

6TH GRADE MATH

Unit 9

Problem Solving with Area
in 2-D Shapes

Date:

Extra! Extra! Read all about it!

We are going to start Unit 9 (Problem Solving with Area in 2-D Shapes). Here is a list of IXL topics, for every topic you complete you will earn some extra credit. Here are the possible points you can earn on each topic. The extra credit will be due by _____, Smart Score on IXL - REVIEW PREVIOUS GRADING SCALE.

Unit 9 Topics – You can earn up to 165 extra credit points! You got this 😊

(REVIEW!) → 5.NF.B.4.b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.

1. Multiply two unit fractions using models (5-M.17)
2. Multiply two fractions using models: fill in the missing factor (5-M.18)
3. Multiply two fractions using models (5-M.19)
4. Understand fraction multiplication and area (5-M.29)
5. Multiply fractions to find area (5-M.30)
6. Area of squares and rectangles with fractions (5-EE.6)
7. Area and perimeter: word problems (5-EE.12)

(REVIEW) → 5.G.B.3 Classify two-dimensional figures in a hierarchy based on properties. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

8. Parallel sides in quadrilaterals (5-BB.5)
9. Identify parallelograms (5-BB.6)
10. Identify rectangles (5-BB.8)
11. Identify rhombuses (5-BB.9)
12. Classify quadrilaterals (5-BB.10)
13. Identify the relationships between quadrilaterals (5-BB.)
14. Describe relationships among quadrilaterals (5-BB.)

6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; know and apply these techniques in the context of solving real-world and mathematical problems.

15. Area of triangles (6-FF.3)
16. Understanding area of a triangle (6-FF.)
17. Area of quadrilaterals (6-FF.5)
18. Area of rhombuses (6-FF.)
19. Understanding area of a parallelogram (6-FF.)
20. Area of parallelograms (6-FF.)
21. Understanding area of a trapezoid (6-FF.)
22. Area of trapezoids (6-FF.4)
23. Area of compound figures (6-FF.6)
24. Area of compound figures with triangles (6-FF.24)

6.EE.A.2.c Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

25. Evaluate numerical expressions involving whole numbers (6-O.3)
26. Evaluate numerical expressions involving decimals (6-O.6)
27. Evaluate numerical expressions involving fractions (6-O.9)
28. Identify mistakes involving the order of operations (6-O.)
29. Evaluate variable expressions with whole numbers (6-Y.4)
30. Evaluate multi-variable expressions (6-Y.5)
31. Evaluate variable expressions with decimals, fractions, and mixed numbers (6-Y.6)
32. Evaluate variable expressions: word problems (6-Y.)
33. Convert between Celsius and Fahrenheit (6-T.10)

Areas of Polygons

Name: _____

Date: _____

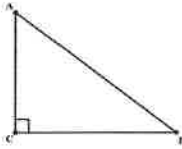
Daily Target: I can find the area of different polygons.

Important Variables

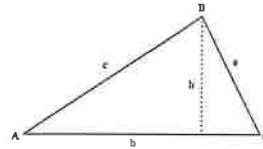
b = base, h = height
l = length, w = width

Triangles

Right Triangles

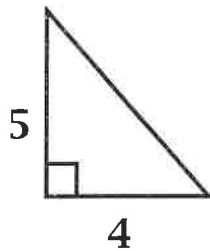


Other Triangles



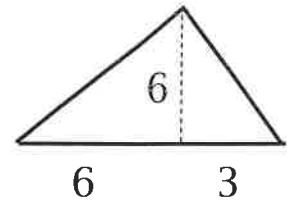
Formula:

$$\frac{1}{2} (b \times h)$$



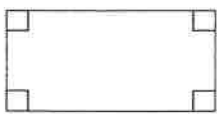
Formula:

$$\frac{1}{2} (b \times h)$$



Other Polygons

Rectangles



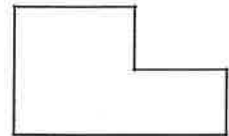
Parallelograms



Trapezoids



Irregular Shapes



Formula:

$$l \times w$$

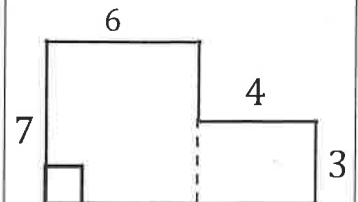
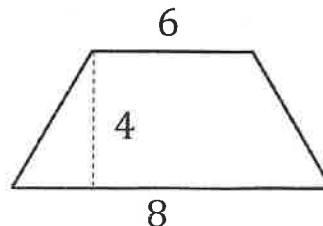
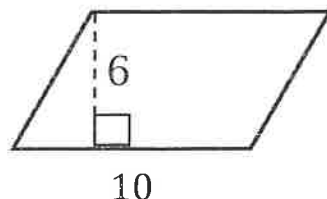
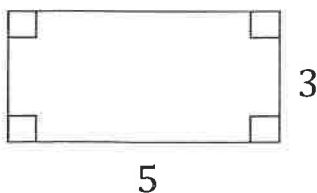
Formula:

$$b \times h$$

Formula:

$$\frac{b_1 + b_2}{2} \times h$$

Break the shape into regular polygons (triangles & rectangles). Then find the areas and add.



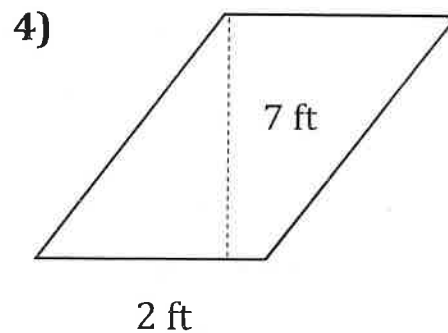
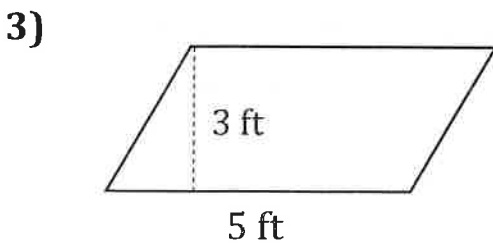
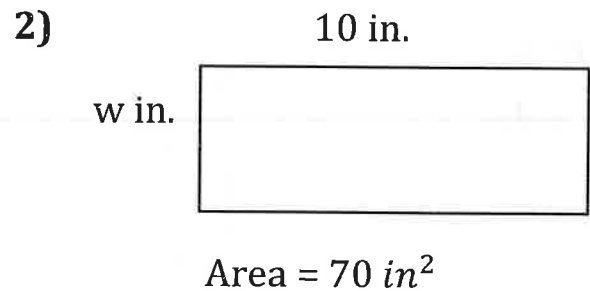
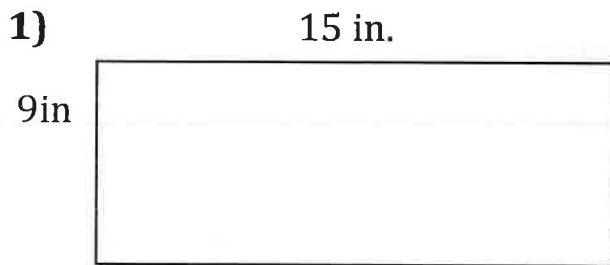
Rectangles & Parallelograms

Name: _____

Date: _____

Daily Target: I can find the area of rectangles and parallelograms.

Rectangle	Parallelogram
A _____ sided polygon with two pairs of _____ sides and four 90° angles	A four sided _____ with two pairs of parallel sides.
Formula: Length X Width	Formula: Base X Height

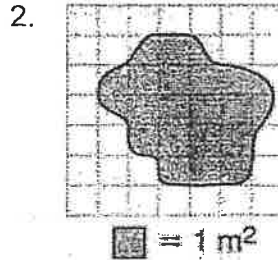
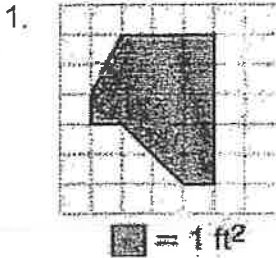
Practice!

5) Jessika is going to tile a kitchen that measures 13 ft by 17 ft. Some floor space is taken up by an island that measures 3 ft by 6 ft. How much area remains to be tiled in the kitchen? *Hint: To find the area to be tiled, subtract the area of the island from the area of the floor.*

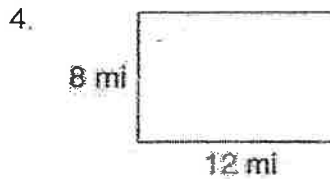
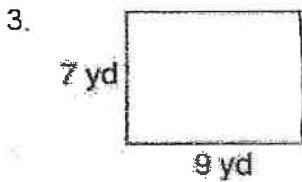
LESSON
10-1

Practice B
Area of Rectangles and Parallelograms

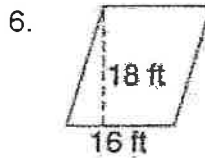
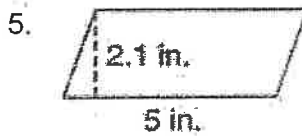
Estimate the area of each figure.



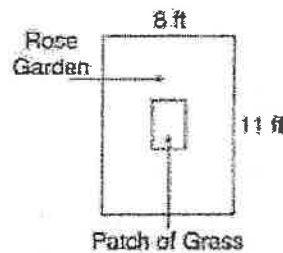
Find the area of each rectangle.



Find the area of each parallelogram.



7. Mariah is planting a rectangular rose garden. In the center of the garden, she puts a smaller rectangular patch of grass. The grass is 2 ft by 3 ft. What is the area of the rose garden?
-



8. A section of a stained-glass window is shaped like a parallelogram. Its base is 6.5 inches, and its height is 4 inches. How much glass is needed to cover the section completely?
-

9. Your rectangular yard is 10 feet wide and 26 feet long. How many square feet of grass do you need to plant if you want to cover the entire yard?
-

Area of a Triangle

Name: _____

Date: _____

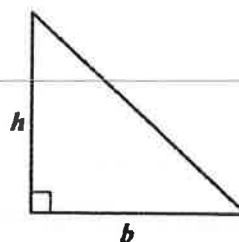
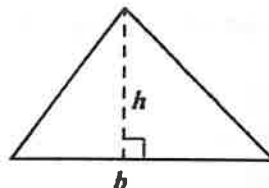
Daily Target: I can find the area of a given triangle.

Triangle

A closed polygon with _____ sides and three angles _____ up to 180° .

Formula:

$$\frac{1}{2} (b \times h) \quad \text{OR} \quad \frac{b \times h}{2}$$

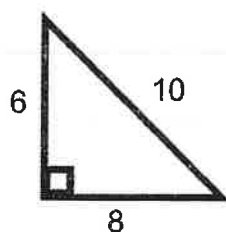


Make sure you identify or _____ your base and height for each triangle!

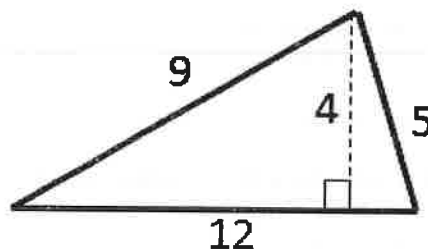
The base and height will _____ be perpendicular to each other!

Practice!

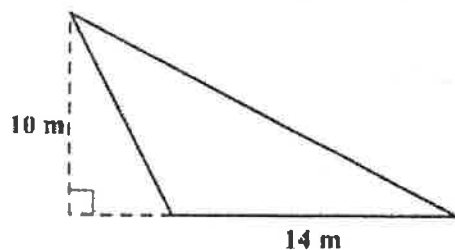
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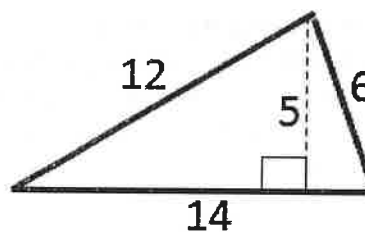
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2)



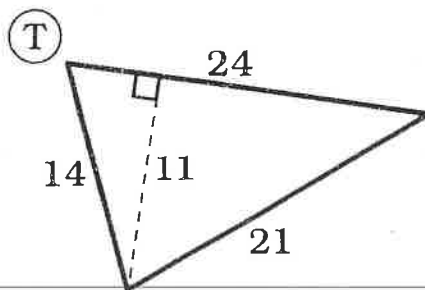
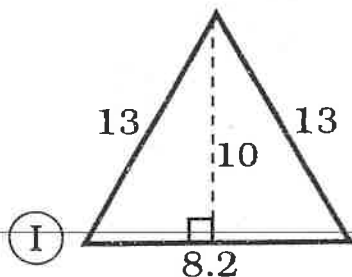
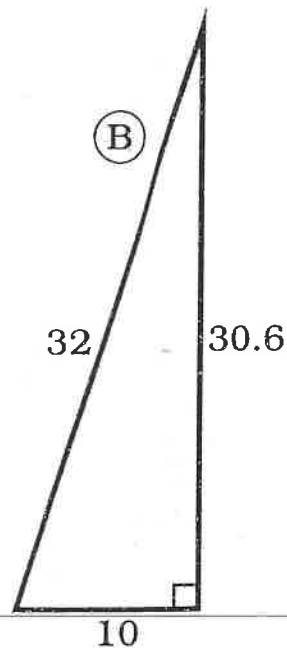
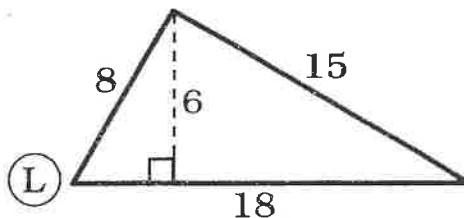
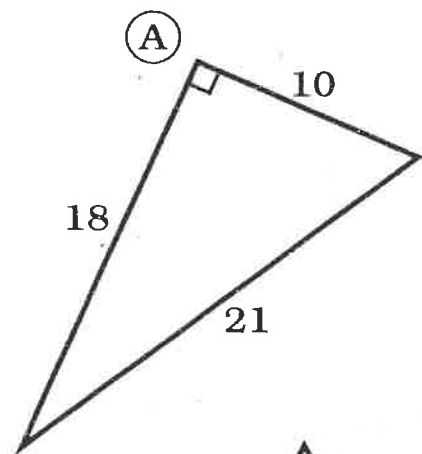
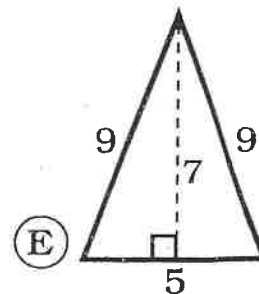
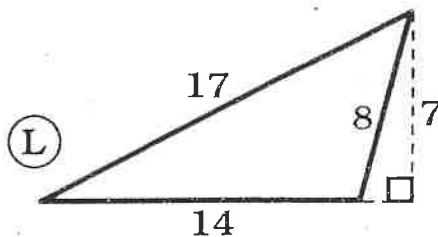
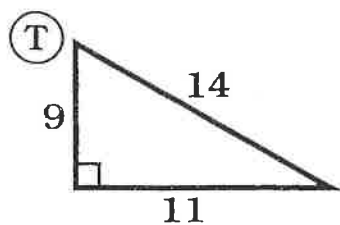
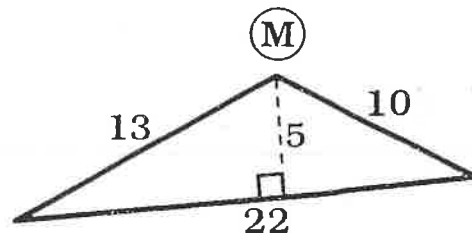
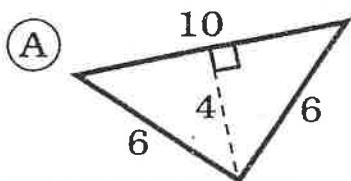
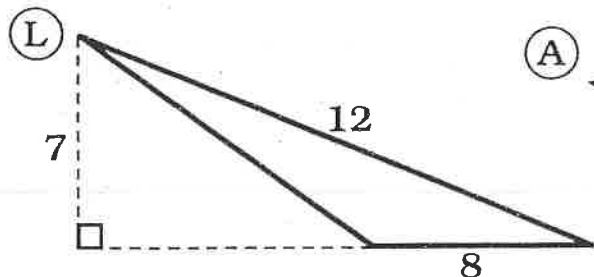
4)



5) The area of a triangle is 24 cm^2 . If the base of the triangle is 6 cm, what is the height?

What Did Mary Order for Dinner?

Find the area of each triangle.



Area of a Trapezoid

Name: _____

Date: _____

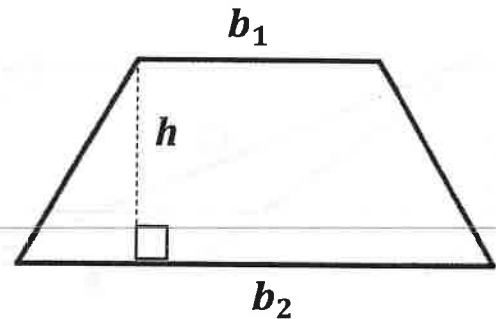
Daily Target: I can find the area of a given trapezoid.

Trapezoid

A _____ sided polygon with only _____ pair of parallel sides.

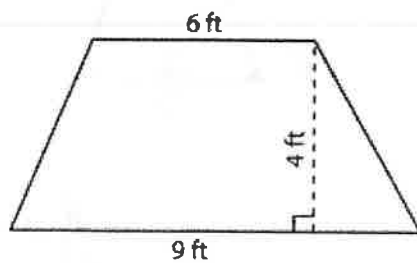
Formula:

$$\frac{b_1 + b_2}{2} \cdot h$$

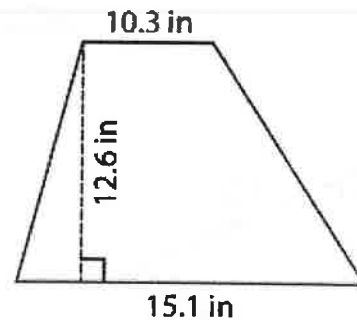


Practice! Find the area of each trapezoid!

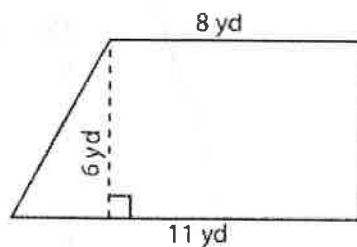
1)



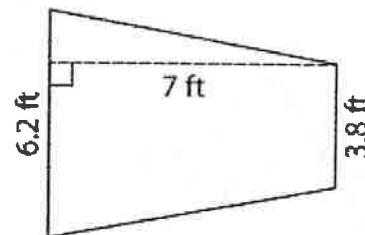
3)



2)



4)

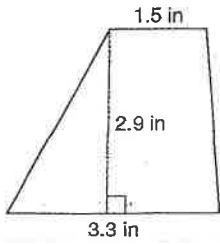


5) Renee has a large table in the shape of a trapezoid in her classroom. The shorter base is 4 m, the longer base is 6 m, and the height is 2 m. What is the area of the table?

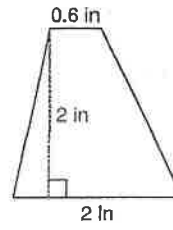
Area of Trapezoids

Find the area of each.

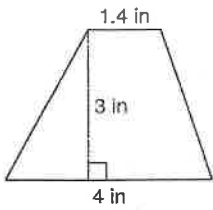
1)



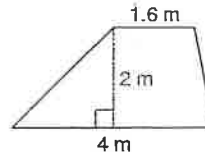
2)



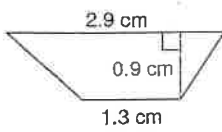
3)



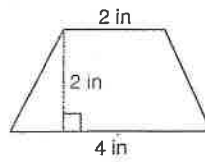
4)



5)



6)



Areas of Irregular Figures

Name: _____

Date: _____

Daily Target: I can use the areas of polygons to find the area of irregular figures.

You can find the _____ of an irregular figure by _____ it into non-overlapping familiar figures. You can also _____ the area of an irregular _____ by using graph paper.

Step One:

_____ the irregular figure into rectangles and _____.

Step Two:

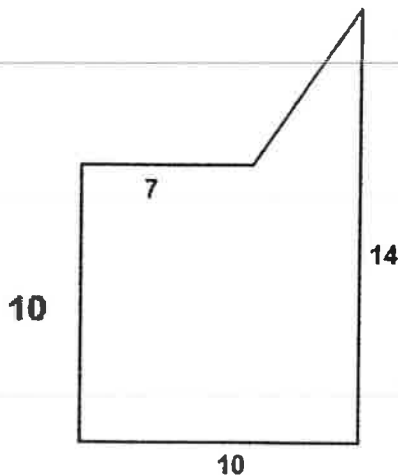
Look for _____ measurements that you will need to find the area of _____ new shape.

Step Three:

_____ the area of every new _____.

Step Four:

_____ the areas of each shape together to find the _____ area.

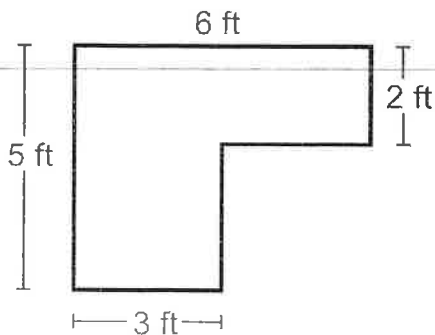


Area of figure 1: _____

Area of figure 2: _____

Total Area = _____

Practice!



Area of figure 1: _____

Area of figure 2: _____

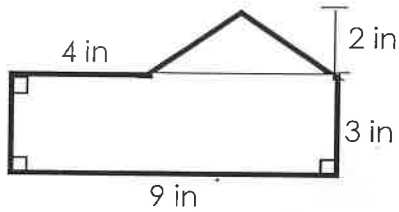
Total Area = _____

Name: _____

Area of Composite Figures

Practice! Find the area of each irregular figure.

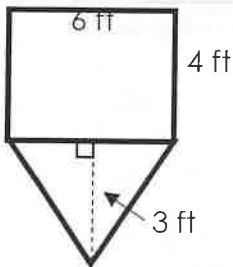
1.



Area of figure 1:

Area of figure 2:

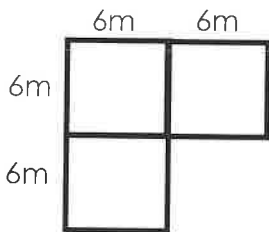
2.



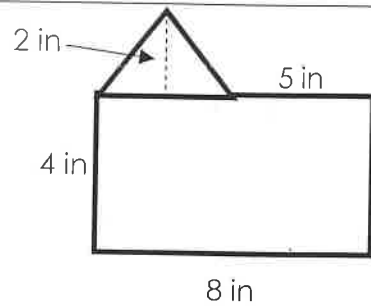
Area of figure 1:

Area of figure 2:

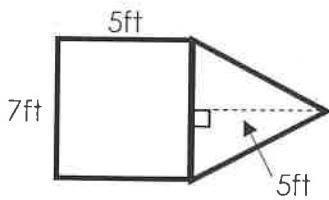
3.



4.



5.



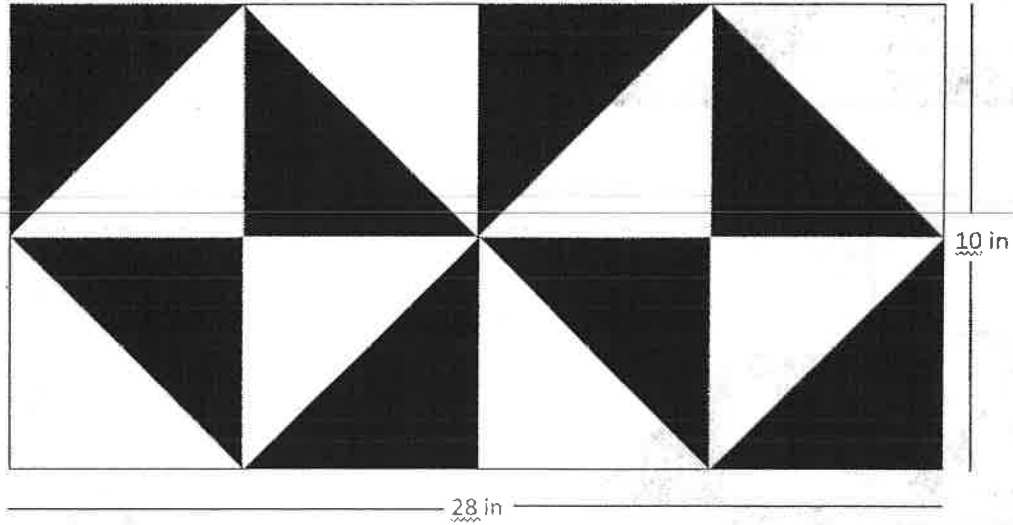
6. Each side of a square piece of cardboard is 12 inches long. What is the piece of cardboard's area?

7. Roxanne is making a large poster in the shape of a trapezoid for an art project. The shorter base is 4 m, the longer base is 5 m, and the height is 2 m. What is the area of the poster?

8. Brian draws a triangle with a base of 9 cm and a height of 4.5 cm. If she colors the space inside the triangle, what is the measurement of the area she must color?

Area of a Geometric Shape Math Task

The following geometric pattern is made up of congruent triangles. The pattern was presented to a 6th grade class and some students made the following statements about the pattern from the classroom. For each student, justify by using words or numbers to prove the student's statement is true.



1. Evan said the total area of the pattern is 280 squared inches.

2. Kelly said to find the total area of the white triangles you would find the area of the entire pattern and divide by 2.

3. Donna said the pattern is made up of 8 smaller rectangles that are half black and half white. She went on to say that that area of each of these smaller rectangles can be found by finding the total area and then dividing by 8.

Name _____

Unit 10 Word Problems

- 1) Each side of a square piece of cardboard is 12 inches long. What is the piece of cardboard's area?

- 2) The windows in an office building are rectangles. The base of each window is 1.5 meters, and the height is 1.8 meters. What is the area of each window?

- 3) The roof on Mrs. Vega's house is shaped like a parallelogram. The base of the roof is 12.6 meters, and the height is 7.2 meters. What is the area of the roof?

- 4) Brian draws a triangle with a base of 9 cm and a height of 4.5 cm. If she colors the space inside the triangle, what is the measurement of the area she must color?

- 5) Roxanne is making a large poster in the shape of a trapezoid for an art project. The shorter base is 4 m, the longer base is 5 m, and the height is 2 m. What is the area of the poster?

- 6) The area of a parallelogram is 16 square inches. If the base is 8 inches, what is the height of the parallelogram?

- 7) The area of a triangle is 24 cm^2 . If the base of the triangle is 6 cm, what is the height?

- 8) Joe spreads out a rectangular picnic blanket with an area of 40 square feet. Its width is 5 feet. Write an equation you could use to find its length.

