6th Grade Math Packet

April 20-April 30

This Packet Includes:

- Check Ups (RETURN TO TEACHER)
- Question of the day challenge
- Notes with check for understanding problems
- Puzzles for extra practice
- Games for you and your family to play
- Answer Keys

The only thing we ask for you to return via bus or emailing a picture to your teacher are the first pages labeled "Check Up" How much of the rest of the packet depends on what is best for you. Included are notes for you to read over and problems to practice. The answers are in the back to check if you are being successful.

If you have online available to you, please join our Google Classrooms where we will be posting videos and tips to help you. Log into Google Classroom using your school address and password. Then join YOUR teacher's classroom using the code.

Mrs. StPeter's code: cphpbko Miss VanBoven's code: y3xbej6

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Possible Schedule

April 20: Receive Packet and look over Mid Chapter 6 Check up and read 6.1 Notes. Try a couple problems and check answers.

April 21: Read 6.2 Notes and try a couple problems checking answers

April 22: Read 6.3 Notes and Check for understanding

April 23: Read 6.4 Notes and Check for understanding

April 24: Both Mid and End of Chapter 6 Check Up

*Add bonus material (puzzles and games through out)

April 27: Look over Mid Chapter 7 Check Up and Read 7.1 Notes. Try a couple problems and check answers. Do problems #1 and #5 on Check Up

April 28: Read 7.2 Notes and Check for Understanding. Do Problems #2 and #7 on Check Up.

April 29: Read 7.3 and Check for Understanding. Do Problems #3 and #4 on Check Up.

April 30: Double check all Check Up problems and email or send back on the bus.

May 1: PLAY GAMES with the family!

Name _____ Date _____

Chapter 6 Mid Chapter Check Up

Return to teacher

1. Write the word sentence as an equation.

   The quotient of a number c and 14 is 5. _____

2. You purchase w items for \$8 each. The total cost is \$64. Write an equation that you can use to find w.

   _____

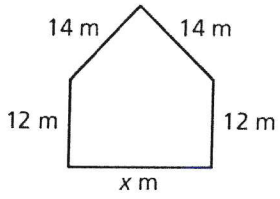
3. Tell whether $c = 3$ is a solution of $c + 7 = 10$. _____ because _____

Solve the equation. (Figure out what x and b equal)

4. $x + 13 = 19$

5. $b - 8 = 14$

6. The perimeter of the figure is 72 meters. Solve for x.



7. You spend \$44 on a game, receive \$30 for painting a fence, and give \$5 to your friend. You have \$32 left. How much money did you start with? (If you are having a hard time with this one, use counters (such as beans) and work backwards.

Name _____ Date _____

Chapter 6 End of Chapter Check Up

Return to teacher

Solve the equation by finding the value of the variable

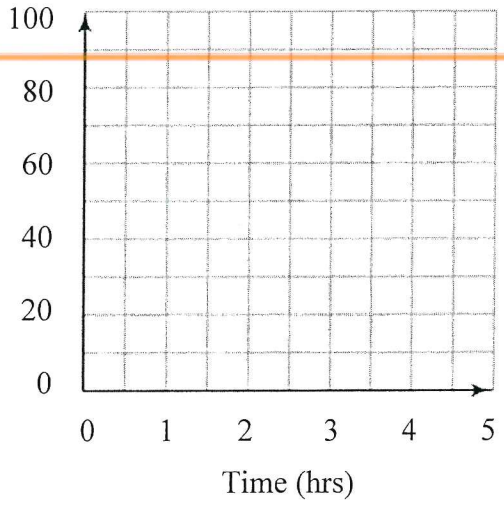
1. $y \div 4 = 10$

2. $6n = 30$

3. Tell whether (5, 10) is a solution of $6x - 18 = y$ *(Remember the coordinates are in this order: (x,y), so if x = 5 and y = 10, would the solution be correct?)*

4. Use a graph to show the relationship between the time and the distance traveled.

Time (hours), *t*	1	4
Distance (miles), *d*	19	76



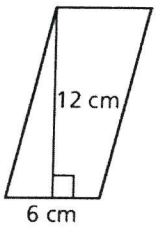
5. An endurance athlete jogs at a rate of 9 miles per hour. How many hours does it take for the athlete to jog 4.5 miles?

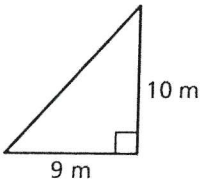
Name _____ Date _____

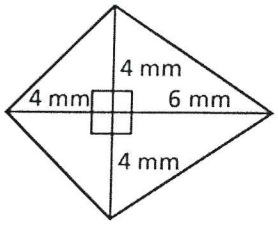
Chapter 7 # Mid Chapter Check Up

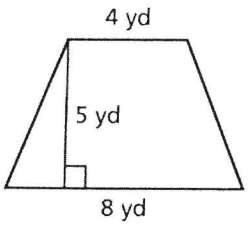
Return to teacher

Find the area of the figure.

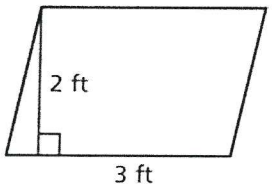
1. 

2. 

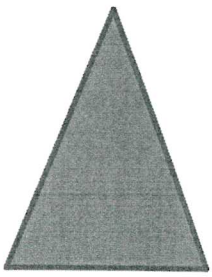
3. 

4. 

5. Find the area of the parallelogram in <u>square inches</u>. (Be careful. Remember that 1 foot = 12 inches.) Change the given measurements from feet to inches before you multiply.)



7. The front of the birdhouse is made using 28 square inches of wood. What is the height of the birdhouse?



8 in.

Questions of the Day

Monday – April 20 You buy a basket of 24 strawberries and eat them as you walk to the beach. After you walk 8 blocks half the berries are left. You walk 4 more blocks and quit eating the berries. If you ate the berries at the same rate throughout your whole walk, how many berries are left when you quit eating?

Tuesday – April 21 You go to the Baby Food Festival. You have $15 for rides. If it costs $1.75 to ride the bumper cars, $1.25 for the Ferris Wheel, $0.50 for the giant slide, and $1.50 for the Scrambler. Do you have enough money to ride each ride twice?

Wednesday – April 22 Can you fill in the ten squares using each of the digits 0 through 9 once?

12 x ☐ = ☐ 0 ☐☐ ÷ 4 = 12 ☐ = ☐ 5 ÷ 5 ☐ x 0 = ☐

7 ☐ = ☐ x 8

Thursday – April 23 The area of a picture is 100 in^2. The length of the picture is 4 times the width. What is the length and width of the picture?

Friday – April 24 Can you write an equation that has (3,4) as a solution? *(Remember the first value in the ordered pair is x and the second value is y.)*

Monday – April 27 A galaxy has a parallelogram-shaped dust field. The base of the dust field is 100 miles. If the height is 25% of the base, what is the area of the dust field?

Tuesday – April 28 How can you use the area of a parallelogram to find the area of a triangle with the same base and height?

Wednesday -April 29 If the base and height of Triangle A are one-half the base and height of Triangle B, how many times bigger is Triangle B than Triangle A? Drawing a picture might help you answer this question.

Thursday – April 30 An equilateral triangle has all sides the same length. If you know the height and perimeter (distance around) of the triangle, how can you find its area?

Friday – May 1 How many items can you list that are shaped like a trapezoid?

Answers to Questions of the Day

April 20 6 berries are left. Half way through your walk there were 12 berries. 4 blocks is half of 8, so you would eat half of the remaining 12 berries in the last 4 blocks. You have 6 berries left.

April 21 No it costs $9.75 to ride each ride once. $9.75 doubled is greater than $15.

April 22 $12 \times 5 = 60$ $48 \div 4 = 12$ $7 = 35 \div 5$ $1 \times 0 = 0$ $72 = 9 \times 8$

April 23 Length is 20 in and the Width is 5 in.

April 24 One example is $y = 2x - 2$ because $4 = 2(3) - 2$ There are several other examples.

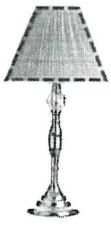
April 27 $100 \times 25 = 2500 \text{ mi}^2$

April 28 The triangle is half the area of the parallelogram if the base and height are the same.

April 29 The bigger triangle will be 4 times bigger because the size is doubled in each direction

April 30 Since all sides are the same length, divide the perimeter by 3. That will give you the length of each side, which would be the length of the base. Multiply that number by the given height and divide your answer by 2 to get the area of the triangle.

May 1 Some examples are below. The popcorn box, the lamp shade and the diamond part of the ring.




Lesson 6.1 Notes

An **equation** is a mathematical sentence that uses an equal sign, =, to show that two expressions are equal.

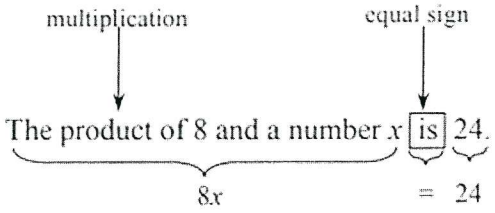
To write a word sentence as an equation, look for key words or phrases such as *is*, *the same as*, or *equals* to determine where to place the equal sign.

EXAMPLE Writing an Equation

Write the word sentence as an equation.

The product of 8 and a number x is 24.

As you read the word sentence, determine which mathematical operation is being described and where to place the equal sign.



▶ An equation is $8x = 24$.

EXAMPLE Writing an Equation

You pay $13.50 for a movie ticket and snacks. The snacks cost $6.95. Write an equation you can use to find the price p of a movie ticket.

Use a verbal model to write an equation.

Verbal model

Total amount paid	=	Price of a movie ticket	+	Cost of snacks

You can substitute 13.50 for "Total amount paid," p for "Price of a movie ticket," and 6.95 for "Cost of snacks."

Equation $13.50 = p + 6.95$

▶ An equation that you can use to find the price of a movie ticket is $13.50 = p + 6.95$.

6.1 Check for Understanding

Write the word sentence as an equation.

1. 12 less than a number x is 19.
2. One-third of a number w is 16.
3. 117 is 32 more than a number m.
4. A number q divided by 5 is 8.
5. 42 more than a number a is 31.
6. 15 less than a number z is 32.

6.1 Puzzle Time

Why Did The Sea Monster Eat Six Ships That Were Carrying Potatoes?

A	B	C	D	E	F
G	H	I	J		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

$\frac{x}{3} = 12$ JUST
$550 + x = 1250$ SHIP
$x + 5 = 14$ IT
$x - 13 = 15$ ONE
$24 = 4 + x$ CAN

Write the word sentence as an equation.

A. The sum of a number x and 5 equals 14.

B. A number x decreased by 6 is 5.

C. 7 times a number x is 42.

D. A number x divided by 8 equals 11.

E. 24 equals 4 more than a number x.

F. 9 is one-third of a number x.

G. 12 is the quotient of a number x and 3.

H. 13 less than a number x equals 15.

I. You throw a football 20 yards. Your friend throws the same football x yards. The football was thrown a total distance of 50 yards. Write an equation you can use to find the distance x that your friend threw the football.

J. Students raised $550 by having a car wash. They need $1250. Write an equation you can use to find the amount x that the students still need to raise.

$\frac{x}{8} = 11$ ONE
$20 + x = 50$ POTATO
$7x = 42$ NO
$9 = \frac{1}{3}x$ EAT
$x - 6 = 5$ SEEMS

6.2 Notes

EXAMPLE Checking Solutions

Tell whether the given value is a solution of the equation.

a. $7 - h = 5;\ h = 2$

$7 - h = 5$	Write the equation.
$7 - 2 \stackrel{?}{=} 5$	Substitute 2 for h.
$5 = 5$ ✓	Sides are equal.

▶ So, $h = 2$ is a solution.

b. $121 = 10m;\ m = 11$

$121 = 10m$	Write the equation.
$121 \stackrel{?}{=} 10(11)$	Substitute 11 for m.
$121 \neq 110$ ✗	Sides are *not* equal.

▶ So, $m = 11$ is *not* a solution.

Key Ideas

Addition Property of Equality

Words When you add the same number to each side of an equation, the two sides remain equal.

Numbers

$$\begin{array}{r} 8 = 8 \\ +5 \quad +5 \\ \hline 13 = 13 \end{array}$$

Algebra

$$\begin{array}{r} x - 4 = 5 \\ +4 \quad +4 \\ \hline x = 9 \end{array}$$

Subtraction Property of Equality

Words When you subtract the same number from each side of an equation, the two sides remain equal.

Numbers

$$\begin{array}{r} 8 = 8 \\ -5 \quad -5 \\ \hline 3 = 3 \end{array}$$

Algebra

$$\begin{array}{r} x + 4 = 5 \\ -4 \quad -4 \\ \hline x = 1 \end{array}$$

EXAMPLE Solving an Equation Using Addition

Solve $y - 12 = 6$.

	$y - 12 = 6$	Write the equation.
Undo the subtraction. →	$+12 \quad +12$	Addition Property of Equality: Add 12 to each side.
	$y = 18$	Simplify.

Check your solution.

$y - 12 = 6$	Write the equation.
$18 - 12 \stackrel{?}{=} 6$	Substitute 18 for y.
$6 = 6$ ✓	Sides are equal.

▶ The solution is $y = 18$.

EXAMPLE Solving an Equation Using Subtraction

Solve $w + 6 = 19$.

	$w + 6 = 19$	Write the equation.
Undo the addition. →	$-6 \quad -6$	Subtraction Property of Equality: Subtract 6 from each side.
	$w = 13$	Simplify.

Try checking the solution on your own.

▶ The solution is $w = 13$.

Check for Understanding

Tell whether the given value is a solution of the equation.

1. $x + 5 = 10; x = 5$
2. $g - 4 = 4; g = 8$
3. $y + 8 = 18; y = 26$
4. $40 - n = 12; n = 32$

Solve the equation. Check your solution.

1. $z + 4 = 6$
2. $x - 5 = 20$
3. $d + 12 = 21$
4. $f - 21 = 10$

6.2 Puzzle Time

What Do Kitty Cats Like To Eat For Breakfast?

Write the letter of each answer in the box containing the exercise number.

Solve the equation. Check your solution.

1. $p - 8 = 4$
2. $k - 2 = 12$
3. $9 = h - 15$
4. $y + 4 = 7$
5. $z + 5 = 21$
6. $63 = r + 31$
7. $x - 25 = 16$
8. $26 = m + 18$
9. $\frac{2}{3} = a - \frac{2}{3}$
10. $f + \frac{1}{4} = \frac{7}{8}$
11. $2.3 = q - 3.6$
12. $j + 4.4 = 16.2$

Answers

K. 16

I. $\frac{5}{8}$

E. 24

S. 14

R. 5.9

C. 41

I. 32

P. 12

S. 8

M. 3

E. 11.8

I. $1\frac{1}{3}$

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

6.3 Notes

Key Ideas

Multiplication Property of Equality

Words When you multiply each side of an equation by the same nonzero number, the two sides remain equal.

Numbers $\frac{8}{4} = 2$

$\frac{8}{4} \cdot 4 = 2 \cdot 4$

$8 = 8$

Algebra $\frac{x}{4} = 2$

$\frac{x}{4} \cdot 4 = 2 \cdot 4$

$x = 8$

Multiplicative Inverse Property

Words The product of a nonzero number n and its reciprocal, $\frac{1}{n}$, is 1.

Numbers $5 \cdot \frac{1}{5} = 1$

Algebra $n \cdot \frac{1}{n} = \frac{1}{n} \cdot n = 1, n \neq 0$

EXAMPLE Solving an Equation Using Multiplication

Solve $\frac{b}{2} = 7$.

	$\frac{b}{2} = 7$	Write the equation.
Undo the division. →	$2 \cdot \frac{b}{2} = 2 \cdot 7$	Multiplication Property of Equality: Multiply each side by 2.
	$b = 14$	Simplify.

Check the solution by substituting the value of the variable and determining whether the equation is true.

$\frac{b}{2} = 7$	Write the equation.
$\frac{14}{2} \stackrel{?}{=} 7$	Substitute 14 for b.
$7 = 7$ ✓	Sides are equal.

▶ The solution is $b = 14$.

Key Idea

Division Property of Equality

Words When you divide each side of an equation by the same nonzero number, the two sides remain equal.

Numbers

$8 \cdot 4 = 32$

$8 \cdot 4 \div 4 = 32 \div 4$

$8 = 8$

Algebra

$4x = 32$

$\frac{4x}{4} = \frac{32}{4}$

$x = 8$

EXAMPLE Solving an Equation Using Division

Solve $24 = 8x$.

	$24 = 8x$	Write the equation.
Undo the multiplication. →	$\frac{24}{8} = \frac{8x}{8}$	Division Property of Equality: Divide each side by 8.
	$3 = x$	Simplify.

Check the solution by substituting the value of the variable and determining whether the equation is true.

$24 = 8x$	Write the equation.
$24 \stackrel{?}{=} 8(3)$	Substitute 3 for x.
$24 = 24$ ✓	Sides are equal.

▶ The solution is $x = 3$.

Check Your Understanding

Solve the Equation then Check Your Solution

1. $4a = 16$
2. $\frac{y}{25} = 5$
3. $28 = 4n$
4. $y \div 12 = 7$

6.3 Puzzle Time

What Did The Dirt Say When It Began To Rain?

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

Solve the equation. Check your solution.

A. $\frac{a}{9} = 6$

B. $7 = \frac{z}{6}$

C. $y \div 4 = 10$

D. $25 = \frac{k}{5}$

E. $2s = 16$

F. $8 \cdot t = 96$

G. $50 = 5x$

H. $56 = 8k$

I. $4b = 52$

J. $39 = 6 \cdot c$

K. $14 = n \div 5$

L. $10 = v \div 6$

M. $x \div 16 = 3.5$

N. $\frac{w}{25} = 4.4$

O. $11.5 \cdot d = 23$

P. $4.5v = 40.5$

7 NAME	12 UP
56 WILL	6.5 CHANGE
54 IF	125 RAIN
9 MUD	110 BE
10 MY	42 THIS
13 WILL	8 KEEPS
2 CALLED	60 I
40 HEAVY	70 AND

6.4 Notes

An **equation in two variables** represents two quantities that change in relationship to one another. A **solution of an equation in two variables** is an ordered pair that makes the equation true.

EXAMPLE Identifying a Solution of an Equation in Two Variables

Tell whether (1, 2) is a solution of the equation $y = x + 1$.

$y = x + 1$	Write the equation.
$2 \stackrel{?}{=} 1 + 1$	Substitute 2 for y and 1 for x.
$2 = 2$ ✔	Sides are equal.

▶ So, (1, 2) is a solution.

EXAMPLE Using an Equation in Two Variables

The equation $y = 48 - 6x$ represents the amount y (in fluid ounces) of lemonade remaining in a pitcher after you pour x glasses. Identify the independent and dependent variables. How much lemonade remains in the pitcher after you pour 5 glasses?

Because the amount y of fluid ounces remaining depends on the number x of glasses you pour, y is the dependent variable and x is the independent variable.

Because you are finding how much lemonade remains after you pour 5 glasses, you need to find the value of y when $x = 5$.

$y = 48 - 6x$	Write the equation.
$y = 48 - 6(5)$	Substitute 5 for x.
$y = 48 - 30$	Multiply 6 and 5.
$y = 18$	Subtract 30 from 48.

▶ There are 18 fluid ounces remaining.

EXAMPLE Graphing an Equation in Two Variables

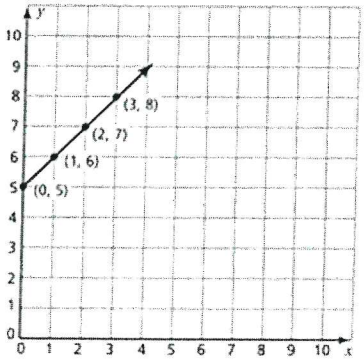
Graph $y = x + 5$.

First find ordered pairs that are solutions of the equation. Make a table of the ordered pairs.

1) Choose values for x. I'm going to use 0, 1, 2, 3
2) Substitute the values for x in the equation
3) The solution is the y value
4) The ordered pair is (x, y).
5) Plot the ordered pairs

x	y = x + 5	y	Ordered Pair
0	y = 0 + 5	5	(0, 5)
1	y = 1 + 5	6	(1, 6)
2	y = 2 + 5	7	(2, 7)
3	y = 3 + 5	8	(3, 8)

Then plot the ordered pairs and draw a line through the points.



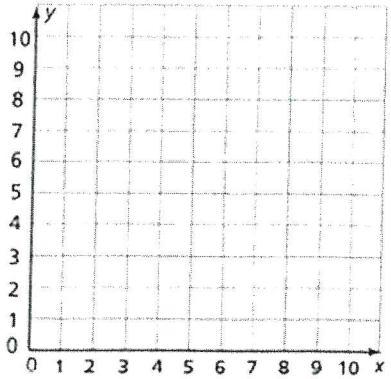
Check Your Understanding

Tell whether the ordered pair is a solution of the equation.

1. $y = 5x$; (1, 10)
2. $y = 3x + 4$; (0, 4)
3. $y = 2x - 7$; (6, 5)
4. $y = 6x + 1$; (2, 11)

Graph y = x + 2

x	y = x + 2	y	(x,y)
0			
2			
4			
6			



6.4 Puzzle Time

Which Are The Strongest Shellfish On The Beach?

Write the letter of each answer in the box containing the exercise number.

Tell whether the ordered pair is a solution of the equation.

1. $y = 6x$; (0, 3)

   R. Yes **S.** No

2. $y = 4x$; (1, 4)

   U. Yes **V.** No

3. $y = 3x - 7$; (4, 5)

   E. Yes **F.** No

4. $y = x + 8$; (2, 12)

   R. Yes **S.** No

5. $y = 9x - 9$; (1, 0)

   L. Yes **M.** No

6. $y = 2x + 4$; (2, 8)

   S. Yes **T.** No

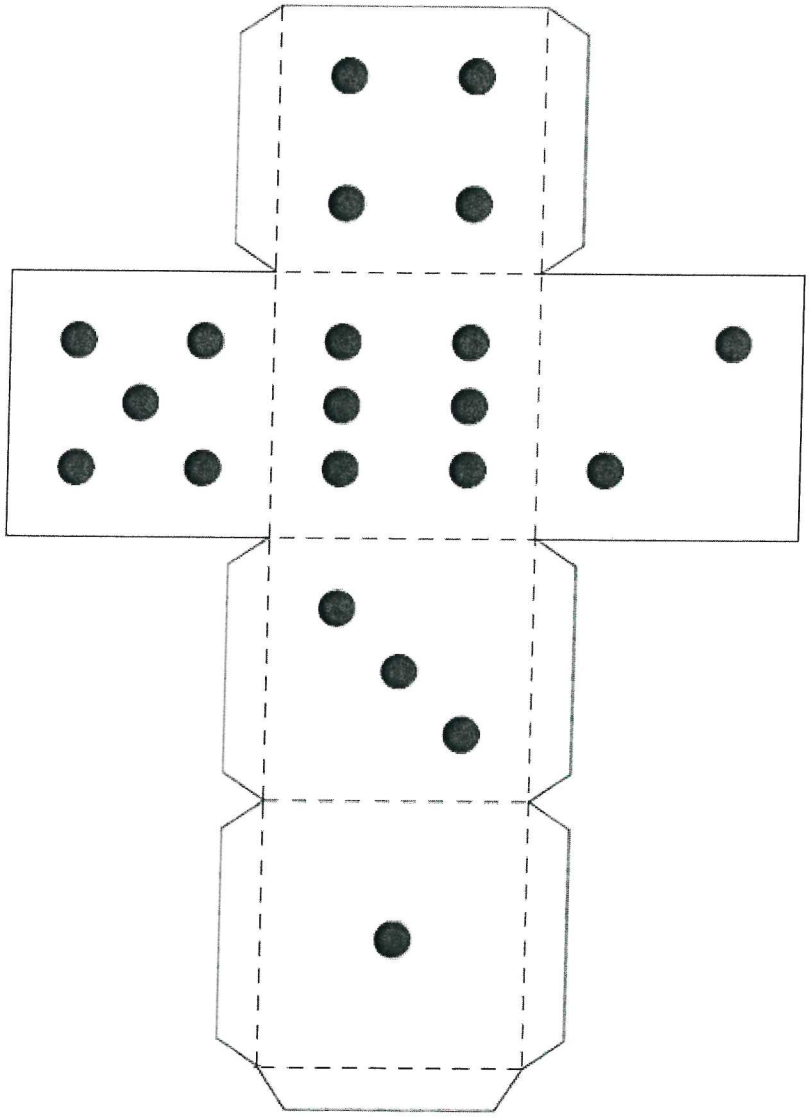
7. **y = x – 6; (5, 11)**

   L. Yes **M.** No

7	2	6	4	3	5	1

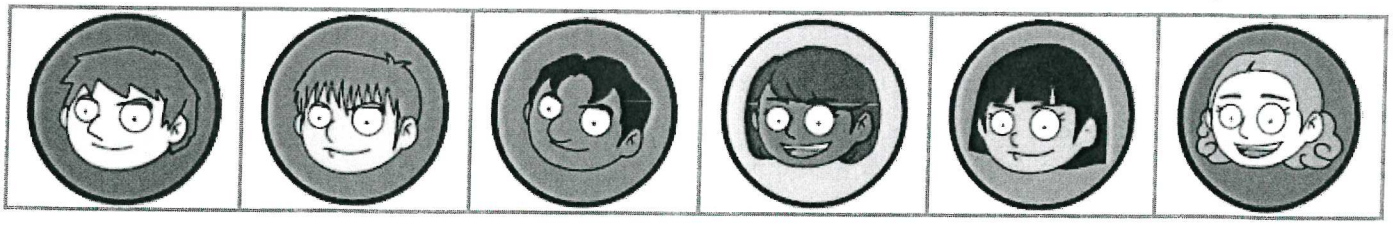
1. Make a dice!

Cut out the dice. If possible, stick or print on card to make it stronger. Fold along the dotted (- - -) line and glue the shaded parts together.



2. Make counters!

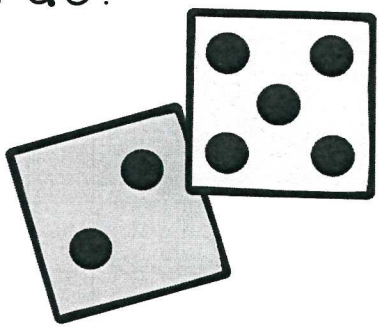
Cut out the counters. If possible, stick or print on card to make them stronger.



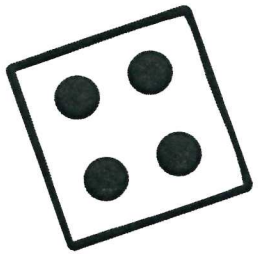
Roll-an-Expression Dice Game

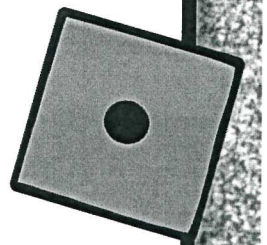
Practice evaluating algebraic expressions with the fun and engaging addition of dice! You are provided with four game cards:

- One variable – basic– A
- One variable – advanced – B
- Two variables – basic– A
- Two variables – advanced – B



The game is simple. Roll the dice to determine what x and y represent. Work space provided to show the substitution of each variable. It's that easy! Enjoy!





- *Erin*-

Algebraic Expressions Dice Game – One Variable (A)

Expression	x =	Workspace (show expression with substitution for x)	Final Answer
$2x + 30$			
$5x - 2$			
$7 + 3x - 4$			
$4x - 2^2 + 3$			
$5x + (6 \times 3)$			
$10x - 3^2$			
$6 + 7x - 10$			

Algebraic Expressions Dice Game – Two Variables (A)

Expression	x =	y =	Workspace (show expression with substitution for x)	Final Answer
$11x + 3y$				
$5y - 2x + 15$				
$20 + 4x - 4y$				
$4x - 2 + 3y$				
$5x + 3y - 9$				
$10y - 2 + 5x$				
$8x + 4y + 3^3$				

Algebraic Expressions Dice Game – One Variable (B)

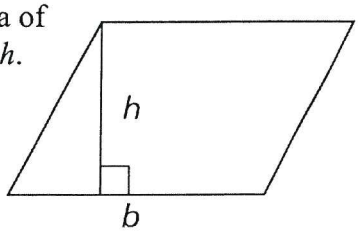
Expression	x =	Workspace (show expression with substitution for x)	Final Answer
$\frac{50}{x} + 4$			
$\frac{6x}{2} - 3$			
$2^x + (12 - x)$			
$\frac{50 - x}{2} + (3 \times 2)$			
$5(\frac{4x}{2})$			
$9x - 2 + x^2$			
$\frac{36 + 3}{3} + 8x$			

Algebraic Expressions Dice Game – Two Variables (B)

Expression	x =	y =	Workspace (show expression with substitution for x)	Final Answer
$\frac{100}{x} + 4y$				
$\frac{4x}{2} + 21$				
$2^x + y(12 \div 4)$				
$\frac{50 - x}{2} + 3y$				
$8(x + 5) + y$				
$14y - 2 + x^2$				
$\frac{45}{5} + (2x + y)$				

Lesson 7.1 Notes

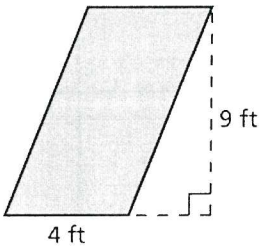
The *area* of a polygon is the amount of surface it covers. The area of a parallelogram is the product of its base b and its height h: $A = bh$.



Any side of a parallelogram can be the base. The height must be perpendicular to the base.

EXAMPLE Finding Areas of Parallelograms

Find the area of the parallelogram.



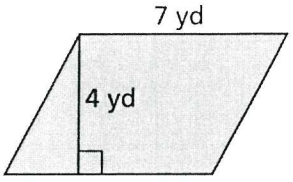
$A = bh$	Write the formula for area of a parallelogram.
$= (4)(9)$	Substitute 4 for b and 9 for h.
$= 36$	Multiply.

▶ The area of the parallelogram is 36 square feet.

Sometimes an area needs to be converted into another type of unit.

EXAMPLE Finding the Area of a Parallelogram

Find the area of the parallelogram in square feet.



$A = bh$	Write the formula for area of a parallelogram.
$= (7)(4)$	Substitute 7 for b and 4 for h.
$= 28$	Multiply.

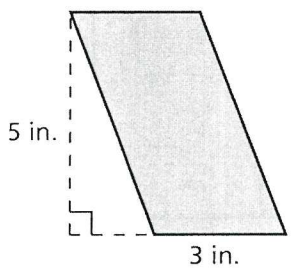
The area of the parallelogram is 28 square yards, but you are asked to find the area in square feet. To convert the area to square feet, use a conversion factor.
Notice that $1\ \text{yd}^2 = (1\ \text{yd})(1\ \text{yd}) = (3\ \text{ft})(3\ \text{ft}) = 9\ \text{ft}^2$.

$$28\ \text{yd}^2 = 28\ \text{yd}^2 \times \frac{9\ \text{ft}^2}{1\ \text{yd}^2} = 252\ \text{ft}^2$$

▶ The area of the parallelogram is 28 square yards, or 252 square feet.

7.1 Check for Understanding

1.



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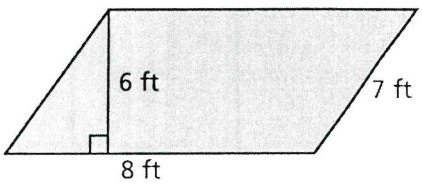


Name _____ Date _____

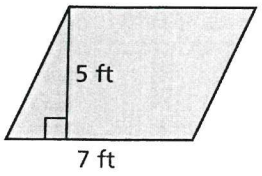
7.1 Puzzle Time

What Is A Teacher's Favorite Ice Cream Flavor?

Write the letter of each answer in the box containing the exercise number.

Find the area of the parallelogram.

1.



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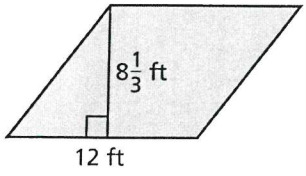

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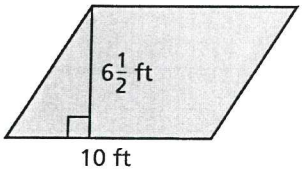

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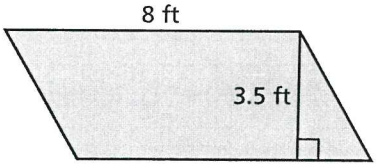
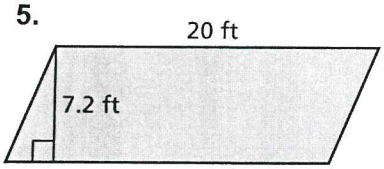


5.



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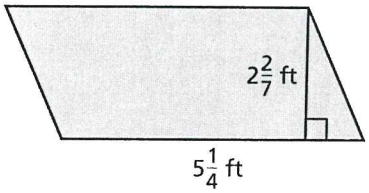


Answers

L. 100 ft^2

A. 144 ft^2

O. 35 ft^2

L. 12 ft^2

T. 10,080 $in.^2$

H. 6,912 $in.^2$

A. 65 ft^2

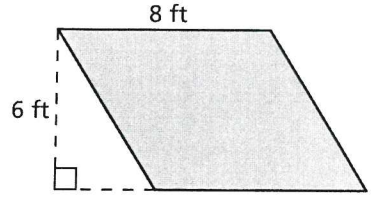
K. 108 ft^2

E. 28 ft^2

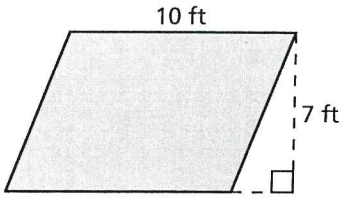
C. 44 ft

Find the area of the parallelogram.

7. Area = _____ $in.^2$



8. Area = _____ $in.^2$



9. A badminton court has an area of 880 square feet. The width of the court is 20 feet. What is the length of the badminton court?

10. You are playing the game Four Square on a 12-foot by 12-foot court. Your square is 6-foot by 6-foot. What is the area of the Four Square court not including your square?

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

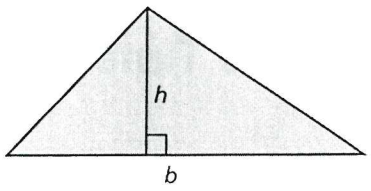
Lesson 7.2 Notes

Key Idea

Area of a Triangle

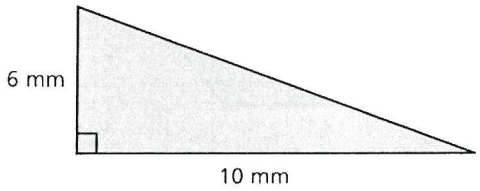
Words The area A of a triangle is one-half the product of its base b and its height h.

Algebra $A = \frac{1}{2}bh$



EXAMPLE Finding the Area of a Triangle

Find the area of the triangle.



The base of the triangle is 10 millimeters, and the height is 6 millimeters.

$A = \frac{1}{2}bh$ Write the formula for the area of a triangle.

$= \frac{1}{2}(10)(6)$ Substitute 10 for b and 6 for h.

$= 5(6)$ Multiply $\frac{1}{2}$ and 10.

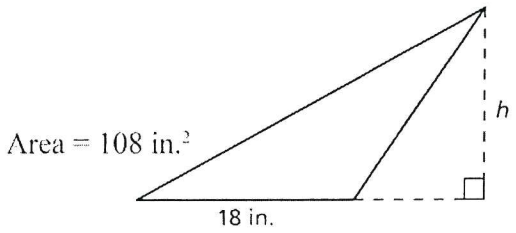
$= 30$ Multiply 5 and 6.

▶ The area of the triangle is 30 square millimeters.

of a triangle. Substitute for the area and the given dimension, then solve for the missing dimension.

EXAMPLE Finding a Missing Dimension

Find the height of the triangle.



$A = \frac{1}{2}bh$ Write the formula for the area of a triangle.

$108 = \frac{1}{2}(18)h$ Substitute 108 for A and 18 for b.

$108 = 9h$ Multiply $\frac{1}{2}$ and 18.

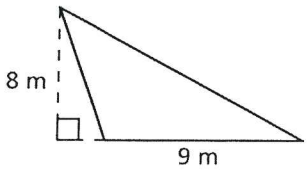
$\frac{108}{9} = \frac{9h}{9}$ Division Property of Equality

$12 = h$ Simplify.

▶ So, the height of the triangle is 12 inches.

Find the area of the triangle.

1.



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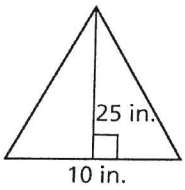

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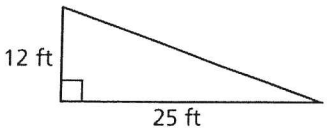


Name _____ Date _____

7.2 Puzzle Time

Did You Hear About The...

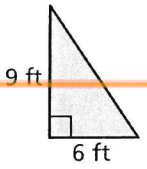
A	B	C	D	E	F
G	H	I	J		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

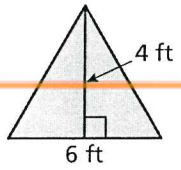
16 ft^2 WITH	14 ft^2 PET	35 ft^2 WATCH
12 ft^2 THAT	75 ft^2 AND	29 ft^2 TAIL
28 ft^2 SWALLOWED	22 ft^2 UP	154 ft^2 LEASH

Find the area of a triangle.

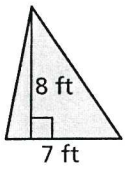
A.



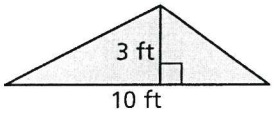
B.



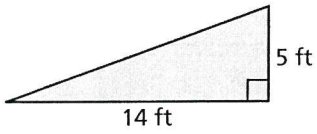
C.



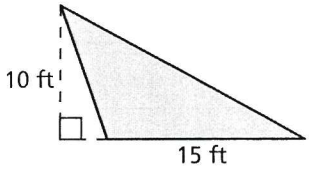
D.



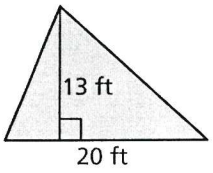
E.



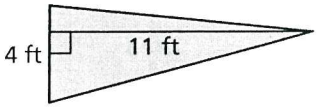
F.



G.



H.



130 ft^2 ENDED	32 ft^2 CAT	168 ft^2 TICKS
82 ft^2 FLEAS	15 ft^2 A	140 ft^2 WAS
54 ft^2 BARKED	60 ft^2 WHO	27 ft^2 DOG

I. Your neighbor adds a triangular section to his driveway with a base of 4 feet and a height of 8 feet. What is the area of the new section of driveway?

J. A triangular flower bed has a base of 12 feet and a height of 28 feet. What is the area of the flower bed?

7.3 Notes

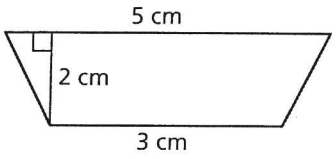
To find the area of a trapezoid, you can decompose the trapezoid into a triangle and a rectangle. Then add the areas of the figures together.

To find the area of a kite, you can decompose the kite into two triangles. Then add the areas of the triangles together.

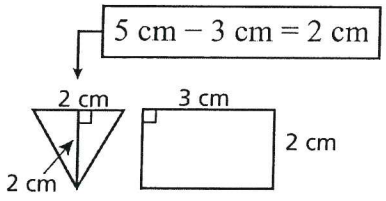
EXAMPLE Finding Areas of Trapezoids and Kites

Find the area of each figure.

a.



Decompose the trapezoid into a triangle and a rectangle. Find the sum of the areas of the figures.

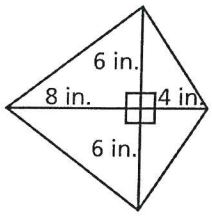


$$\begin{pmatrix}\text{Area of}\\ \text{trapezoid}\end{pmatrix} = \begin{pmatrix}\text{Area of}\\ \text{triangle}\end{pmatrix} + \begin{pmatrix}\text{Area of}\\ \text{rectangle}\end{pmatrix}$$

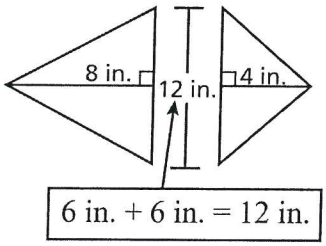
$$\begin{aligned} A &= \tfrac{1}{2}bh + \ell w \\ &= \tfrac{1}{2}(2)(2) + (3)(2) \\ &= 2 + 6 \\ &= 8 \end{aligned}$$

▶ The area of the trapezoid is 8 square centimeters.

b.



Decompose the kite into two triangles. Find the sum of the areas of the triangles.

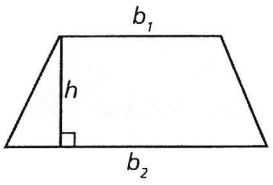


$$\begin{pmatrix}\text{Area}\\ \text{of kite}\end{pmatrix} = \begin{pmatrix}\text{Area of}\\ \text{triangle}\end{pmatrix} + \begin{pmatrix}\text{Area of}\\ \text{triangle}\end{pmatrix}$$

$$\begin{aligned} &= \tfrac{1}{2}bh + \tfrac{1}{2}bh \\ &= \tfrac{1}{2}(12)(8) + \tfrac{1}{2}(12)(4) \\ &= 48 + 24 \\ &= 72 \end{aligned}$$

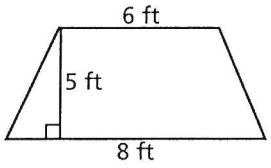
▶ The area of the kite is 72 square inches.

The formula for the area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$.



EXAMPLE Finding the Area of a Trapezoid

Find the area of the trapezoid.



$A = \frac{1}{2}h(b_1 + b_2)$ Write the formula for the area of a trapezoid.

$= \frac{1}{2}(5)(6 + 8)$ Substitute 5 for h, 6 for b_1, and 8 for b_2.

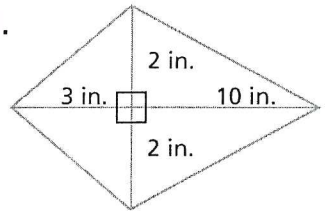
$= \frac{1}{2}(5)(14)$ Add 6 and 8.

$= 35$ Multiply.

▶ The area of the trapezoid is 35 square feet.

Find the area of the figure.

1.



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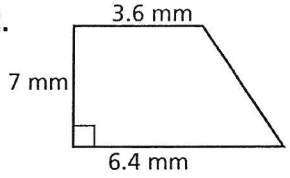
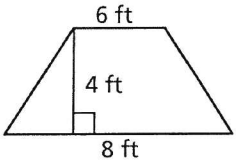
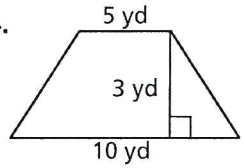


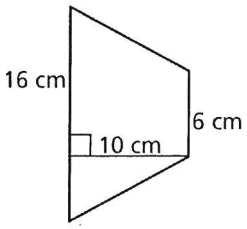
3.



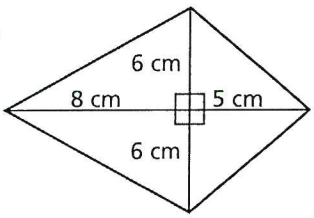
4.



5.



6.



Name _____ Date _____

7.3 Puzzle Time

How Do You Fix A Broken Pizza?

A	B	C	D	E	F
G	H	I	J	K	

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

42 in.^{2} TO
7 in.^{2} WAS
70 in.^{2} KEPT
49 in.^{2} DRIVE
84 in.^{2} WASN'T
54 in.^{2} HARD
60 in.^{2} KEYS
15 in.^{2} COMPUTER
80 in.^{2} BECAUSE

Find the area of the trapezoid.

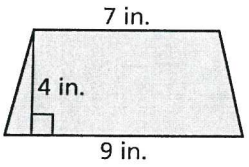
A. $b_1 = 8$ in.; $b_2 = 12$ in.; $h = 5$ in.

B. $b_1 = 3$ in.; $b_2 = 7$ in.; $h = 3$ in.

C. $b_1 = 10$ in.; $b_2 = 14$ in.; $h = 8$ in.

D. $b_1 = 7$ in.; $b_2 = 17$ in.; $h = 7$ in.

E.



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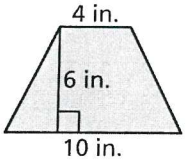

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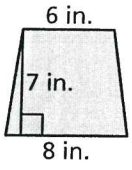

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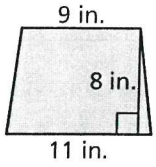

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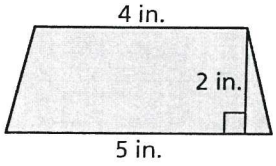

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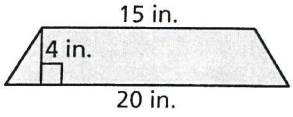


K. A rearview mirror is in the shape of a trapezoid that is 11 inches long across the bottom, 9 inches long across the top, and 3 inches high. What is the area of the rearview mirror?

9 in.^{2} IT
96 in.^{2} THAT
100 in.^{2} DID
50 in.^{2} THE
90 in.^{2} WOULD
21 in.^{2} MEMORY
30 in.^{2} CRASHING
18 in.^{2} BOOTING
32 in.^{2} ALLOWED

BUMP GAME DIRECTIONS

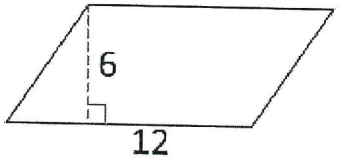
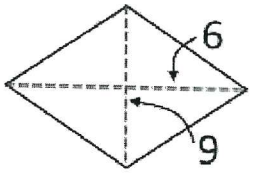
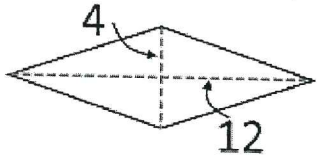
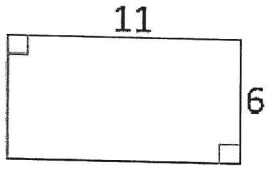
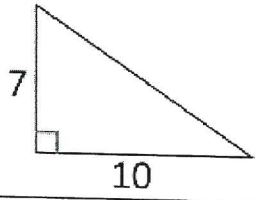
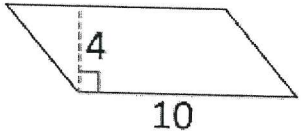
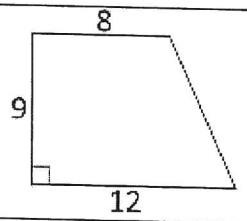
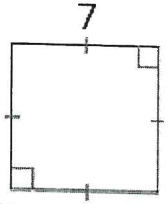
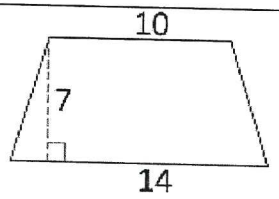
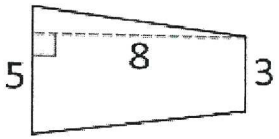
Supplies Needed: Each player needs 2 dice and 10 game pieces. Game pieces can be 2-sided, color counters, snap cubes, or any other pieces that allow each player to have a unique color. Each set of 2 opponents should share 1 game board.

Getting Started: To determine who goes first, each student should roll his or her dice and find the sum. The player with the greatest sum goes first. If there is a tie, roll again.

Playing the Game: The first player should again roll his or her dice and find the sum. Then, he or she should find that sum on the chart and perform the mathematical task in that row. Next, that player should use a marker to cover the corresponding answer on the top of the game board.

Next, the second player takes a turn. If the answer already has a marker on it, the player can bump the marker off of the board and replace it with his or her own marker. If a player has put two markers on a space, the space is locked and the markers can no longer be bumped.

Winning the Game: The first player to place all ten of his or her markers on the board is the winner. If time runs out before any player has placed all 10 pieces of the board, then the player with the most pieces on the board at that time is the winner.

Sum ↓	Calculate the area of each polygon in square units.		
2		8	
3		9	
4		10	
5		11	
6		12	

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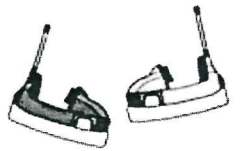
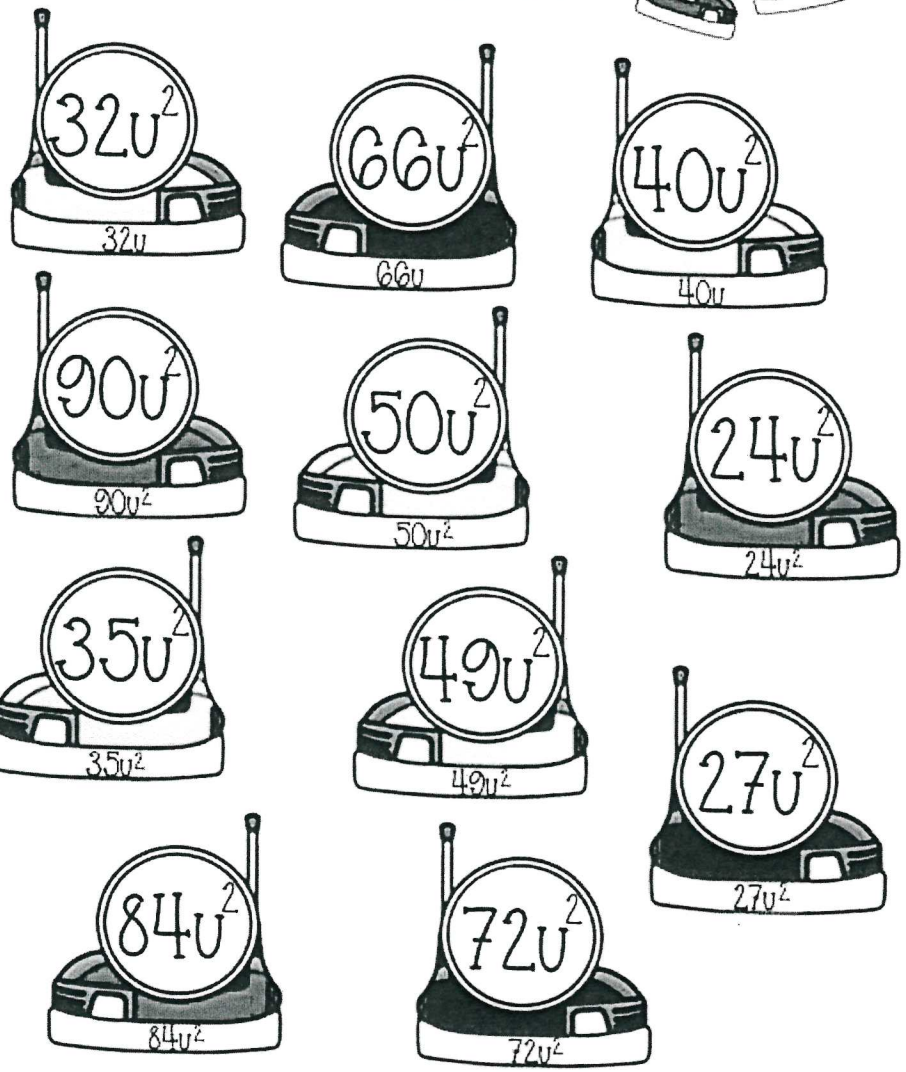
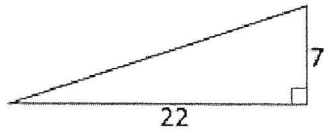
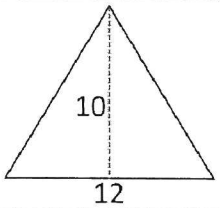
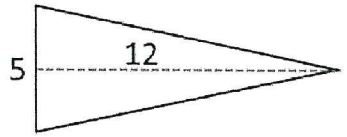
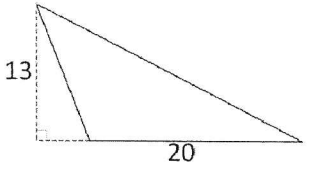
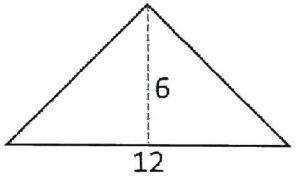
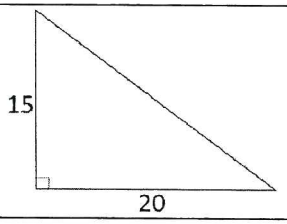
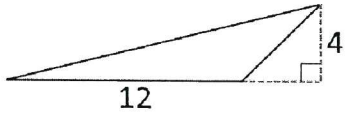
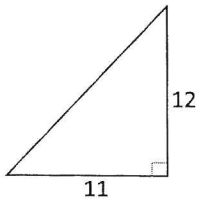
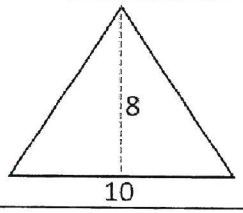
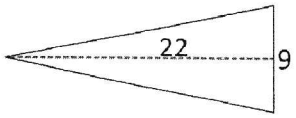




Sum ↓	Calculate the area of each triangle in square units.		
2		8	
3		9	
4		10	
5		11	
6		12	

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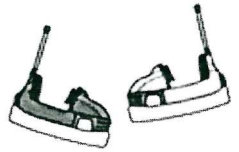

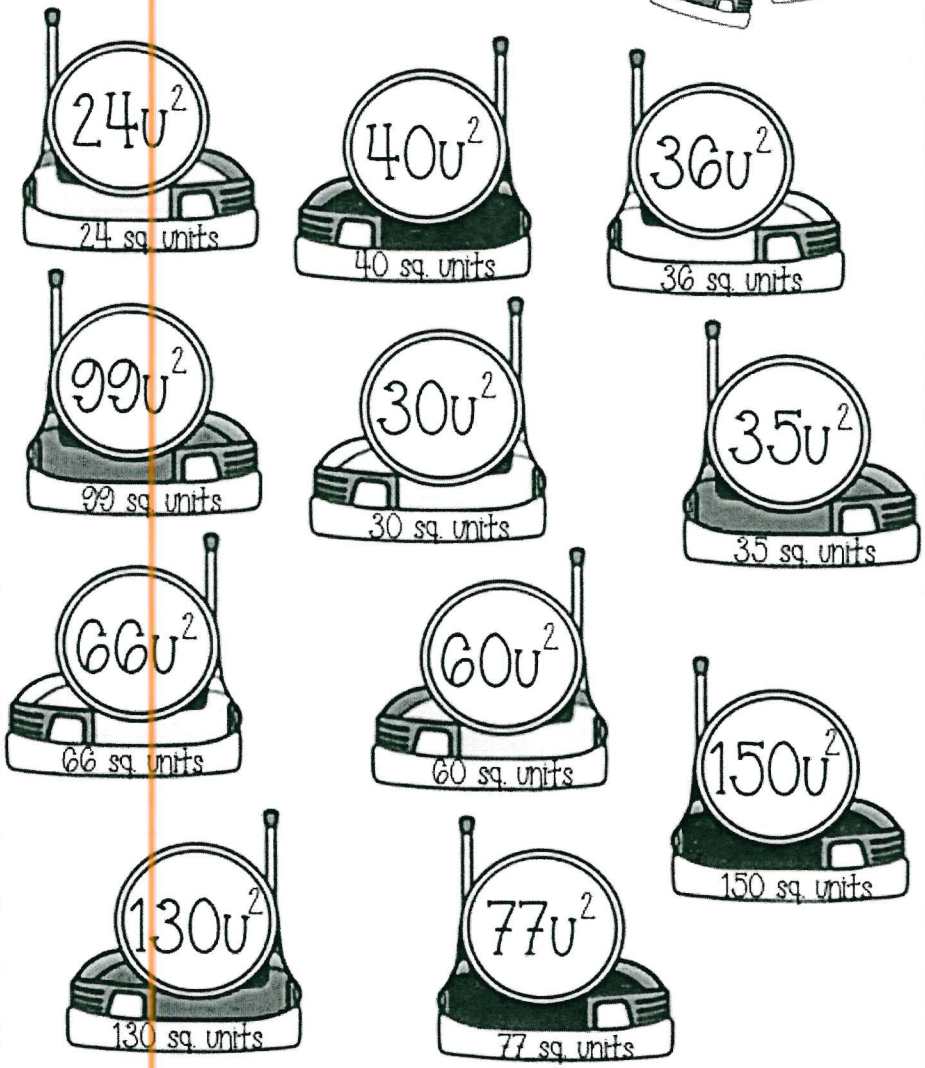

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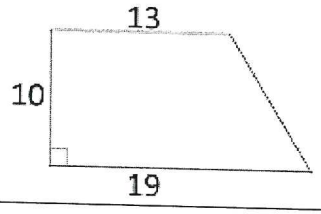
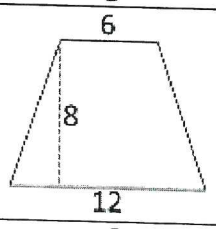
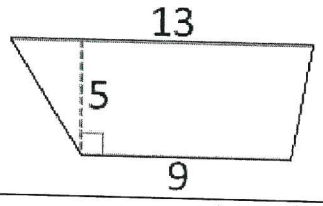
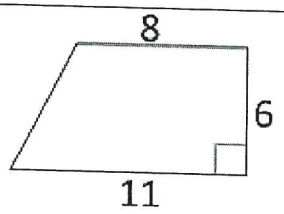
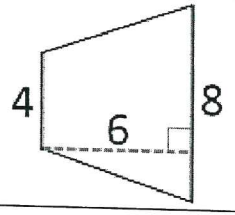
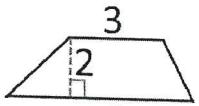
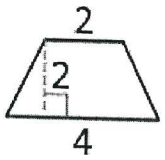
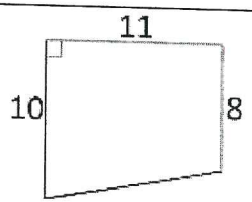
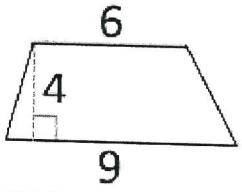
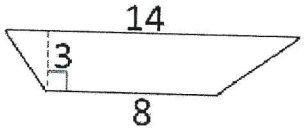
2		8	
3		9	
4		10	
5		11	
6		12	

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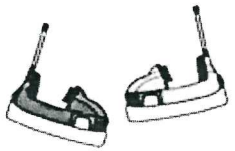
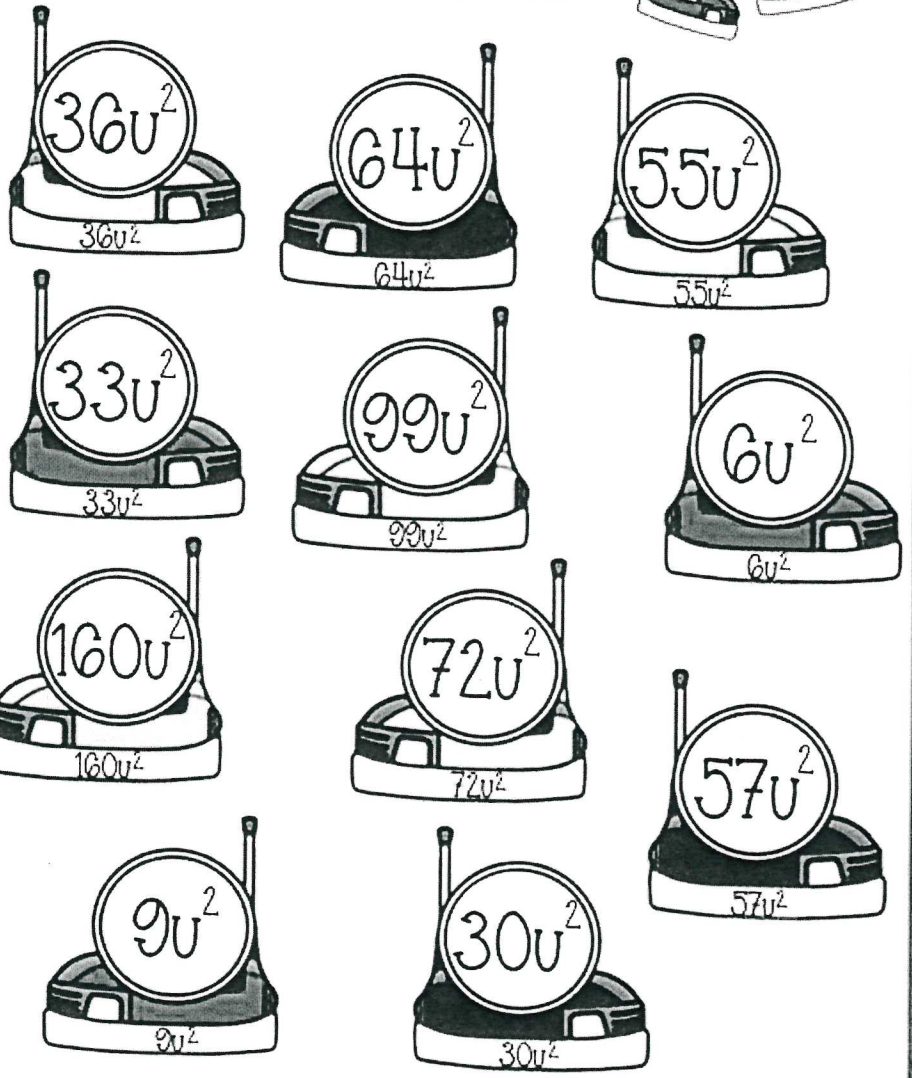




Answer Keys

6.1 Check for Understanding

1. $x - 12 = 19$
2. $\frac{1}{3}w = 16$
3. $117 = m + 32$
4. $q \div 5 = 8$ or $\frac{q}{5} = 8$
5. $a + 42 = 31$
6. $z - 15 = 32$

6.1 Puzzle - It seems no one can eat just one potato ship

6.2 Check for Understanding

1. $x + 5 = 10$; $x = 5$
   $5 + 5 = 10$ yes!
2. $g - 4 = 4$, $g = 8$
   $8 - 4 = 4$ yes!
3. $y + 8 = 18$; $y = 26$
   $26 + 8 \neq 18$ no!
4. $40 - n = 12$; 32
   $40 - 32 \neq 8$; no!

1. $z + 4 = 6$
   $-4 \quad -4$
   $z = 2$
   $2 + 4 = 6$
2. $x - 5 = 20$
   $+5 \quad +5$
   $x = 25$
   $25 - 5 = 20$
3. $d + 12 = 21$
   $-12 \quad -12$
   $d = 9$
   $9 + 12 = 21$
4. $f - 21 = 10$
   $+21 \quad +21$
   $f = 31$
   $31 - 21 = 10$

6.2 Puzzle – Mice Krispies

6.3 Check for Understanding

1. $4a = 16$
$\div 4 \quad \div 4$
$a = 4$
$4(4) = 16$

2. $\frac{y}{25} = 5$
$25\left(\frac{y}{25}\right) = 5 \times 25$
$y = 125$
$\frac{125}{25} = 5$

3. $28 = 4n$
$\div 4 \quad \div 4$
$7 = n$
$28 = 4(7)$

④ $y \div 12 = 7$
$\times 12 \quad \times 12$
$y = 84$
$84 \div 12 = 7$

6.3 Puzzle If this heavy rain keeps up my name will change and I will be called mud.

6.4 Check for Understanding

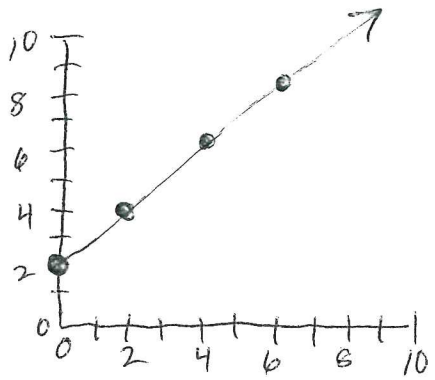
1. $y = 5x$ $(\overset{x}{1}, \overset{y}{10})$
$10 = 5(1)$ No
$10 = 5$

② $y = 3x + 4$ $(\overset{x}{0}, \overset{y}{4})$
$4 = 3(0) + 4$ Yes
$4 = 0 + 4$
$4 = 4$

③ $y = 2x - 7$ $(\overset{x}{6}, \overset{y}{5})$
$5 = 2(6) - 7$
$5 = 12 - 7$ Yes
$5 = 5$

4. $y = 6x + 1$ $(\overset{x}{2}, \overset{y}{11})$
$11 = 6(2) + 1$
$11 = 13$ No

x	$y = x + 2$	y	(x, y)
0	$y = 0 + 2$	2	(0, 2)
2	$y = 2 + 2$	4	(2, 4)
4	$y = 4 + 2$	6	(4, 6)
6	$y = 6 + 2$	8	(6, 8)



6.4 Puzzle – Mussels

7.1 Check for Understanding

1. $5 \times 3 = 15\ in^2$
2. $8 \times 6 = 48\ ft^2$

7.1 Puzzle

CHALK-O-LATE

7.2 Check for Understanding

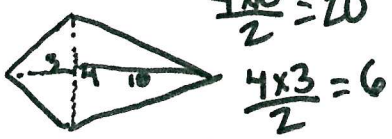
1. $\frac{9 \times 8}{2} = 36\ m^2$
2. $\frac{10 \times 25}{2} = 125\ in^2$

3. $\frac{25 \times 12}{2} = 150\ ft^2$

7.2 Puzzle - Dog that swallowed a watch and ended up with ticks.

7.3 Check for understanding

1. $26\ in^2$

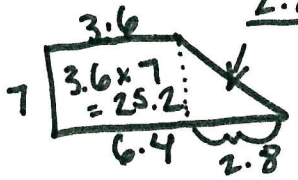


$\frac{4 \times 10}{2} = 20$

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

$20 + 6 = 26$

2. $35\ mm^2$



$\frac{2.8 \times 7}{2} = 9.8$

$25.2 + 9.8 = 35$

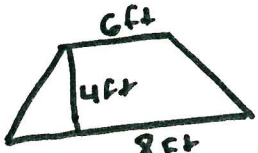
$A = \frac{1}{2} h (b_1 + b_2)$

$= \frac{1}{2} (7)(6.4 + 3.6)$

$= \frac{1}{2} (7)(10)$

$= 35$

3. $28\ ft$



$A = \frac{1}{2} h (b_1 + b_2)$

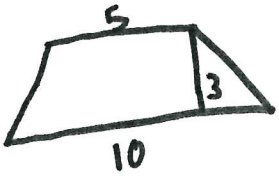
$= \frac{1}{2} (4)(8 + 6)$

$= \frac{1}{2} (4)(14)$

$= 28$

7.3 Check for understanding continued

4) $22.5\ yd^2$



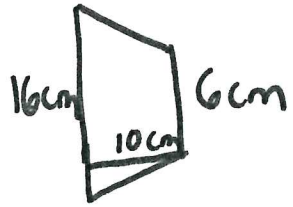
$A = \frac{1}{2} h (b_1 + b_2)$

$= \frac{1}{2}(3)(10+5)$

$= \frac{1}{2}(3)(15)$

$= 22.5\ yd^2$

5) $110\ cm^2$



$A = \frac{1}{2} h (b_1 + b_2)$

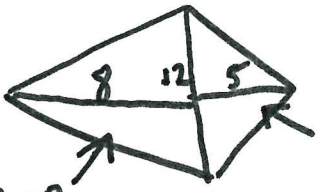
$= \frac{1}{2}(10)(16+6)$

$= \frac{1}{2}(10)(22)$

$= 110\ cm^2$

6) $78\ cm^2$

$48 + 30 = 78$



$\frac{12 \times 5}{2} = 30$

$\frac{12 \times 8}{2} = 48$

7.3 Puzzle

The computer that wasn't allowed to drive because it kept crashing.