Slice is It with Answers

For each of the exercises below, sketch a solid which could have the given cross sections and name the solid.

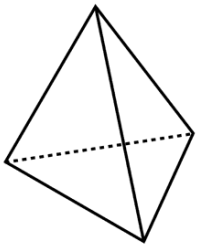
4. Cross section parallel to a base:



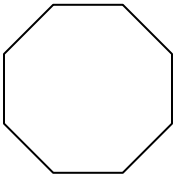
Cross section perpendicular to a base:



Name of Solid: *triangular pyramid*
Sketch:

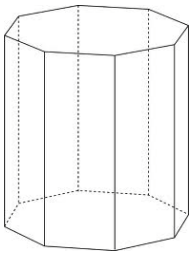


5. Cross section parallel to a base:



Cross section perpendicular to a base:

Name of Solid: *Octagonal prism*
Sketch:



6. DESIGN YOUR OWN!

Cross section parallel to a base:

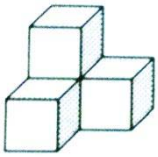
Cross section perpendicular to a base:

Name of Solid:
Sketch:

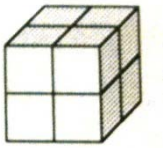
Name_____ Date_____

Build It!

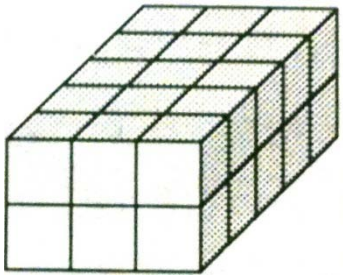
1) Build each of the following figures, and then determine the volume (V) and surface area (SA) of each figure, assuming that 1 unit is a unit of volume.

a) 

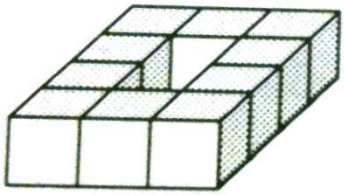
V = _____
SA = _____

b) 

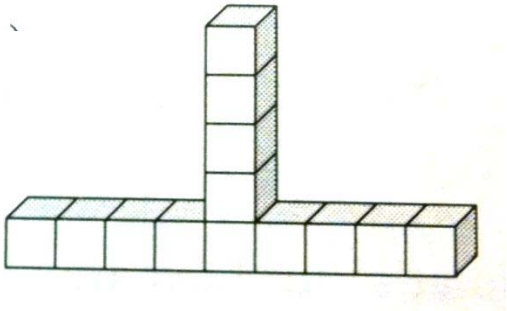
V = _____
SA = _____

c) 

V = _____
SA = _____

d) 

V = _____
SA = _____

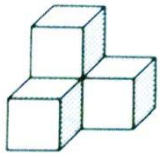
e) 

V = _____
SA = _____

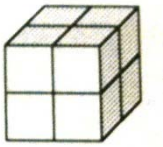
Name_____ Date_____

Build It!

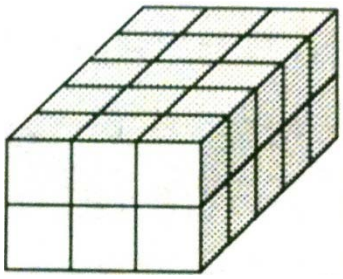
1) Build each of the following figures, and then determine the volume (V) and surface area (SA) of each figure, assuming that 1 unit is a unit of volume.

b) 

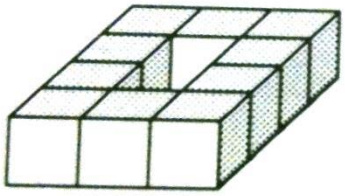
V = 4 cubic units
SA = 18 square units

b) 

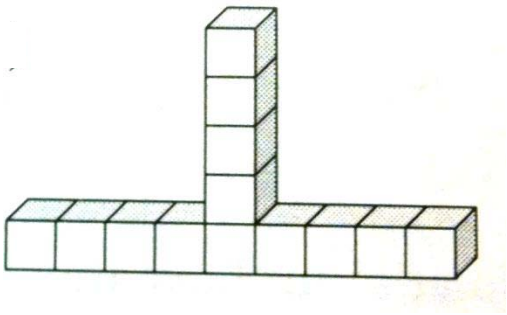
V = 8 cubic units
SA = 24 square units

c) 

V = 30 cubic units
SA = 62 square units

d) 

V = 10 cubic units
SA = 40 square units

e) 

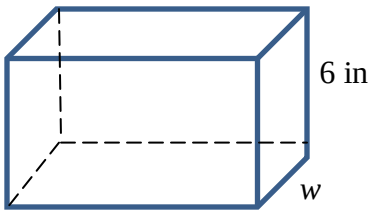
V = 13 cubic units
SA = 54 square units

Name_____ Date_____

Cover It, Fill It

Solve the following problems using the method that makes sense to you. Show all work using sketches and/or mathematics. Don't forget to include correct units with your solution. Be ready to present your solutions to the class!

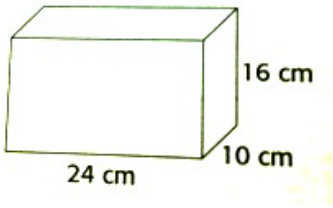
1) The volume of the covered box shown is 630 cubic inches.



a. Find the width *w* of the box. _____
b. Find the total surface area of the box. _____

2) A bedroom is 18 ft long, 15 ft wide, and 10 ft high. If the **walls and ceiling** of the bedroom are given one coat of paint, what is the total area to be painted? _____

3) Kayla has part of a roll of wrapping paper left to wrap her sister's birthday gift. Determine the amount of paper needed to wrap the box below. _____



4) The surface area of a cube is 216 in^2. What is the **length of each side** of the cube?
_____

5) The **inside** of a rectangular swimming pool will be resurfaced. The pool is 40 feet long, 18 feet wide, and 7 feet deep. What is the total area to be resurfaced?

6) The volume of a rectangular prism is 1,001 in^3. The height of the prism is 13 in. and its width is 7 in. What is the length of the prism?

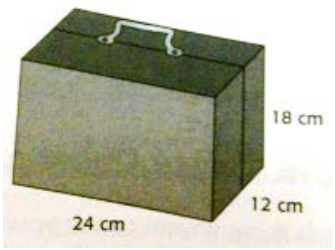
7) A cereal manufacturer needs a box that will have 60 in^3 of space inside.
a. Give the dimensions of two possible boxes the manufacturer can use.
_____ and _____

b. Which of the two boxes you suggested will use less cardboard? _____

c. Based on your findings, what general statement can you make about boxes with the same volume?

8) A straight driveway leading to a hotel is 150 feet long and 12 feet wide. It is paved with concrete 6 inches thick. At a cost of $6.25 per cubic foot, how much did the concrete cost?

9) As a craft project, Rosa is covering the closed wooden box shown with a mosaic made from 1 cm^2 tiles. The tiles come in packages of 100 that cost $2.95 each.



a. How many tiles does Rosa need to completely cover the box?

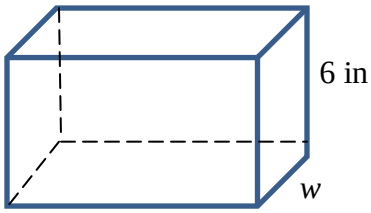
b. How much will Rosa spend for the tiles? Explain how you arrived at your answer.

Name_____ Date_____

Cover It, Fill It

Solve the following problems using the method that makes sense to you. Show all work using sketches and/or mathematics. Don't forget to include correct units with your solution. Be ready to present your solutions to the class!

1) The volume of the covered box shown is 630 cubic inches.



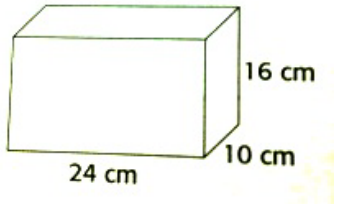
a. Find the width *w* of the box. *7 inches*
b. Find the total surface area of the box.

b) Top and bottom: 2(7 x 15) = 210
Short sides: 2(7 x 6) = 84
Long sides: 2(15 x 6) = 180
Surface area = 210 + 84 + 180 =
474 square inches or 474 in^2

2) A bedroom is 18 ft long, 15 ft wide, and 10 ft high. If the **walls and ceiling** of the bedroom are given one coat of paint, what is the total area to be painted?

Ceiling: 15 x 18 = 270
Short walls 2(15 x 10) = 300
Long walls 2 (18 x 10) = 360
Area to be painted: 270 + 300 + 360 = 930 square feet or 930 ft^2

3) Kayla has part of a roll of wrapping paper left to wrap her sister's birthday gift. Determine the amount of paper needed to wrap the box below. *(24 x 10) x 16 = 3,840 sq cm or 3,840 cm^2*



4) The surface area of a cube is 216 in^2. What is the **length of each side** of the cube?

There are 6 faces on a cube, so $\frac{216}{6}$ *= 36 sq in, which is the area of each face.*

If the area of the face of a square is 36 sq in, then the dimensions of that square must be a 6 x 6, so the length of each side of the cube must be 6 inches.

5) The **inside** of a rectangular swimming pool will be resurfaced. The pool is 40 feet long, 18 feet wide, and 7 feet deep. What is the total area to be resurfaced?
Bottom of pool: 18 x 40 = 720
Short sides: 2(18 x 7) = 252
Long sides: 2(40 x 7) = 560
Total area to be resurfaced: 720 + 252 + 560 = 1,532 sq ft or 1,532 ft^2

6) The volume of a rectangular prism is 1,001 in^3. The height of the prism is 13 in. and its width is 7 in. What is the length of the prism? *11 inches*

7) A cereal manufacturer needs a box that will have 60 in^3 of space inside.
a. Give the dimensions of two possible boxes the manufacturer can use.
2 x 3 x 10 and 5 x 2 x 6 or some other variation using these factors

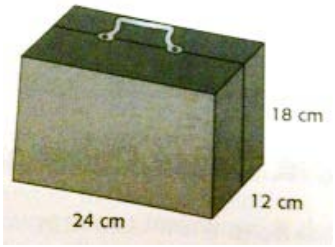
b. Which of the two boxes you suggested will use less cardboard?
The surface area of the 2 x 3 x 10 cereal box is 112 square inches and the surface area of the 5 x 2 x 6 cereal box is 104 square inches. The cereal box using the least amount of cardboard is the 5 x 2 x 6 cereal box.

c. Based on your findings, what general statement can you make about boxes with the same volume? *Answers will vary but students should generalize that a box having dimensions that are closer together will produce a more cube-like box which has a smaller surface area than a box that is long and thin.*

8) A straight driveway leading to a hotel is 150 feet long and 12 feet wide. It is paved with concrete 6 inches thick. At a cost of $6.25 per cubic foot, how much did the concrete cost?

The volume of the driveway is 150 ft x 12 ft by ½ ft = 900 cubic feet
The cost of the concrete is 900 x $6.25 = $5,625.

9) As a craft project, Rosa is covering the closed wooden box shown with a mosaic made from 1 cm^2 tiles. The tiles come in packages of 100 that cost $2.95 each.



a. How many tiles does Rosa need to completely cover the box?
Top and bottom: 2(24 x 12) = 576
Front and back: 2(24 x 18) = 864
Both sides: 2(12 x 18) = 432
Surface area of the box: 576 + 864 + 432 = 1,872 sq cm or 1,872 cm^2

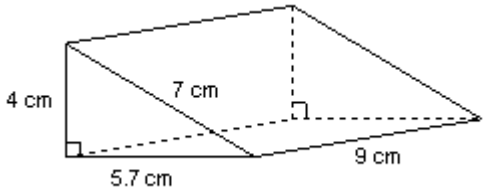
b. How much will Rosa spend for the tiles? Explain how you arrived at your answer.
Rosa will spend $56.05 for the tiles. If 100 tiles come in one package, to find the number of packages needed to cover the box, divide 1,872 by 100 or $\frac{1872}{100}$ *which is 18.72. Since you can't buy part of a box of tiles, you need to round 18.72 to 19 boxes. To find the total cost for the tiles needed, multiply 19 boxes by $2.95 for each box and the cost is $56.05.*

Name_____ Date_____

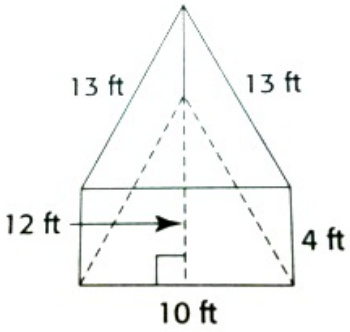
Prism Practice

Use any strategy that is mathematically correct to find the surface area or volume of the figures below. Show all work.

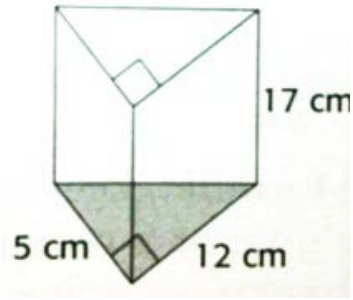
1) Twelve large bookends are needed for the school library. A sketch of one of the bookends is shown below. If 8 ounces of paint covers 350 square centimeters, how much paint is needed for all the bookends? *Write your answer in gallons.*



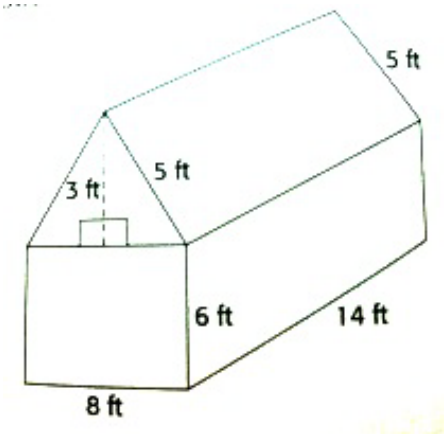
2) A prop in a play is a giant wedge of cheddar cheese. How much yellow cardboard will be needed to make the prop?



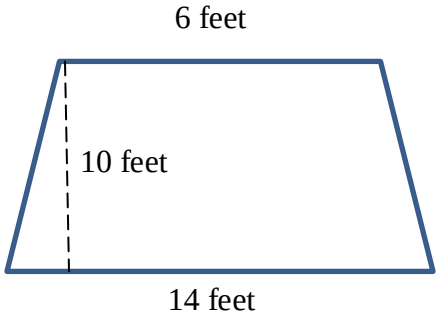
3) Joe's mom is making a flower arrangement using the vase pictured. She will fill the vase with marbles before the flowers are placed inside. How much space is available inside the vase to be filled with marbles?



4) Find the outside surface area of the wooden storage shed shown.



5) The neighbors are putting a pool in their backyard with the trapezoidal base shown below. If the pool has a depth of 6 feet, use the sketch below to determine how much dirt must be dug out before the pool can be put in. *Use ½h(b_1 + b_2) to find the area of a trapezoid.*

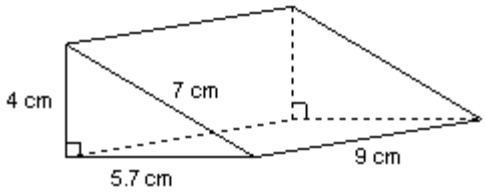


Name_____ Date_____

Prism Practice

Use any strategy that is mathematically correct to find the surface area or volume of the figures below. Show all work.

1) Twelve large bookends are needed for the school library. A sketch of one of the bookends is shown below. If 8 ounces of paint covers 350 square centimeters, how much paint is needed for all the bookends? *Write your answer in gallons.*



Solution:

Surface area of one bookend—173.1 sq cm

2 triangular faces:
2[½(5.7)(4)]
2(½)(22.8)
2(11.4)
22.8 sq cm

Rectangular face 1: 5.7(9) = 51.3 sq cm
Rectangular face 2: 7(9) = 63 sq cm
Rectangular face 3: 4(9)= 36 sq cm

SA = 22.8 + 51.3 + 63 + 36 = 173.1 sq cm for one bookends
SA for twelve bookends: 173.1 x 12 = 2,077.2 sq cm

To calculate amount of paint:

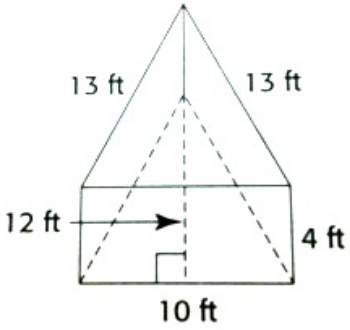
$$\frac{8 \text{ oz.}}{350 \text{ sq cm}} = \frac{x}{2{,}077.2 \text{ sq cm}}$$

$x = 47.48$ oz

Solution in gallons:

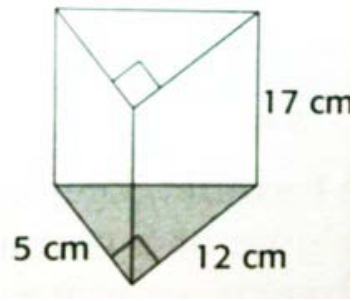
$\frac{47.48 \text{ oz}}{16 \text{ oz}} = 2.97 \approx 3$ gallons of paint needed for 12 bookends

2) A prop in a play is a giant wedge of cheddar cheese. How much yellow cardboard will be needed to make the prop?



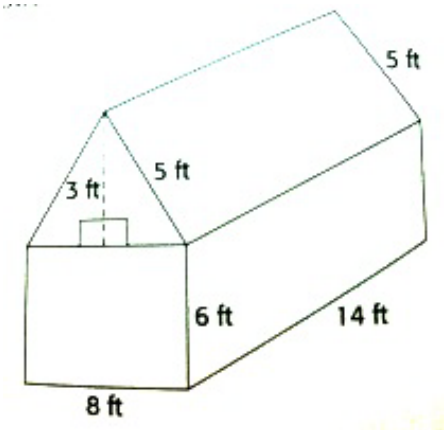
Triangle faces: 2[½(10)(12)] = 120
3 rectangle faces: 2(13 x 4) = 104
1(10 x 4) = 40
Surface Area: 120 + 104 + 40 = 264 sq ft or 264 ft^2

3) Joe's mom is making a flower arrangement using the vase pictured. She will fill the vase with marbles before the flowers are placed inside. How much space is available inside the vase to be filled with marbles?



V = Bh
Area of triangle base: ½ (12)(5) = 30
Volume = 30 x 17 = 510 cubic cm or 510 cm^3

4) Find the outside surface area of the wooden storage shed shown.

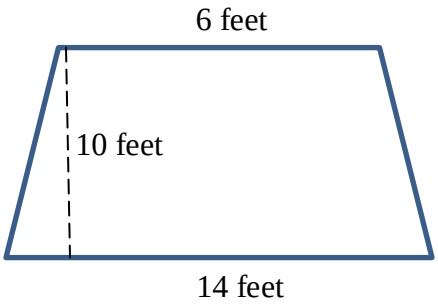


ROOF:
Triangle faces: 2[½(8)(3)] = 24
Rectangle faces: 2(5 x 14) = 140

SHED:
Front and back: 2(8 x 6) = 96
Sides of shed: 2(14 x 6) = 168

Surface Area: 24 + 140 + 96 + 168 = 428 sq ft or 428 ft^2

5) The neighbors are putting a pool in their backyard with the trapezoidal base shown below. If the pool has a depth of 6 feet, use the sketch below to determine how much dirt must be dug out before the pool can be put in. *Use ½h(b_1 + b_2) to find the area of a trapezoid.*



V = Bh
Area of trapezoid base: ½ h (b_1 + b_2) = ½ (10)(14 + 6) = 100
Volume: 100 x 6 = 600 cubic ft or 600 ft^3

Name_____ Date_____

ADD OR SUBTRACT?

SITUATION A:

Erin has 12 CD's and Mary has 15 CD's

SITUATION B:

Miranda had 15 pairs of socks until her sister borrowed 12 pairs when she went to camp.

SITUATION C:

Lewis saved $24 last week, which is $8 more than Joanne saved.

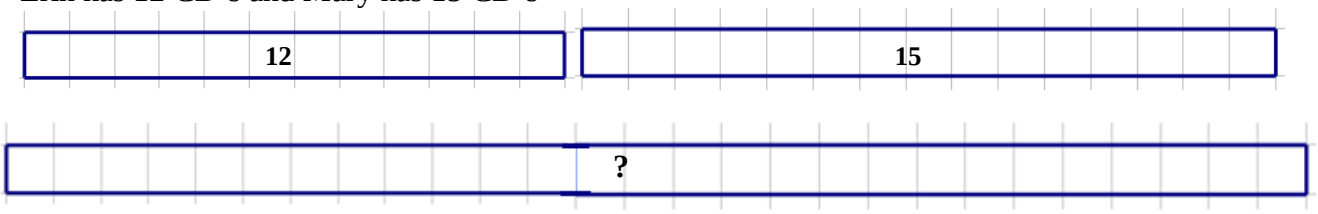
Name_____ Date_____

ADD OR SUBTRACT?

Solutions will vary and should see addition or subtraction

SITUATION A:

Erin has 12 CD's and Mary has 15 CD's

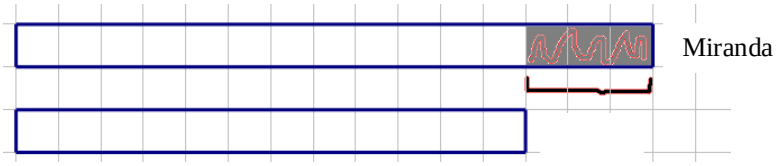


If you put the two sets of tiles together, you will have 27 total tiles.

$12 + 15 = 27$ or $12 + 15 = x$

SITUATION B:

Miranda ha 15 pairs of socks until her sister borrowed 12 pairs when she went to camp.

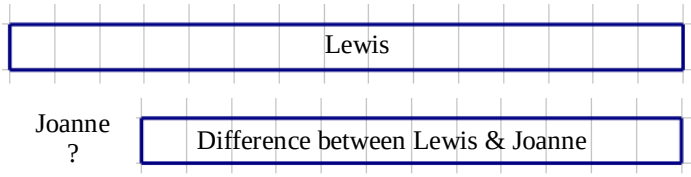


We can see that when you compare 15 and 12, there is a difference of 3 which represents what Miranda was left with.

$15 - 12 = 3$

SITUATION C:

Lewis saved $15 last week, which is $12 more than Joanne saved.



We don't know how much Joanne saved. If you compare the amount Lewis saved with the $12 difference, you can find the amount that Joanne saved.

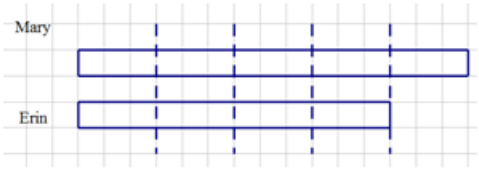
$15 = 12 + x$

Name_____ Date_____

Multiply or Divide?

SITUATION A:

Erin has 12 CD's and Mary has 15 CD's



$15 = 1\ ¼ \text{ of } 12$

$12 = \frac{4}{5} \text{ of } 15$

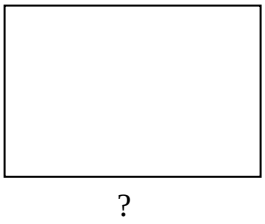
There are 1 ¼ as many CD's in Mary's collection as in Erin's, or that Erin has $\frac{4}{5}$ as many CD's as Mary.

$1\ ¼ \times 12 = 15$

$\frac{4}{5} \times 15 = 12$

SITUATION B:

Julian built a rectangular pen for his dog. The perimeter is 48 feet and one dimension of the pen is 6 feet.

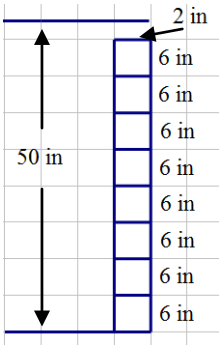


One possible way that students may think of this situation is in terms of finding the area. We know that since this is a rectangle, and one of the dimensions is 6 feet, then the opposite side must by 6 feet. We also know that the perimeter is 48 feet, so if we subtract 12 feet (2 short sides), then we know the sum of the other two sides must be 36. To find the dimensions of the "long" sides, divide 36 by 2 to get 18 feet, the other dimensions of the pen. Now to find the area, multiply 6 by 18 to get 108 sq ft,

48 = 2l + 2(6)To find the other dimension
A = 6(18)To find the area

SITUATION C:

The art teacher stores her supplies in boxes that are 6 inches high. The boxes are stacked in a cabinet which has 50 inches between each pair of shelves.



Each stack holds 50 ÷ 6 = 8 boxes, with 2 inches of space remaining.

Recipe Activity

Name _____ Date_____

Modify the following recipe to make 18 servings and 108 servings.

Buttermilk Brownies with Frosting

18 Servings	108 Servings	Ingredients
		2 cups all-purpose flour
		2 cups sugar
		1 teaspoon baking soda
		¼ teaspoon salt
		1 cup margarine or butter
		1 cup unsweetened cocoa powder
		1 cup water
		2 eggs
		½ cup buttermilk
		1 ½ teaspoon vanilla
		¼ cup margarine or butter
		3 tablespoons unsweetened cocoa powder
		3 tablespoons buttermilk
		2 ¼ cups sifted powdered sugar
		½ teaspoon vanilla
		1 cup of coarsely chopped pecans (optional)

Directions:
In a mixing bowl, combine flour, sugar, baking soda, and salt. Set aside.
In a medium saucepan, combine the 1 cup margarine or butter, the water, and the 1/3 cup unsweetened cocoa powder. Bring mixture just to boil, stirring constantly. Remove from heat. Add the chocolate mixture to dry ingredients and beat with an electric mixer on medium to high speed till thoroughly combined. Add eggs, the ½ cup buttermilk, and the 1 ½ teaspoon vanilla. Beat for 1 minute (batter will be thin.)

Pour the batter into a greased and floured 15 x 10 x 1-inch baking pan. Bake in a 350 degree oven for about 25 minutes or till a toothpick inserted near the center comes out clean. Meanwhile, for frosting, in a medium saucepan combine the ¼ cup margarine or butter, the 3 tablespoons unsweetened cocoa powder, and the 3 tablespoons buttermilk. Bring to boiling. Remove from heat. Add powdered sugar and the ½ teaspoon vanilla. Beat till smooth. Stir in chopped pecans, if desired. Pour warm frosting over the warm brownies, spreading evenly. Cool in pan on a wire rack. Cut into bars. **Makes 36.**

Recipe Activity

Name _____ Date_____

Modify the following recipe to make 18 servings and 108 servings.

Buttermilk Brownies with Frosting

18 Servings	108 Servings	Ingredients
1 cup	*6 cups*	2 cups all-purpose flour
1 cup	*6 cups*	2 cups sugar
½ tsp	*3 tsp*	1 teaspoon baking soda
1/8 tsp	*¾ tsp*	¼ teaspoon salt
½ cup	*3 cups*	1 cup margarine or butter
½ cup	*3 cups*	1 cup unsweetened cocoa powder
½ cup	*3 cups*	1 cup water
1 egg	*6 eggs*	2 eggs
¼ cup	*1 ½ cups*	½ cup buttermilk
¾ tsp	*4 ½ cups*	1 ½ teaspoon vanilla
1/8 cup	*¾ cups*	¼ cup margarine or butter
1 ½ tsp	*9 T*	3 tablespoons unsweetened cocoa powder
1 ½ tsp	*9 T*	3 tablespoons buttermilk
1 and 1/8 cup	*6 ¾ cups*	2 ¼ cups sifted powdered sugar
¼ tsp	*1 ½ tsp*	½ teaspoon vanilla
½ cup	*3 cups*	1 cup of coarsely chopped pecans (optional)

Directions:
In a mixing bowl, combine flour, sugar, baking soda, and salt. Set aside.
In a medium saucepan, combine the 1 cup margarine or butter, the water, and the 1/3 cup unsweetened cocoa powder. Bring mixture just to boil, stirring constantly. Remove from heat. Add the chocolate mixture to dry ingredients and beat with an electric mixer on medium to high speed till thoroughly combined. Add eggs, the ½ cup buttermilk, and the 1 ½ teaspoon vanilla. Beat for 1 minute (batter will be thin.)

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Party Requirements

Catering Company: _____
Budget: $250 Number of Guests: 30 boys/girls

Theme:
_____

Required Budget Items:

- Food (cost to purchase food or ingredients to make food)
- Decorations
- Consumables: table coverings/napkins/plates/cups/silverware
- Entertainment/Activities
- Miscellaneous Expenses/Favors

Party Proposal must include:

- Budget spreadsheet (expenses and summary with percentage of each budget category)
- Menu of food to be served – at least 2 complete recipes with modification for number of guests
- Map of room layout – with map key or labels on pictures
- Description of party – entertainment/activities, decorations, and food

Internet Resources: *Get permission from your teacher if you want to use other websites!*

http://www.orientaltrading.com
http://www.birthdaypartyideas.com
http://www.birthdaydirect.com
http://www.kids-birthday-party-guide.com
http://www.birthdayexpress.com
http://www.celebrateexpress.com
http://www.netgrocer.com

Name_____
Date_____

BUDGET SPREADSHEET

Expenses:

Quantity items	Description	Item Number	Cost per item	Cost
			TOTAL COST>>>>	

Summary of Expenses:

Expense	Total Cost	Percent of Total Budget
Food		
Decorations		
Consumables		
Entertainment/Activities		
Miscellaneous Expenses/Favors		

Name_____ Date_____

Integer Practice

1. Evaluate $\frac{2 \times 3 \times (-6)}{-9}$.
2. If an airplane descends at a rate of 500 feet per minute, write and evaluate an expression with integers to show how far will it descend in 6 minutes.
3. Copy and complete the number statement by replacing the circle with $<$, $>$, or $=$.

   a. $3 \times (-3) - 1 \bigcirc 3 \times (-3) + 1$

   b. $0 \div (4) + 9 \bigcirc 0 \div (-10) + 9$
4. Divers can descend 7 feet per second. If the diver starts at sea level, what is the depth after 5 seconds of diving? Express your answer as a negative integer.
5. Find the mean of the following cold temperatures at Yellowstone Park: -10° F, -23° F, -5° F, -18° F, and -9° F. (*Hint:* Find the mean by dividing the sum of the values by the number of values.)
6. If a football team gained 5 yards per play for 3 plays and then lost 2 yards per play for 4 plays, write and evaluate an expression with integers to show their total gain or loss.
7. $-3 \times 2 \times (-5) \times (-6) \times 4 =$

Name_____ Date_____

Integer Practice

1. Evaluate $\frac{2 \times 3 \times (-6)}{-9}$.

4

2. If an airplane descends at a rate of 500 feet per minute, write and evaluate an expression with integers to show how far will it descend in 6 minutes.

500(6) = 3000 feet in 6 minutes

3. Copy and complete the number statement by replacing the circle with <, >, or =.

a. $3 \times (-3) - 1 \bigcirc 3 \times (-3) + 1$

b. $0 \div (4) + 9 \bigcirc 0 \div (-10) + 9$

a. -10 < -8

b. 9 = 9

4. Divers can descend 7 feet per second. If the diver starts at sea level, what is the depth after 5 seconds of diving? Express your answer as a negative integer.

7(-5) = -35 or 35 feet below sea level

5. Find the mean of the following cold temperatures at Yellowstone Park: -10° F, -23° F, -5° F, -18° F, and -9° F. (*Hint:* Find the mean by dividing the sum of the values by the number of values.)

(-10 + -23 + -5 + -18 + -9) ÷ 5 = -13

6. If a football team gained 5 yards per play for 3 plays and then lost 2 yards per play for 4 plays, write and evaluate an expression with integers to show their total gain or loss.

5(3) + (-2)4 = 15 + -8 = 7 yard gain

7. $-3 \times 2 \times (-5) \times (-6) \times 4 =$

-720