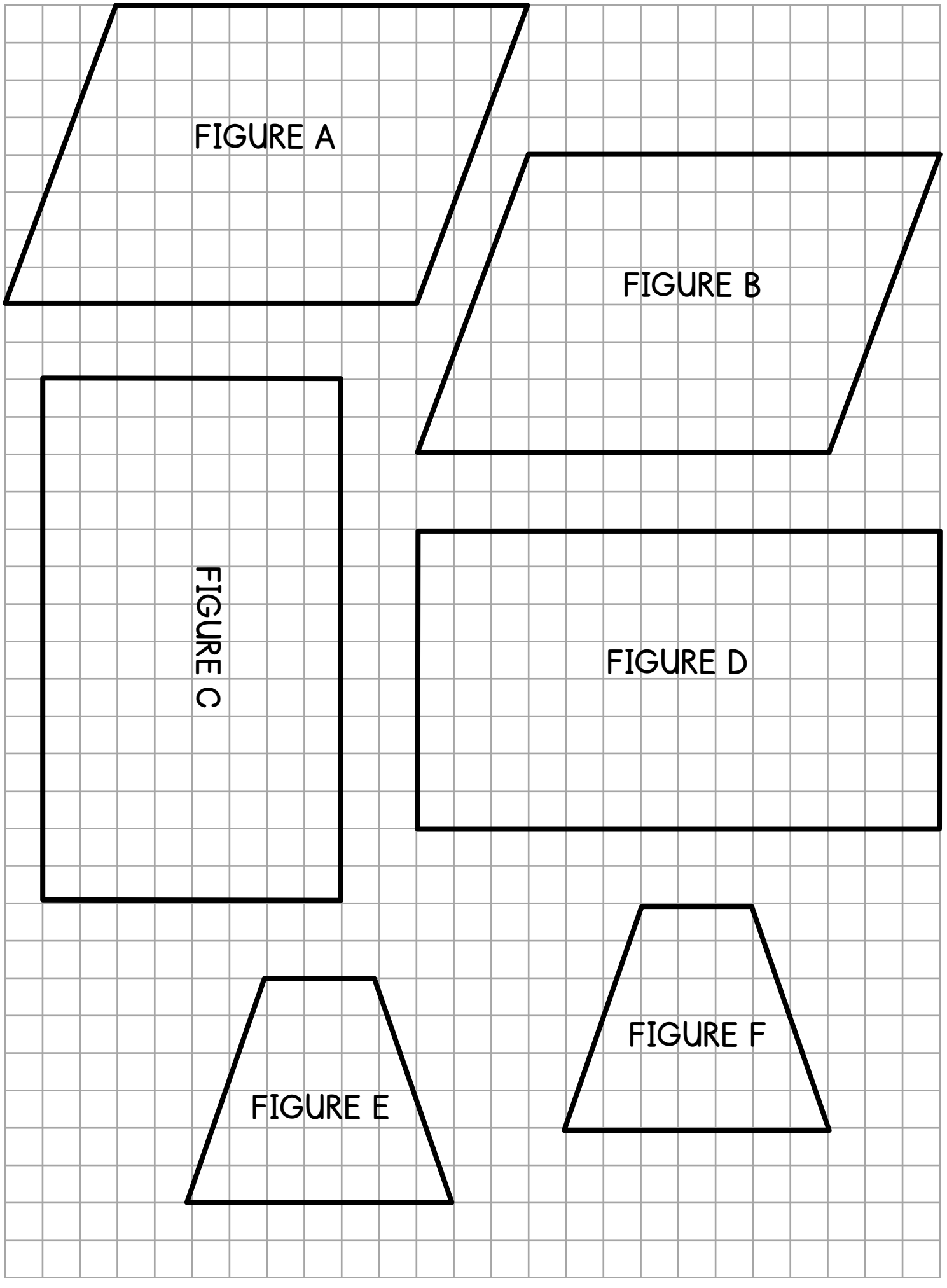


FIGURE A
FIGURE B
FIGURE C
FIGURE D
FIGURE E
FIGURE F

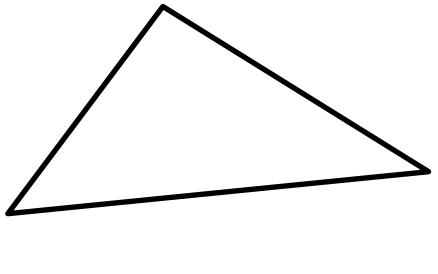
RUBRIC

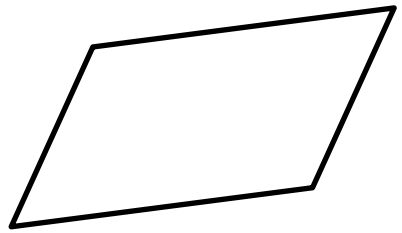
Name: _____

Date: _____ Class: _____

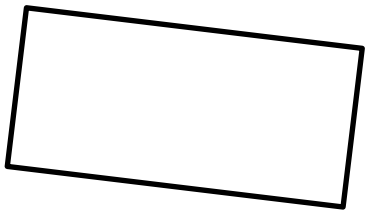
	ABOVE STANDARD	MET STANDARD	BELOW STANDARD
MATHEMATICAL CONTENT	Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes without error ____ points	Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes with few errors ____ points	Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes with several errors ____ points
MATHEMATICAL THINKING	Provides thoughtful reasoning and explanation ____ points	Provides some reasoning and explanation ____ points	Does not provide thoughtful reasoning and explanation ____ points
PARTICIPATION	Participates fully ____ points	Participates with minor redirects from teacher ____ points	Participates with major redirects from teacher ____ points
SHOWS WORK	Shows work for 100% of the questions ____ points	Shows the work for 80% or more of the questions ____ points	Shows work for less than 80% of the questions ____ points
FOLLOWS DIRECTIONS	Follows directions and criteria fully ____ points	Follows directions and criteria with few errors ____ points	Follows directions and criteria with multiple errors. ____ points

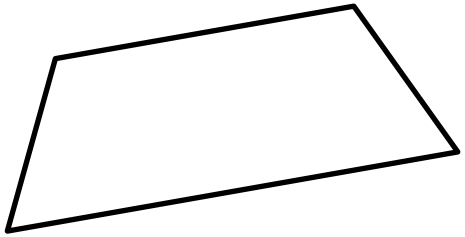
TOTAL POINTS : _____





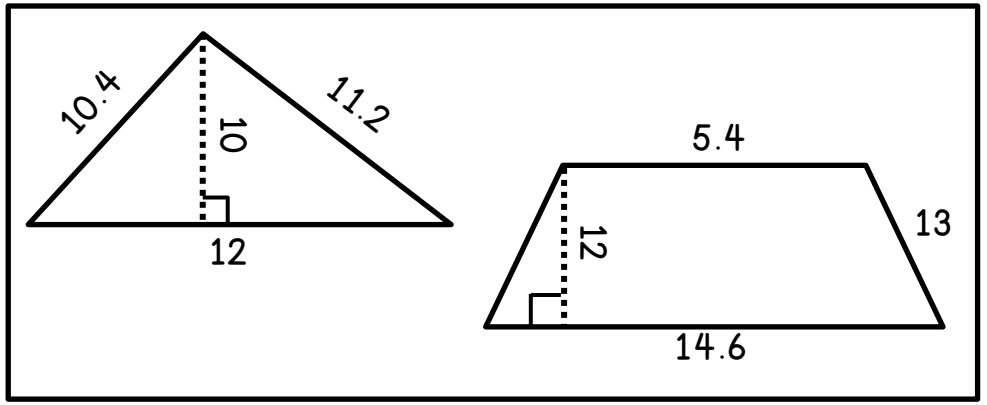
MODELING AREA





BY: _____

APPLY AREA



"to find the area of the triangle, you can use $A = \frac{1}{2}(10.4) \cdot 12$ because 10.4 is the tallest point" -Mo

"the area of the triangle is exactly half the area of the trapezoid" -Art

"the area of the triangle is equal to the area of the trapezoid because you get 120 with both formulas" -Priscilla

Based on your exploration and your understanding of the formulas, determine if you agree or disagree with the statements above.

I _____ with Mo because _____

_____

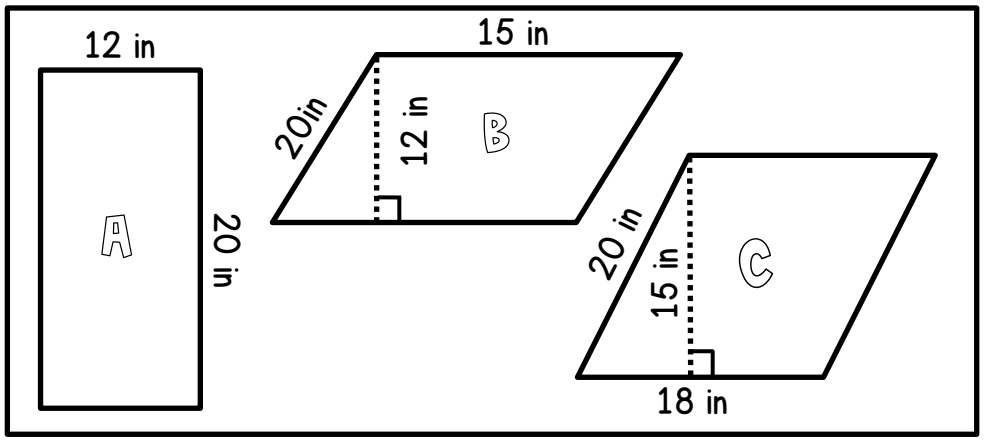
I _____ with Art because _____

_____

I _____ with Priscilla because _____

_____

APPLY AREA



"figures A and B will have the same area because you multiply 12(20)" -Ryan

"figure C has the largest area" -Li

"you can use the same formula to determine the area of shapes A, B, and C" -Felicia

Based on your exploration and your understanding of the formulas, determine if you agree or disagree with the statements above.

I _____ with Ryan because _____

_____

I _____ with Li because _____

_____

I _____ with Felicia because _____

_____

RECTANGLES

Cut out "Figure C" and glue it below. Label the base and height of the rectangle.

1. Count the number of squares for each of the measurements below:

a. base _____

b. height _____

c. total number of squares _____

2. How are the base and height related to the total number of squares?

_____

_____

_____

_____

TRIANGLES

The tables below show the areas of 3 triangles and 3 rectangles.

RECTANGLE

	BASE	HEIGHT	AREA
A	2	4	8
B	5	10	50
C	7	8	56

TRIANGLE

	BASE	HEIGHT	AREA
A	2	4	4
B	5	10	25
C	7	8	28

a. Using this information, describe how the area of the triangle is related to the area of the rectangle?

_____

_____

_____

b. Using your understanding of the area of the rectangle formula, write a formula to find the area of a triangle.

_____

_____

_____

TRAPEZOIDS

1. Count the number of squares for each of the measurements below:

a. base 1 _____

a. base 2 _____

b. height _____

c. approximate number of squares _____

2. How is the area of the trapezoid related to the area of the parallelogram?

_____

_____

3. What is another way you could break up the trapezoid or rearrange it into shapes to find the area? Apply your ideas to "Figure F" and paste the shapes below.

TRAPEZOIDS

Use your mathematics reference chart to record the formula for the area of a trapezoid. Label the various dimensions below.

a. What do you notice about the formula for the area of a trapezoid? How does this compare to the formula for the area of a parallelogram and the area of the triangle?

_____

_____

_____

Cut out "Figure E." Draw a horizontal line inside the trapezoid to create two figures with equal heights of 3 units. Then, rearrange the shape to form a parallelogram and paste it in the space below.

TRIANGLES

Cut out "Figure D." Draw a diagonal from one vertex to the opposite vertex. Cut along the line and label the triangles A and B.

1. Count the number of squares in the triangles for the measurements below:

a. base _____

b. height _____

c. approximate number of squares _____

2. How are the base and height related to the total number of squares?

_____

_____

3. Trace the outline of triangle A in the space above, then lay triangle B over the outline. What do you notice? How is this connected to the formula?

_____

_____

PARALLELOGRAMS

Given the shape below, draw lines to break the shape into triangles and rectangles.

a. Use these shapes to describe a potential method for finding the area of a parallelogram.

_____

_____

b. Test out your hypothesis by cutting and pasting "Figure A" into the pieces you described above.

c. Describe how the area of the figure changed when the parallelogram was decomposed.

_____

_____

PARALLELOGRAMS

Cut out "Figure B." Draw a vertical line from one vertex to the opposite base. Cut along your line, then arrange the pieces to form a rectangle. Paste your rectangle in the space below.

1. Count the number of squares for each of the measurements below:

a. base _____

b. height _____

c. approximate number of squares _____

2. Predict the formula for the area of a parallelogram.

_____

_____

3. Describe how the height of the parallelogram is represented. Label it on the figure above.

_____

_____

RUBRIC

Name: _____

Date: _____ Class: _____

	ABOVE STANDARD	MET STANDARD	BELOW STANDARD
MATHEMATICAL CONTENT	Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes without error ____ points	Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes with few errors ____ points	Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes with several errors ____ points
MATHEMATICAL THINKING	Provides thoughtful reasoning and explanation ____ points	Provides some reasoning and explanation ____ points	Does not provide thoughtful reasoning and explanation ____ points
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SHOWS WORK	Shows work for 100% of the questions ____ points	Shows the work for 80% or more of the questions ____ points	Shows work for less than 80% of the questions ____ points
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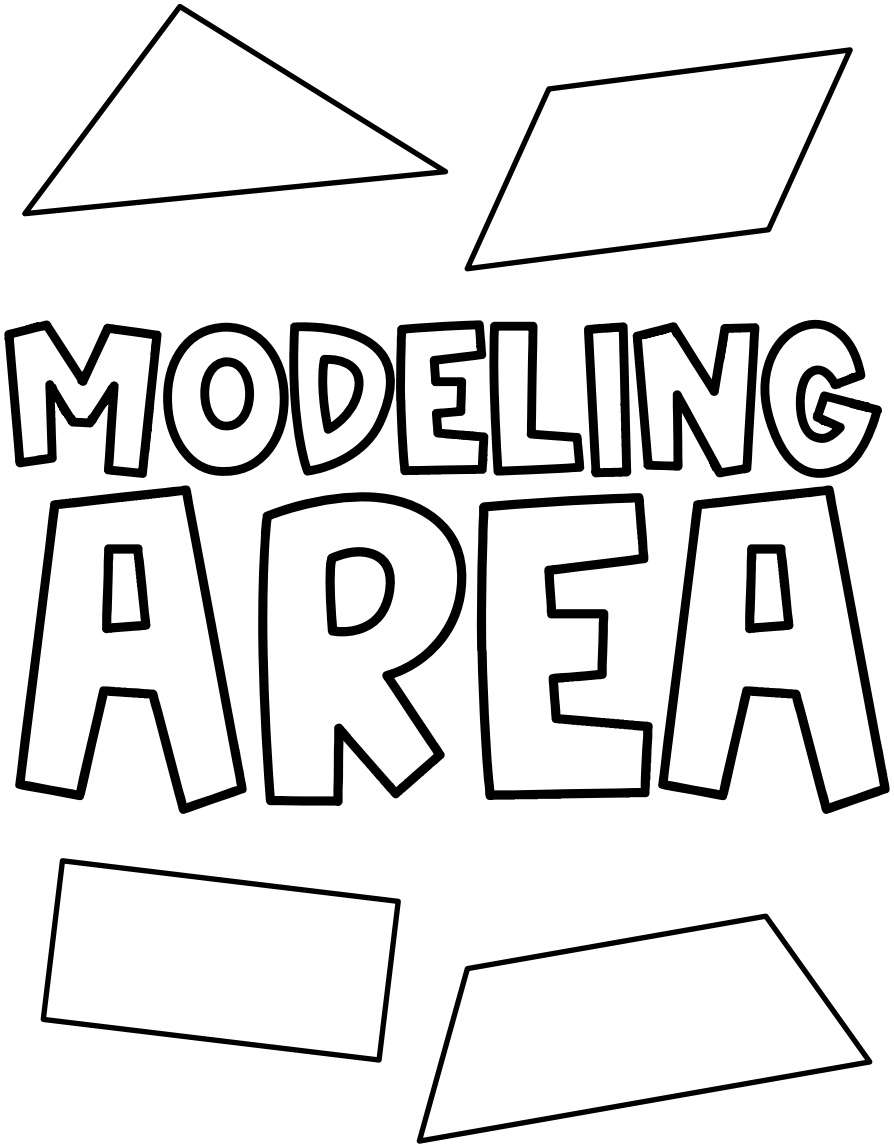
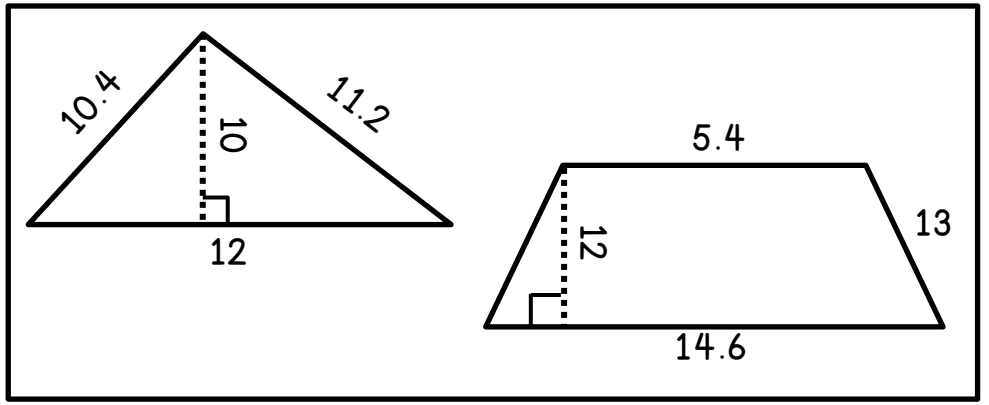
TOTAL POINTS : _____



MODELING AREA

BY: Answer Key

APPLY AREA



"to find the area of the triangle, you can use $A = \frac{1}{2}(10.4) \cdot 12$ because 10.4 is the tallest point" -Mo

"the area of the triangle is exactly half the area of the trapezoid" -Art

"the area of the triangle is equal to the area of the trapezoid because you get 120 with both formulas" -Priscilla

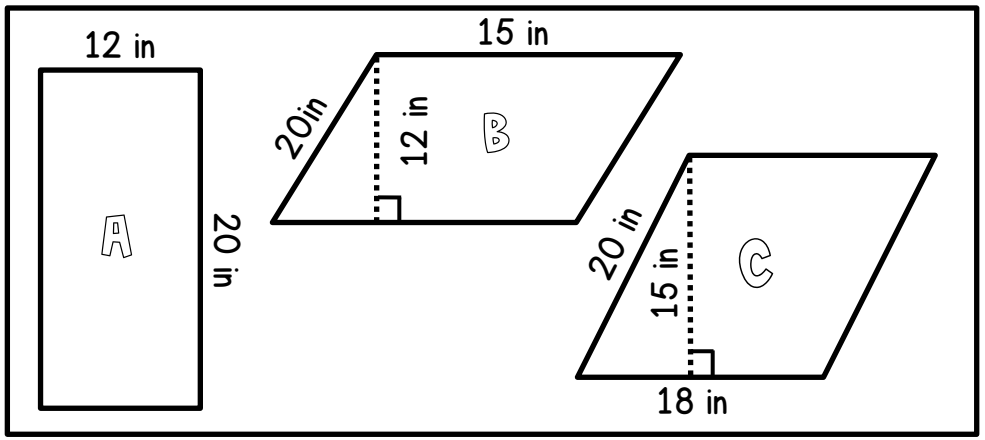
Based on your exploration and your understanding of the formulas, determine if you agree or disagree with the statements above.

I disagree with Mo because the height of the triangle must make a 90 degree angle with the base. The height is 10.

I agree with Art because the area of the triangle is 60 units^2 and the area of the trapezoid is 120 units^2.

I disagree with Priscilla because the triangle's area is $120(\frac{1}{2})$, or 60 units^2.

APPLY AREA



"figures A and B will have the same area because you multiply 12(20)" -Ryan

"figure C has the largest area" -Li

"you can use the same formula to determine the area of shapes A, B, and C" -Felicia

Based on your exploration and your understanding of the formulas, determine if you agree or disagree with the statements above.

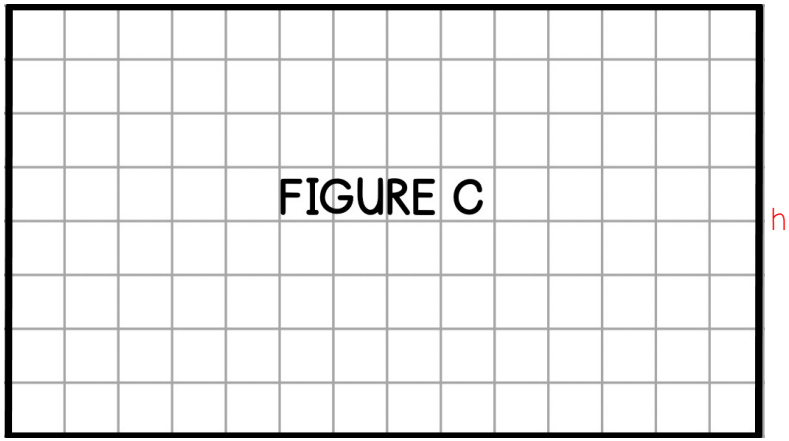
I disagree with Ryan because in figure B, you should multiply 12(15), since 20 is not the base or the height.

I agree with Li because the area of figure C is 270 units^2, while figure A is 240 units^2 and figure B is 180 units^2.

I agree with Felicia because both rectangles and parallelograms use the formula A=bh.

RECTANGLES

Cut out "Figure C" and glue it below. Label the base and height of the rectangle.



1. Count the number of squares for each of the measurements below:

a. base 14

b. height 8

c. total number of squares 112

2. How are the base and height related to the total number of squares?

Ex: When you multiply the base and the height, you will cover the entire rectangle, which gives you the total number of squares.

TRIANGLES

The tables below show the areas of 3 triangles and 3 rectangles.

RECTANGLE

	BASE	HEIGHT	AREA
A	2	4	8
B	5	10	50
C	7	8	56

TRIANGLE

	BASE	HEIGHT	AREA
A	2	4	4
B	5	10	25
C	7	8	28

a. Using this information, describe how the area of the triangle is related to the area of the rectangle?

Ex: The measurements of the base and height are the same, but the triangle area is half the rectangle area.

b. Using your understanding of the area of the rectangle formula, write a formula to find the area of a triangle.

Ex: $A = b(h)/2$ or $A = \frac{1}{2}(b)(h)$

TRAPEZOIDS

1. Count the number of squares for each of the measurements below:

a. base 1 7

a. base 2 3

b. height 6

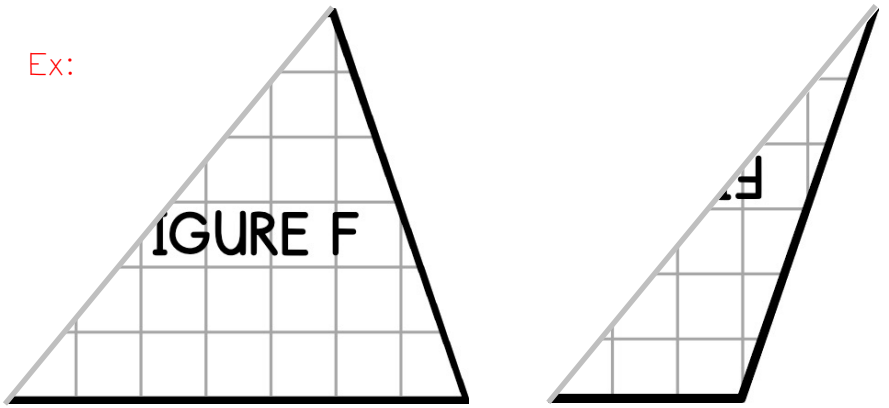
c. approximate number of squares 30

2. How is the area of the trapezoid related to the area of the parallelogram?

Ex: The area remained the same.

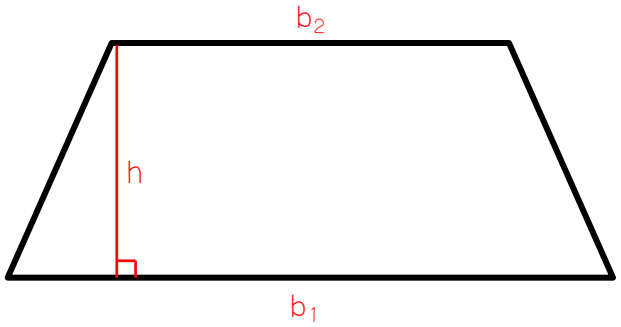
3. What is another way you could break up the trapezoid or rearrange it into shapes to find the area? Apply your ideas to "Figure F" and paste the shapes below.

Ex:



TRAPEZOIDS

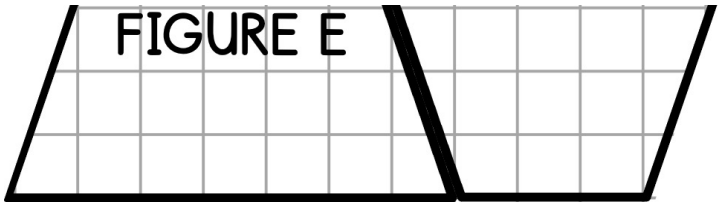
Use your mathematics reference chart to record the formula for the area of a trapezoid. Label the various dimensions below.



a. What do you notice about the formula for the area of a trapezoid? How does this compare to the formula for the area of a parallelogram and the area of the triangle?

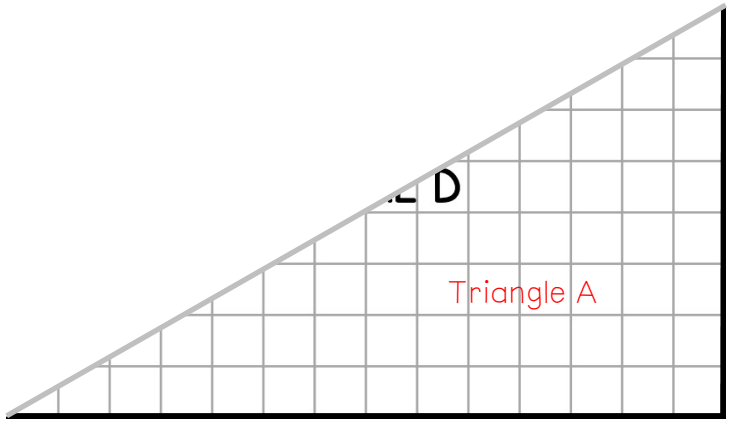
Ex: It has a $\frac{1}{2}$ in it like a triangle. It has two bases but they are added and then multiplied by the height.

Cut out "Figure E." Draw a horizontal line inside the trapezoid to create two figures with equal heights of 3 units. Then, rearrange the shape to form a parallelogram and paste it in the space below.



TRIANGLES

Cut out "Figure D." Draw a diagonal from one vertex to the opposite vertex. Cut along the line and label the triangles A and B.



1. Count the number of squares in the triangles for the measurements below:

a. base 14

b. height 8

c. approximate number of squares 56

2. How are the base and height related to the total number of squares?

Ex: The number of squares is half of the base times the height.

3. Trace the outline of triangle A in the space above, then lay triangle B over the outline. What do you notice? How is this connected to the formula?

Ex: The rectangle forms two triangles with the same area.

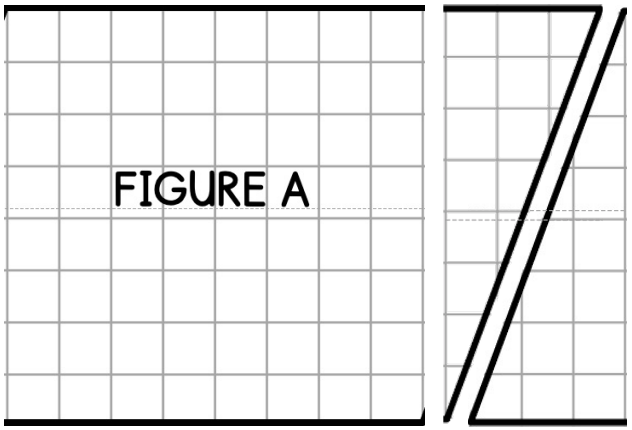
PARALLELOGRAMS

Given the shape below, draw lines to break the shape into triangles and rectangles.

a. Use these shapes to describe a potential method for finding the area of a parallelogram.

Ex: You could cut off the two triangles to make two triangles and a rectangle shape.

b. Test out your hypothesis by cutting and pasting "Figure A" into the pieces you described above.

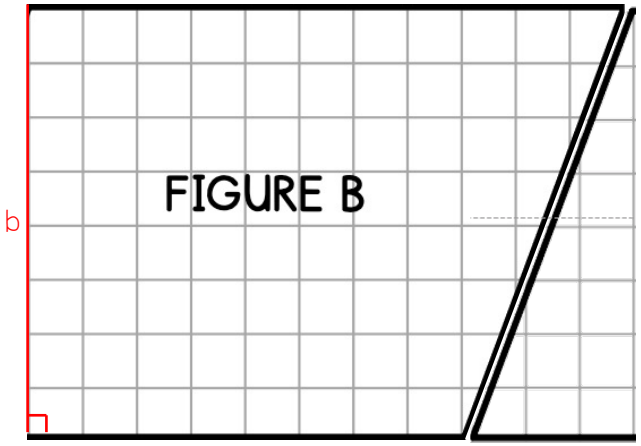


c. Describe how the area of the figure changed when the parallelogram was decomposed.

Ex: The area didn't change.

PARALLELOGRAMS

Cut out "Figure B." Draw a vertical line from one vertex to the opposite base. Cut along your line, then arrange the pieces to form a rectangle. Paste your rectangle in the space below.



1. Count the number of squares for each of the measurements below:

a. base 11

b. height 8

c. approximate number of squares 88

2. Predict the formula for the area of a parallelogram.

Ex: A = b(h)

3. Describe how the height of the parallelogram is represented. Label it on the figure above.

Ex: The height makes a right angle with the base.