

Name: _____

Core: _____

Unit 3 Geometry: Triangles and Quadrilaterals
Advanced Scoring Rubric – Packet due Wednesday, December 20th

Page 1: Area of Triangles

Feedback _____

Score ____ / 6

Page 2: Perimeter and Types of Triangles

Feedback _____

Score ____ / 12

Page 3: Sum of the interior angles of Triangles

Feedback _____

Score ____ / 6

Page 4: Identifying Types of Triangles

Feedback _____

Score ____ / 5

Page 5: Area and Perimeter of Parallelograms

Feedback _____

Score ____ / 15

Page 6 - 7: Area of Polygons through Composition and Decomposition

Feedback _____

Score ____ / 8

Page 8-9: Quadrilaterals Flowchart

Feedback _____

Score ____ / 22

Page 10: Area of Trapezoids

Feedback _____

Score ____ / 4

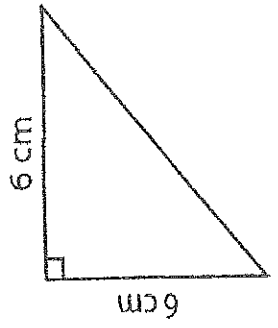
Completed by Wednesday, December 20th _____ - 2 easy points!

Add up your total score: ____ / 80

Find the area of each triangle.

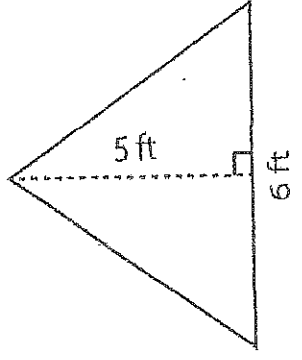
Area formula for triangles: _____

1)



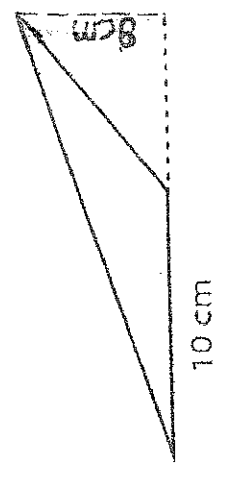
Area =

2)



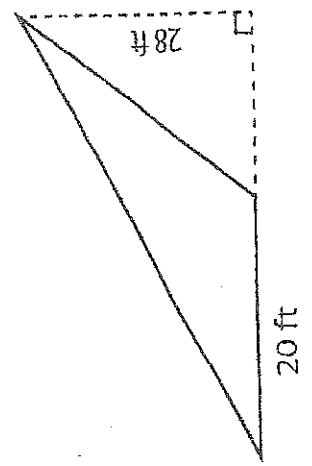
Area =

3)



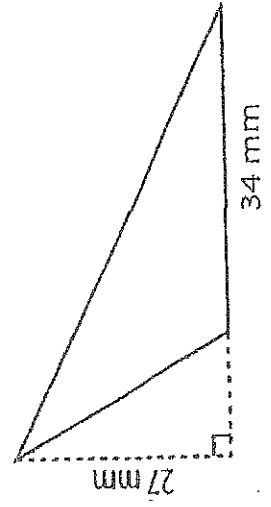
Area =

4)



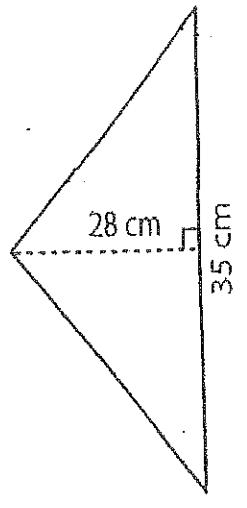
Area =

5)



Area =

6)



Area =

Name: _____ Core: _____

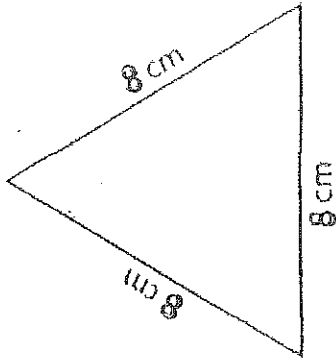
Homework: Triangle Types, Area and Perimeter

Due Wednesday, January 11th

Name each triangle and find the perimeter. Include correct units for the perimeter.

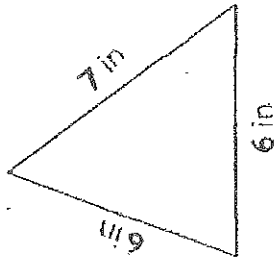
Types of Triangles: Equilateral Isosceles Scalene
Right Acute Obtuse

1)



Perimeter: $8+8+8=24$ cm
Equilateral acute triangle

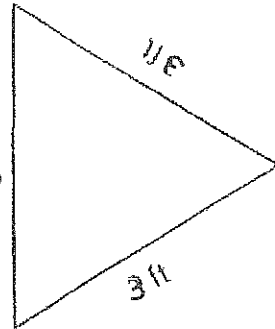
2)



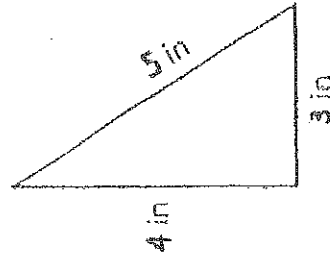
3)



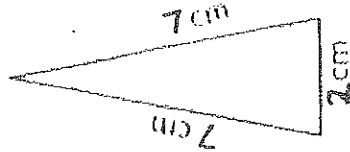
4)



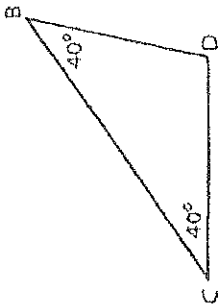
5)



6)



Example:



Sum of the interior angles = 180°

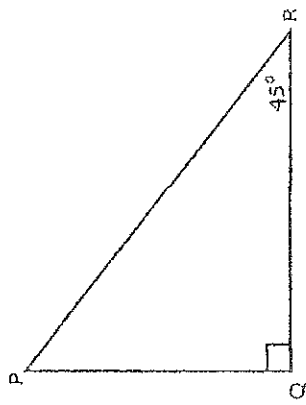
Sum of the interior angles = $40^\circ + 40^\circ + \angle D$

$$180^\circ = 80^\circ + \angle D$$

$$\angle D = 180^\circ - 80^\circ = 100^\circ$$

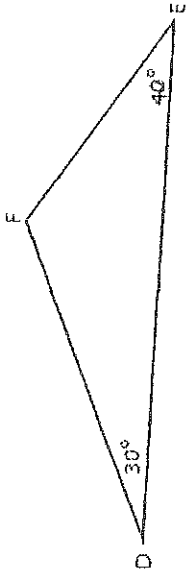
Find the unknown interior angle for each triangle.

1)



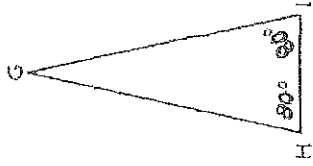
$$\angle P = \text{○}$$

2)



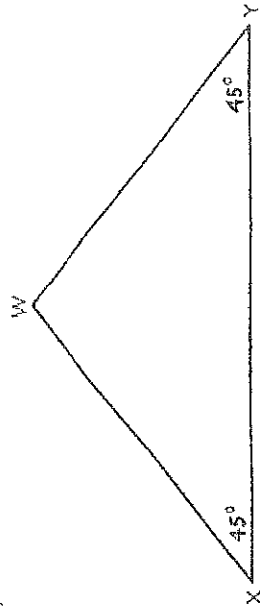
$$\angle F = \text{○}$$

3)



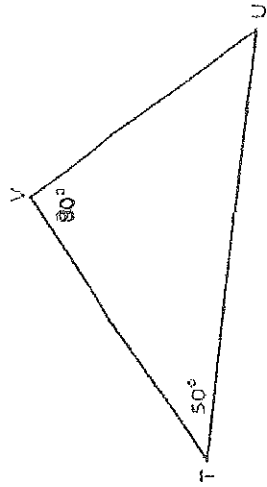
$$\angle G = \text{○}$$

4)



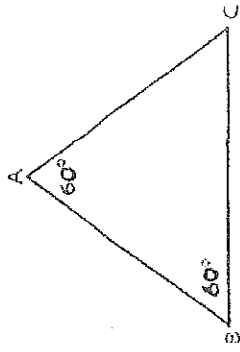
$$\angle W = \text{○}$$

5)



$$\angle U = \text{○}$$

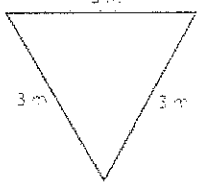
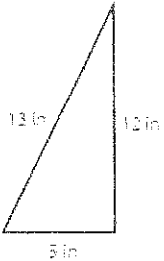
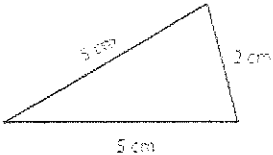
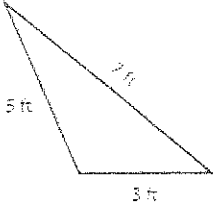
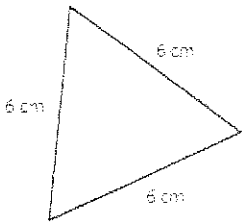
6)



$$\angle C = \text{○}$$

Identifying Types of Triangles

Tick the boxes that apply to each triangle.

Triangle	Equilateral	Isosceles	Scalene	Acute	Obtuse	Right
1) 						
2) 						
3) 						
4) 						
5) 						

Area and Perimeter of Triangles and Quadrilaterals

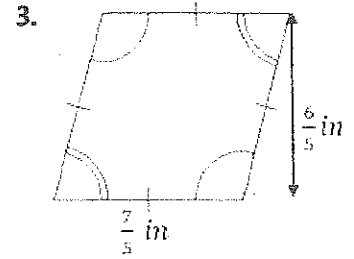
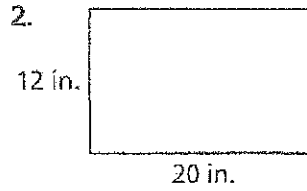
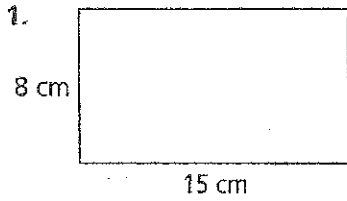
Review Questions:

How do I find the perimeter of any figure?

How do I find the area of a triangle?

How do I find the area of a parallelogram (includes square and rectangle)?

Find the area and perimeter for each of the parallelograms below.



Area:

Area:

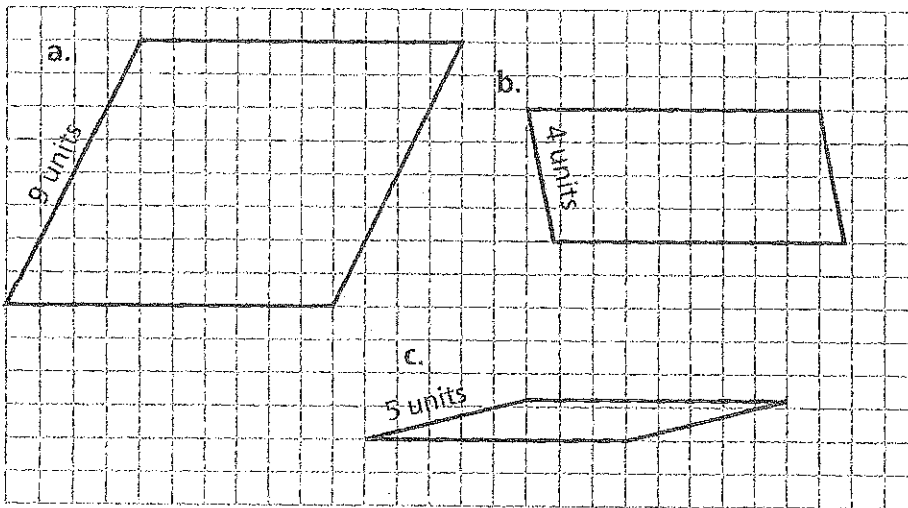
Area:

Perimeter:

Perimeter:

Perimeter:

For each of the following, find the area and the perimeter of the parallelogram.



a. Area:

b. Area:

c. Area:

Perimeter:

Perimeter:

Perimeter:

The Area of Polygons through Composition and Decomposition

Example 1: Decomposing Polygons into Rectangles

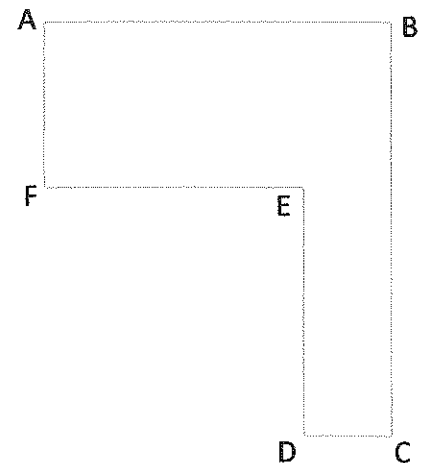
Here is an aerial view of a Mr. Kennedy's backyard.

If $AB = 10$ units, $FE = 8$ units, $AF = 6$ units, and $DE = 7$ units, find the lengths of the other two sides.

$DC =$

$BC =$

Mr. Kennedy wants to build a fence around his yard.
How long would his fence have to be?



If $DC = 10$ units, $FE = 30$ units, $AF = 28$ units, and $BC = 54$ units, find the lengths of the other two sides.

$AB =$

$DE =$

Example 2: Decomposing Polygons into Rectangles

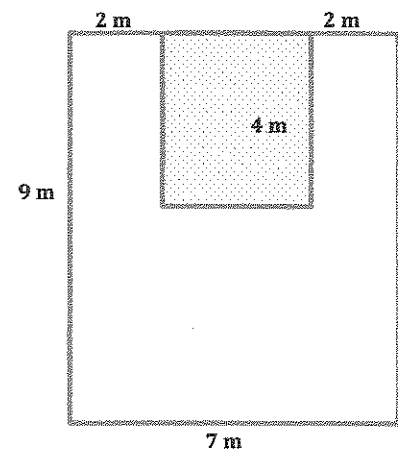
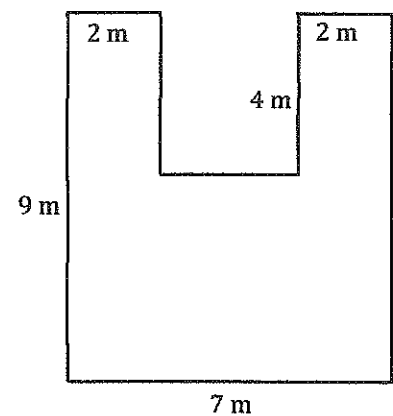
The Olson Middle School is producing a play that needs a special stage built. A diagram of the stage is shown to the right (not to scale).

1. Divide the stage into 3 rectangles and find the area of each rectangle.
2. Add up the 3 rectangles to find the total area of the stage.

Total area of the stage:

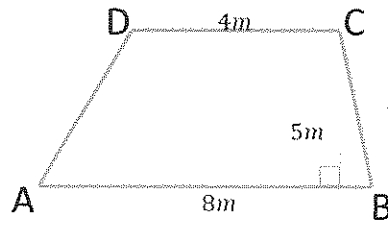
Now think of the stage as a large rectangle with a piece removed.

1. What are the dimensions of the large rectangle and the small rectangle?
2. What are the areas of the two rectangles?
3. Explain how you will find the area of the stage using this example.



Example 3: Decomposing Trapezoids

The trapezoid below is a scale drawing of a garden plot.



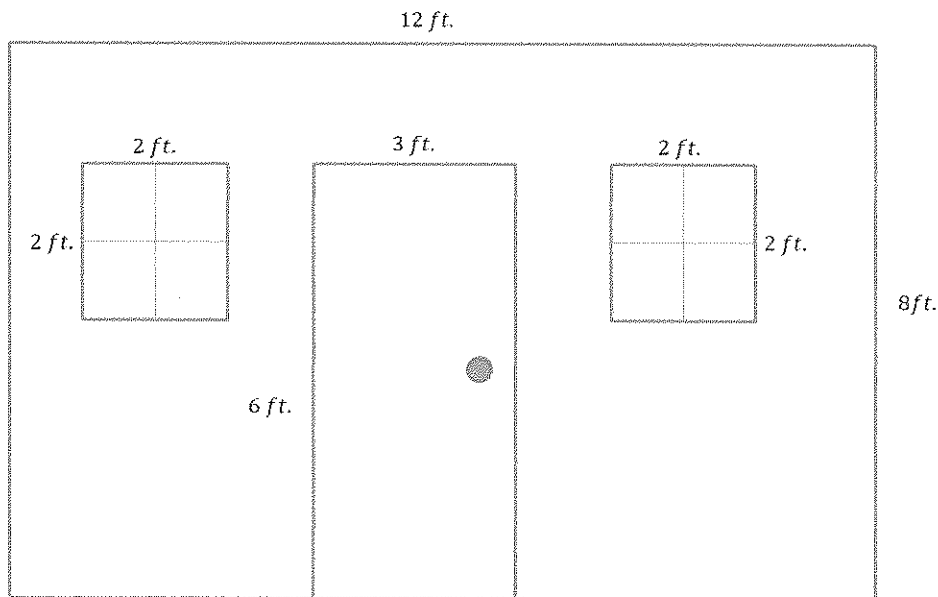
Find the area of both triangles ABC and ACD (draw diagonal AC). Then find the area of the trapezoid.

Find the area of both triangles ABD and BCD (Draw diagonal BD). Then find the area of the trapezoid.

How else could we find this area?

Example 4: Real Life Example

Here is a sketch of a wall that needs to be painted:



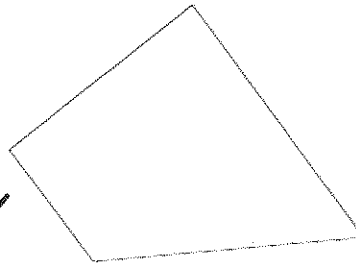
- The windows and door will not be painted. Calculate the area of the wall that will be painted.
- If a quart of Extra-Thick Gooey Sparkle paint covers 30 ft^2 , how many quarts must be purchased for the painting job?

Name: _____

Core: _____

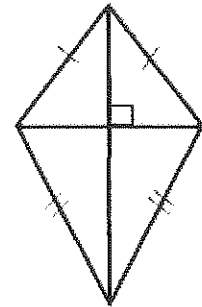
Quadrilateral Properties Flowchart

****Each quadrilateral has all of the properties of the quadrilateral before it in the flowchart****



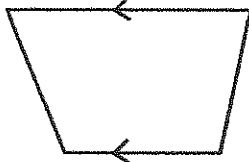
Name: _____

- Properties: 1.
2.
3.



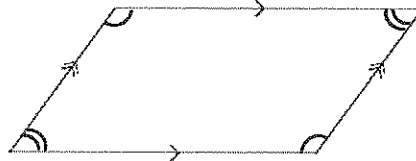
Name: _____

Properties: 5.



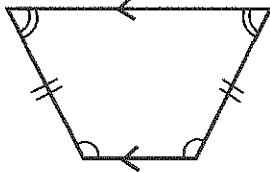
Name: _____

Properties: 4.



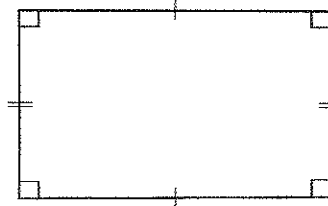
Name: _____

- Properties: 6.
7.
8.



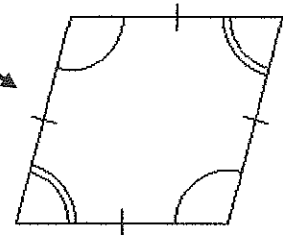
Name: _____

- Properties: 9.
10.



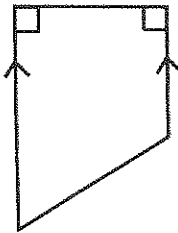
Name: _____

Properties: 12.



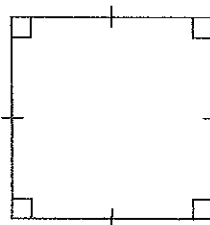
Name: _____

Properties: 13.



Name: _____

Properties: 11.



Name: _____

Name: _____

Core: _____

Key Word Help:

Congruent	-sides have the same length and the same amount of hash marks -angles that are the same have the same amount of arcs
Convex	-no two sides are "caved in" or no inside angles greater than 180°
Isosceles	-two sides are congruent
Right	- 90° angle, shown with \square
Parallel	-if you extend the sides forever, they will not cross, shown by same number of arrows
Adjacent	-adjacent sides are touching at a vertex, adjacent angles share a side between them

Names of Quadrilaterals Word Bank – Use each name once!

Convex Quadrilateral

Isosceles Trapezoid

Kite

Parallelogram

Rectangle

Right Trapezoid

Rhombus

Square

Trapezoid

Properties Word Bank – Use each property once!

Polygon with 4 sides

Sum of angles is 360°

No angles greater than 180°

1 pair of parallel sides

1 pair of opposite sides congruent

2 adjacent right angles

2 pairs of parallel sides

2 pairs of adjacent sides are congruent

Adjacent angles congruent

Opposite sides are congruent

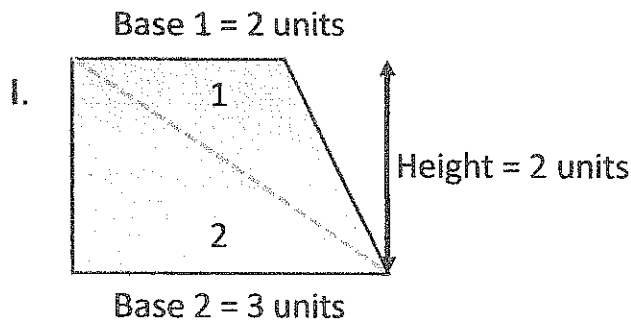
Opposite angles are congruent

All angles are right angles

All sides are congruent

Area of Trapezoids

Draw in one diagonal on each of the trapezoids below to split into two triangles.
 Label the heights and bases of each triangle.
 Find the total area of for each trapezoid.



Find the area of Triangle 1:

Find the area of Triangle 2:

Add the areas of Triangle 1 and Triangle 2 together

Trapezoid Area =

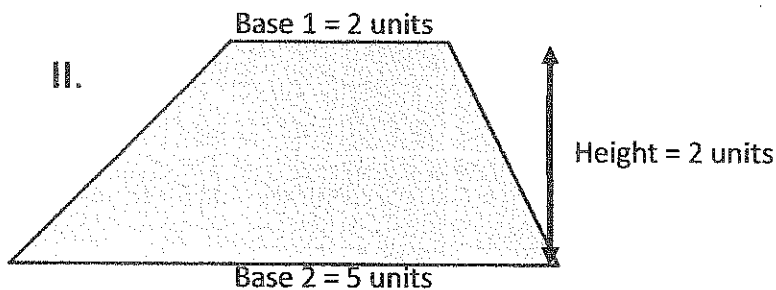
The area of each trapezoid is found by adding the area of the two triangles in the trapezoid together.

Total Area = Area of Triangle 1 + Area of Triangle 2

$$\text{Total Area} = \frac{1}{2} \times \text{Base 1} \times \text{Height} + \frac{1}{2} \times \text{Base 2} \times \text{Height}$$

We can simplify this to an easier formula to remember:

$$\text{Area of Trapezoids} = \frac{1}{2} \text{Height} \times (\text{Base 1} + \text{Base 2})$$



$$\text{Area of Trapezoid} = \frac{1}{2} \times \underline{\quad} \times (\underline{\quad} + \underline{\quad})$$

$$= \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$$

=