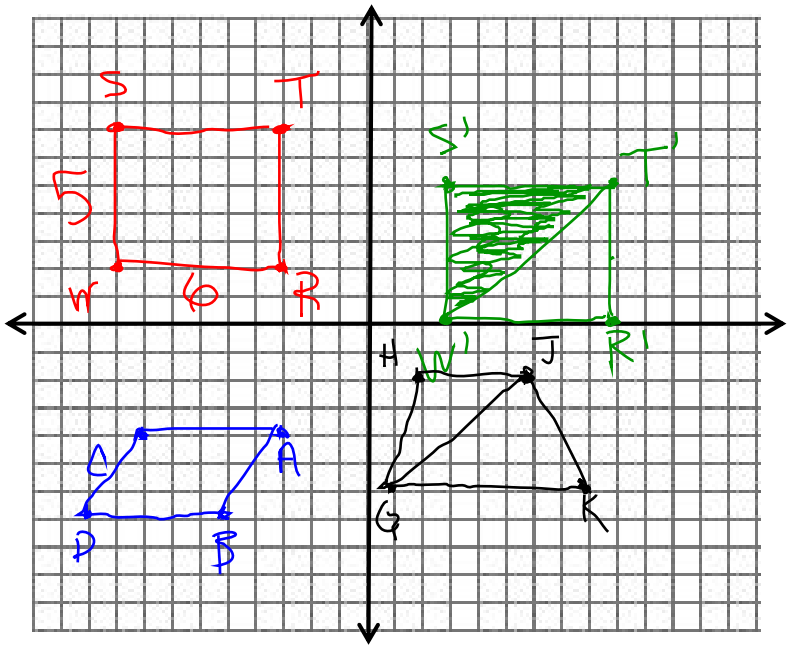
Area and Perimeter

Name:_____ Date:_____



RECTANGLE:
$A = l \times w$

PARALLELOGRAM:
$A = b \times h$

TRIANGLE:
$A = \frac{bh}{2}$

TRAPEZOID:

PERIMETER:

1. Plot the following points on the graph above: R(-3, 2), T(-3, 7), W(-9, 2), S(-9, 7). Now connect the points.
2. Name the shape: rectangle. Count the number of squares contained within the figure 30.
3. Is there an easier way to find the number of squares contained within the figure? Explain:
   l x w
4. So to find the area for a rectangle you could use the formula: A = l x w
5. Transfer this formula into the box to the right of the graph that is labeled "RECTANGLE". Explain why your final units should be listed as "units^2".
   5 cm x 6 cm = 30 cm^2
6. Next translate (move) the figure 12 units right and two units down. Is the new figure congruent to the old one? yes How do you know? all the points are the same, just moved shape
7. What figures are created when you draw a diagonal through this figure? 2 triangles
   Do these new figures have equal areas? yes Color in one of the shapes created in the new figure.
8. What part of the rectangle area does this new shape represent? 1/2 The formula to find the area of a triangle is: $\frac{bh}{2}$
9. When using this formula, the "base" and the "height" of the triangle are l + w of rectangle
10. Transfer the formula for a triangle into the boxes at the right of the graph.

1. Plot the following points on the graph above: A(-3, -4), B(-5, -7), C(-8, -4), D(-10, -7). Now connect the points.

2. Name the shape: Parallelogram What is the height of the figure? 3 What is the length of the base? 5

3. The formula to find the area of a parallelogram is base x height.

4. When using this formula, the "base" and the "height" are l + w.

5. Transfer the formulas for these figures into the boxes at the right of the graph.

A = bh

1. Plot the following points on the graph: H(2, -2), J(6, -2), K(8, -6), G(1, -6). Connect the points.

2. Name the shape: trapezoid What is the height of the figure? 4

3. Draw a diagonal. What two shapes are created? triangles Do they have the same height? yes

4. Do the triangles have the same base? no Fill in the following to find the area of this figure:

Area of Triangle #1	+	Area of Triangle #2
A = ½ *bh*	+	A = ½ *bh*
½ (7)(4)	+	½ (4)(4)
14	+	8
22		

- If you were to put this together into one formula it would look like this: $A = \frac{1}{2}b_1h + \frac{1}{2}b_2h$
- Above we noted that the bases would not be the same so one is represented with b_1 and the other is b_2.
- If you look at what the two pieces have that are the same you see ½ and h are the same for each.
- We could use the distributive property and pull those outside of a set of parenthesis leaving the bases (that are different) inside of the parenthesis. Now it looks like this: $A = \frac{1}{2} h(b_1 + b_2)$ The standard way that we see this formula written is $A = \frac{1}{2} h(b_1 + b_2)$.
- What property was used to move between these two formulas? Commutative

*** The two bases are always the sides that are parallel to one another. ***

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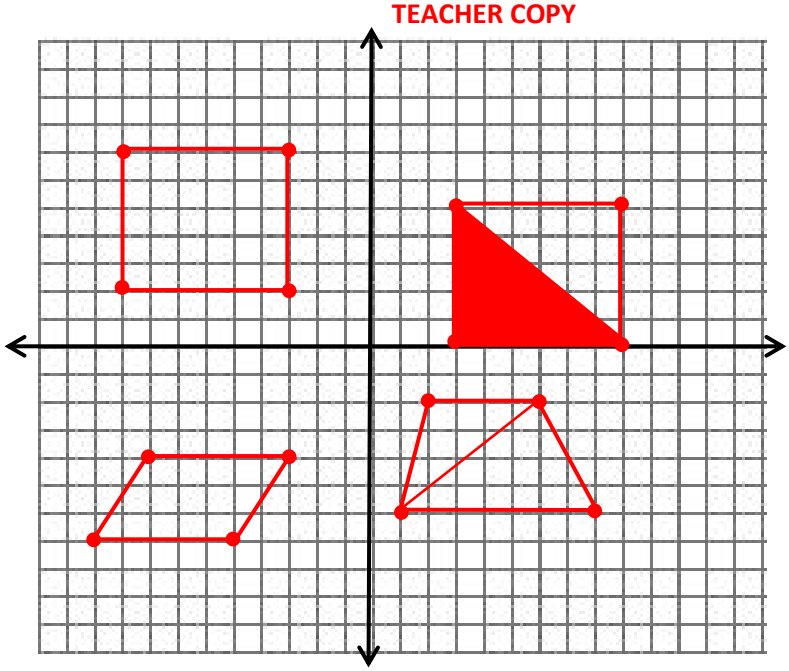

RECTANGLE **A = *l* x *w***
PARALLELOGRAM **A = *b* x *h***
TRIANGLE **A = ½ *b* x *h***
TRAPEZOID $A=\frac{1}{2}(b_1+b_2)h$ ~~$A=\frac{1}{2}(b_1 \times b_2)h$~~
PERIMETER **P = add all sides**

1. Plot the following points on the graph above: R(-3, 2), T(-3, 7), W(-9, 2), S(-9, 7). Now connect the points.

2. Name the shape:____**rectangle**____ Count the number of squares contained within the figure._**30**_

3. Is there an easier way to find the number of squares contained within the figure? Explain:

   instead of counting all squares you could multiply the number in the length times the number in the width

4. So to find the square area for a rectangle you could use the formula: _____**A = l x w**_____

5. Transfer this formula into the box to the right of the graph that is labeled "RECTANGLE". Explain why your final units should be listed as "units^2" _____**answers vary; the area represents the number of squares that it would take to fill the figure**_____

6. Next translate the figure 12 units right and two units down. Is the new figure congruent to the old one?_**yes**_

7. How do you know?___**the size did not change when it was translated-each point made the same move**___

8. What figures are created when you draw a diagonal through this figure?_____**triangles**__ Do these new figures have equal areas?___**yes**_____ Color in one of the triangles created in the new figure.

9. What part of the rectangle area does this represent?__**1/2**__ The formula to find the area of a triangle:_**A = ½ bh**
10. When plugging in this formula the "base" and the "height" of the triangle must be __**perpendicular**___.

1. Plot the following points on the graph above: A(-3, -4), B(-5, -7), C(-8, -4), D(-10, -7). Now connect the points.

2. Name the shape:___**parallelogram**___ What is the height of the figure?_**3 units** What is the length of the base?_**5**__

3. The formula to find the area of a __**parallelogram**____ is ___**A = bh**_.

4. When plugging in this formula the "base" and the "height" must be __**perpendicular**___.

5. Transfer the formulas for these figures into the boxes at the right of the graph.

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1. Plot the following points on the graph: H(2, -2), J(6, -2), K(8, -6), G(1, -6). Connect the points.

2. Name the shape:____**trapezoid**____ What is the height of the figure?___**4 units**____

3. Draw a diagonal. What two shapes are created?___**triangles**___ Do they have the same height?__**yes**__

4. Do the triangles have the same base?__**no**___ Fill in the following to find the area of this figure:

Area of Triangle #1	+	Area of Triangle #2
$A = \frac{1}{2}bh$	**+**	**$A = \frac{1}{2}bh$**
$\frac{1}{2}(4)(4)$	**+**	**$\frac{1}{2}(7)(4)$**
8	**+**	**14**
22 units^2		

If you were to put this together into one formula it would look like this: $A = \frac{1}{2}b_1h + \frac{1}{2}b_2h$

Above we noted that the bases would not be the same so one is represented with b_1 and the other is b_2.

If you look at what the two pieces have that are the same you see _**1/2**_ and _**h**__ are the same for each.

We could use the distributive property and pull those outside of a set of parenthesis leaving the bases (that are different) inside of the parenthesis. Now it looks like this: $A = \frac{1}{2}h(b_1 + b_2)$ The standard way that we see this formula written is $A = \frac{1}{2}(b_1 + b_2)h$. What property was used to move between these two formulas?_**communtative** The two bases are always the sides that are _____**parallel**___to one another.