EMG Education

Name: _____

Math Second Semester Review Pack 2020

A. Graphs and Linear Equations

Origin- The point where the x-axis and y-axis meet (0,0)

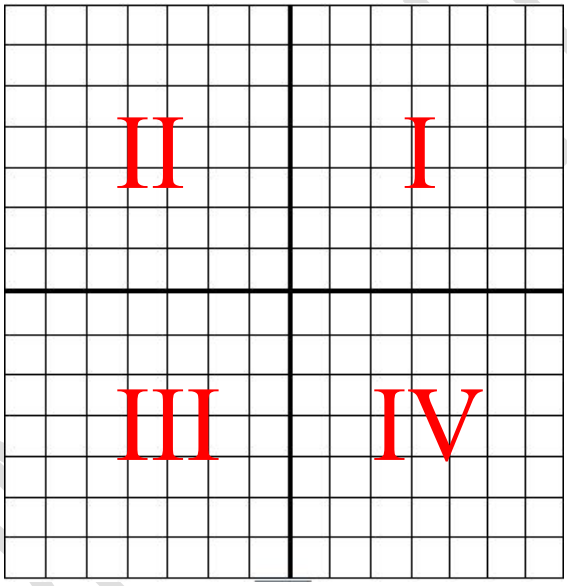
Quadrant- One of four section of a graph. Quadrants are numbered from the top right, going counterclockwise.

Quadrant I: Top right quadrant. Coordinates are (+, +)

Quadrant II: Top left quadrant. Coordinates are (- , +)

Quadrant III: Bottom left quadrant. Coordinates are (- , -)

Quadrant IV: Bottom right quadrant. Coordinates are (+, -)



X-axis- The horizontal axis that goes from left to right

Numbers on the left side of the origin (0,0) will have negative x coordinates

Y-axis- The vertical axis that goes from top to bottom

Numbers above the origin (0,0) will have positive y coordinates

Ordered Pair- A pair of coordinates (x , y) which refers to a specific point on a graph (6,7).

"Rise"- the amount that you "rise", or "fall," (along the y-axis) for the coordinate

"Run"- the amount that you "run" forward or backward (along the x) for the coordinate.

Gradient- The Rate of Change in a line. (rise over run) $\left(\frac{y_2 - y_1}{x_2 - x_1}\right)$

Midpoint formula- $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

1. Using the linear equations provided:

I. Create a data table six points
II. List the first six coordinate pairs
III. Graph the points
IV. Sketch the line of best fit

y= x + 4

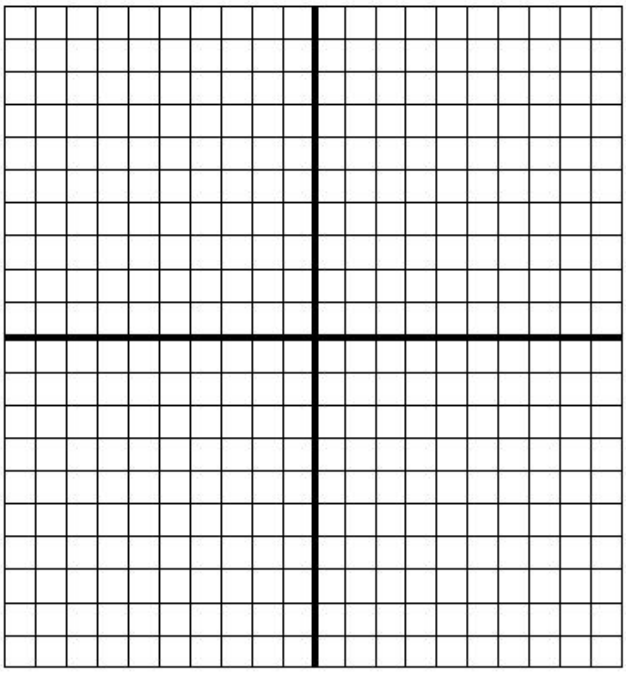
I. Create a table

x						
y						

II. List six coordinate pairs:

_____

III. Graph the coordinate points:



IV. Sketch the line of best fit on the graph above.

2. Using the table provided:

I. Create a linear equation
II. List the first six coordinate pairs
III. Graph the points
IV. Sketch the line of best fit

I.

x	6	5	4	3	2	1
y	1	0	-1	-2	-3	-4

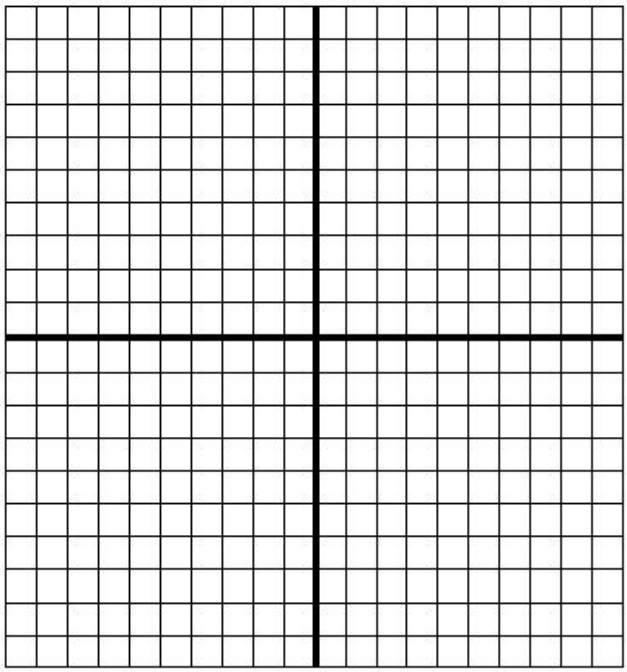
Create a linear equation

_____

II. List six coordinate pairs:

_____

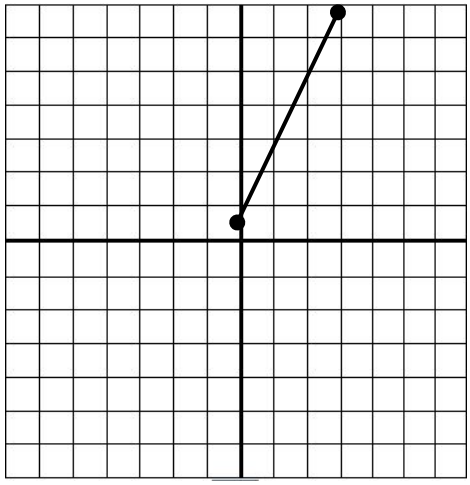
III. Graph the coordinate points:



IV. Sketch the line of best fit on the graph above

V. A. Identify the endpoints and plot the midpoint:

A	
B	
M	



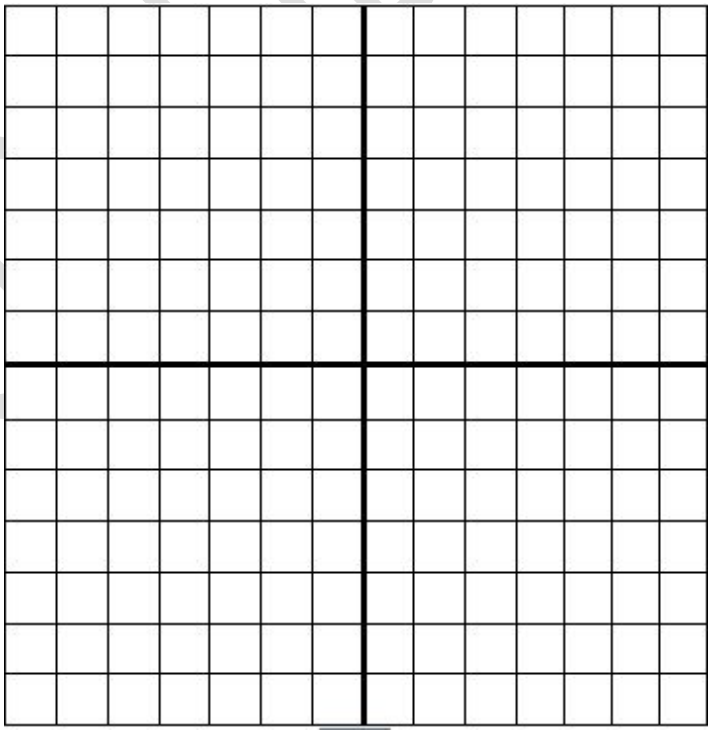
B. Using the endpoints given, find the midpoint and gradient.

Point A: (0, -3)
Point B: (-3, 6)

Midpoint: _____

Gradient: _____

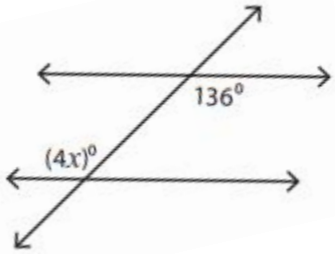
On the corresponding graphs below, plot all data from **B**



C. Angles, Quadrilaterals, and Congruent Shapes

Find the value of the missing angles

1.



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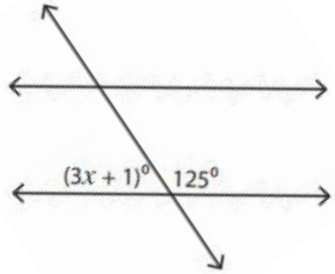

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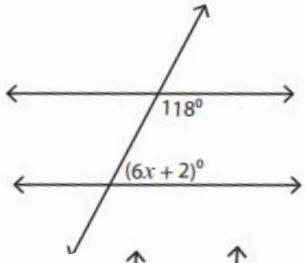

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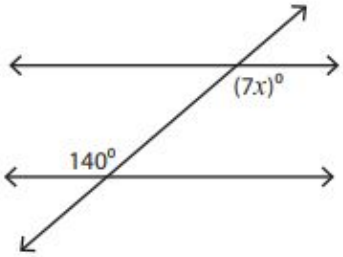

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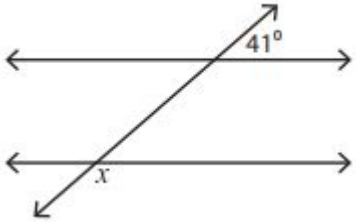

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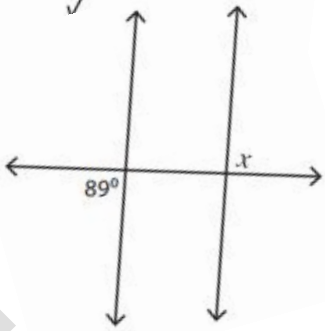

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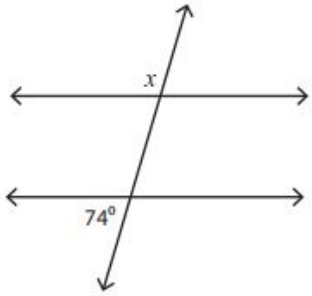

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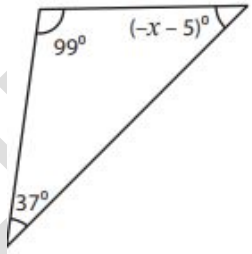

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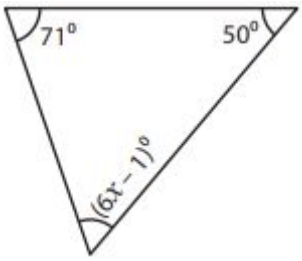

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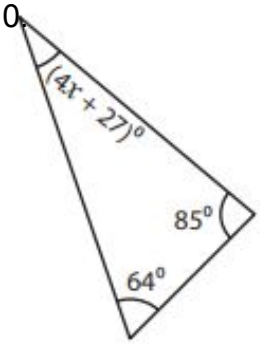

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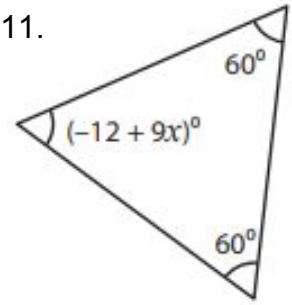

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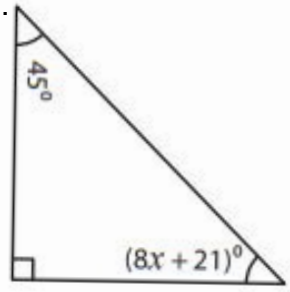

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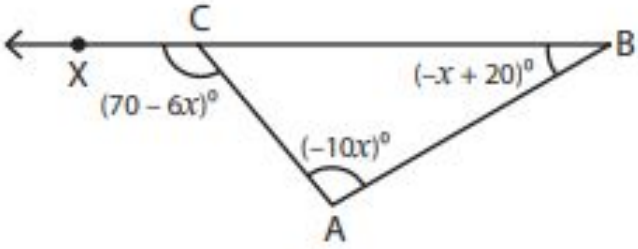

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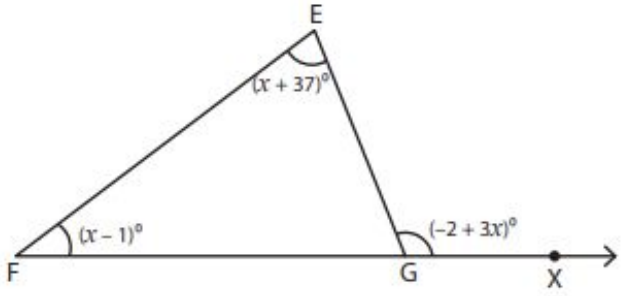
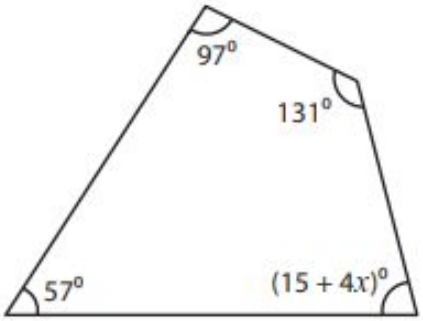


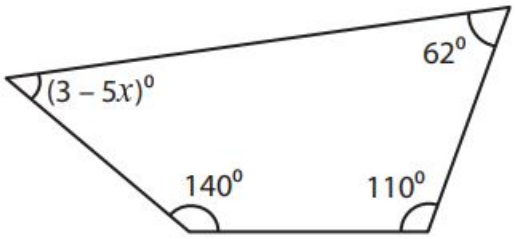
II. Solve for x in the following quadrilaterals. **Show your work**:

1.



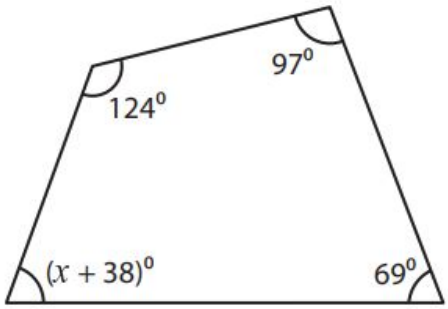
X=

2.



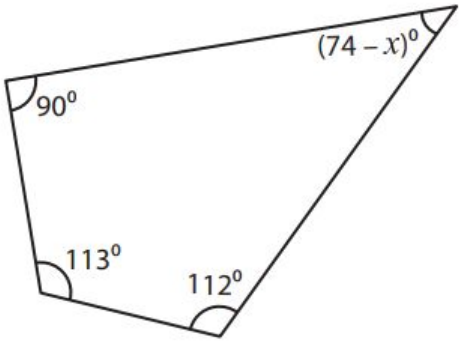
X=

3.



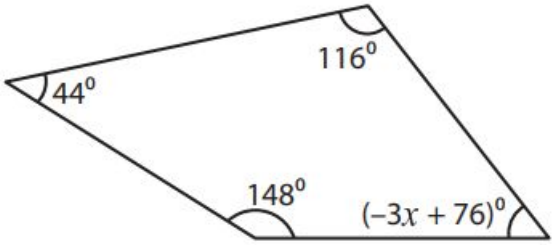
X=

4.



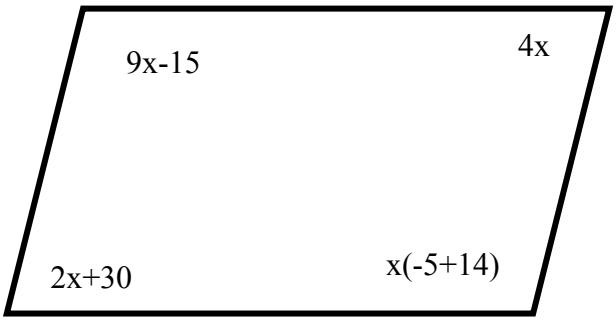
X=

5.



X=

6.



X=

D. Geometry: 3-d Shapes; Plans and Elevations

Face- A flat surface of a 3-D shape

Vertices- The corners of 2-D or 3-D shapes

Edges- The edge where two faces meet

Plan- the view from above the object

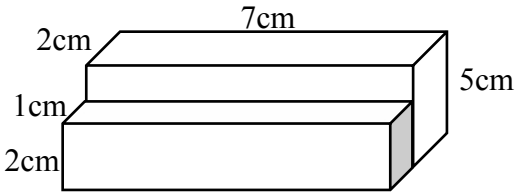
Front Elevation- the view from the front of the object

Side Elevation- the view from the side of the object

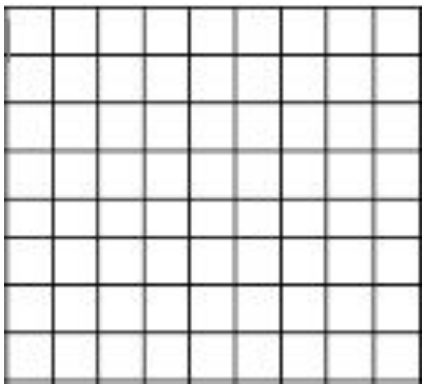
Sketch each shape and identify the number of faces, vertices, and edges

3-D Shape Name	Sketch	Faces	Edges	Vertices
Cube				
Rectangular Prism				
Hexagonal Prism				
Triangular Based Pyramid				
Sphere				

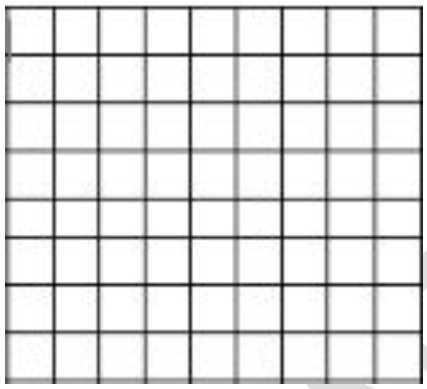
Given the shape, draw the Plan, Front, and Side Elevation.



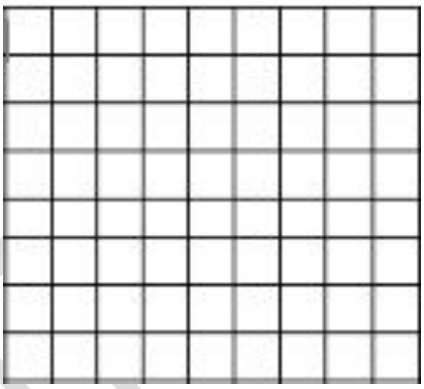
Plan



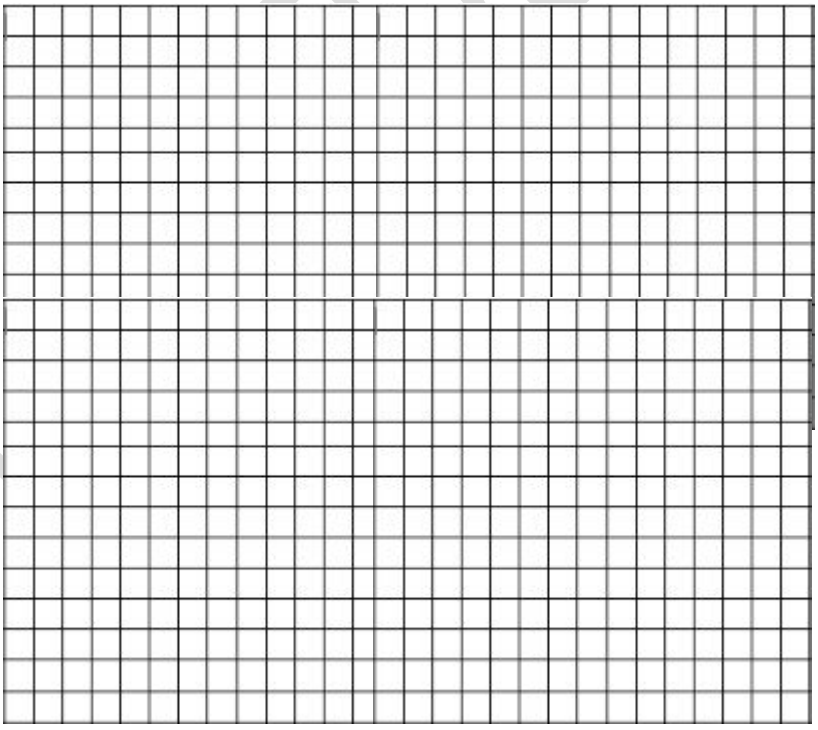
Front



Side



Draw the net of **only** the 2cm x 7cm x 5cm cuboid shown above above.



E. Geometry: Circles

Circle- 2-dimensional shape made by drawing a curve that is always the same distance from the center.

Circumference- the perimeter of the circle.

Radius- a straight line from the centre to any point on the circumference.

Diameter- a straight line joining any two points on the circumference and passing through the centre.

Chord- a straight line joining any two points on the circumference.

Arc- a part of the circumference.

Sector- a region bounded by an arc and two radii.

Segment- a region bounded by an arc and a chord.

Important Formulae

Circles

Circumference (c)

$c = 2\pi r$ or πd

Area (A)

$a = \pi r^2$

Sectors

Arc Length

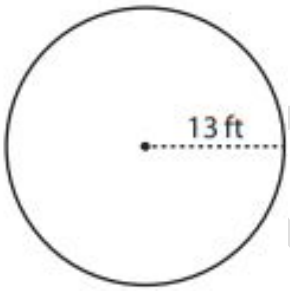
$$\text{Arc Length} = \frac{\theta}{360^\circ} \times 2\pi r$$

Arc Length

$$\text{Sector Area} = \frac{\theta}{360^\circ} \times \pi r^2$$

Find the Area and Circumference of the following circles:

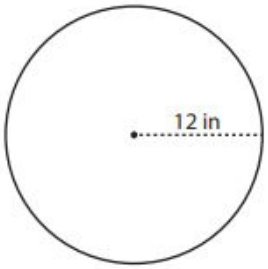
1.



Area:

Circumference:

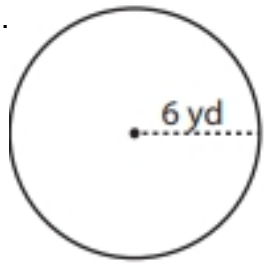
2.



Area:

Circumference:

3.



Area:

Circumference:

F. Geometry: Polygons: Area and Perimeter

Perimeter is sum of the lengths of all sides.

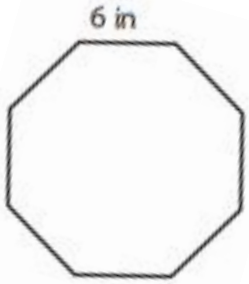
The area of a shape is everything within the lines.

The area of a rectangle or a square is calculated by multiplying length times width.

Area of a Triangle= $\frac{b \times h}{2}$ **b**= base **h**=height

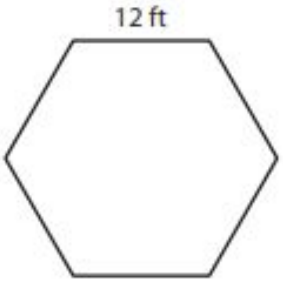
Find the perimeter of the following regular polygons (regular=equals sides):

1.



2.

3.



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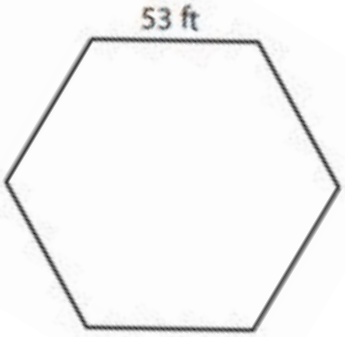

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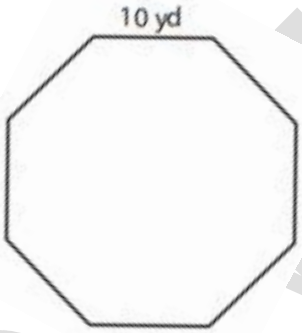

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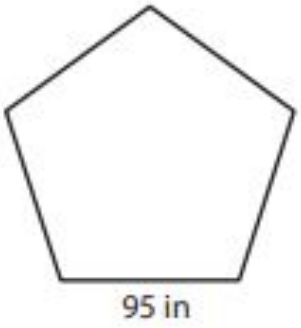
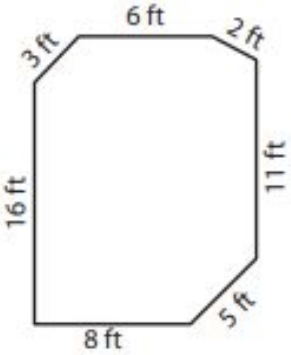


Find the perimeter of the following irregular polygons (irregular= not equal sides)

7.



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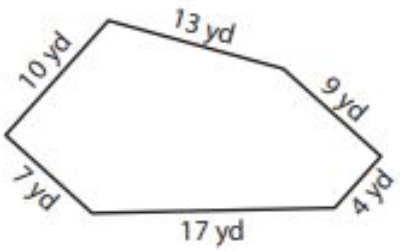

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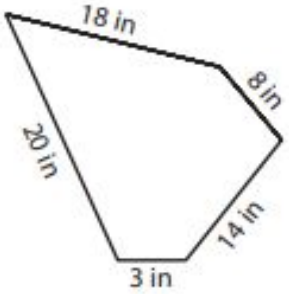

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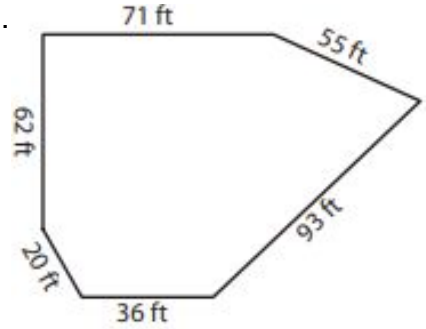

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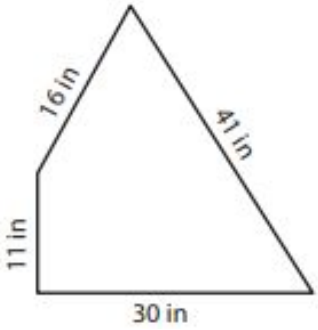

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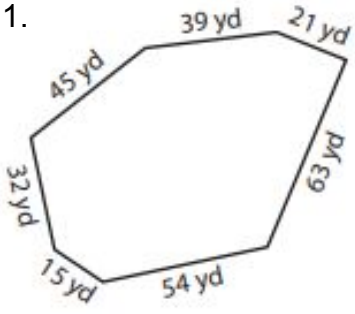
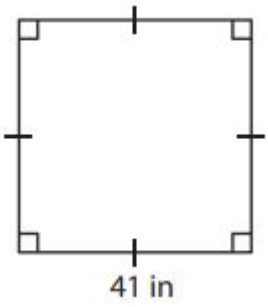


Find the Area of the following polygons:

1.



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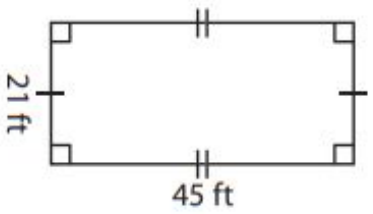

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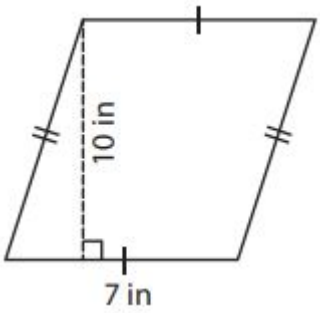

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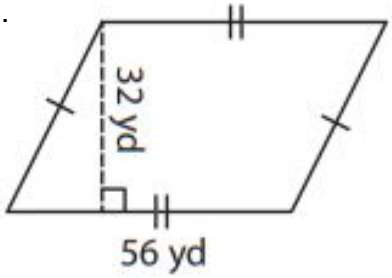

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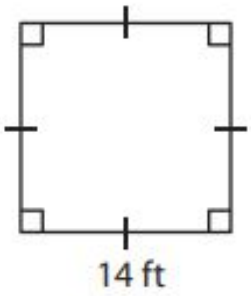

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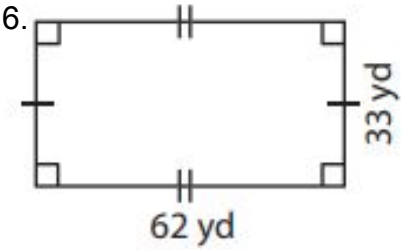
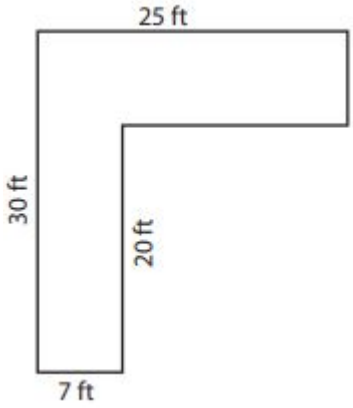


Find the Area of the following Compound shapes

7.



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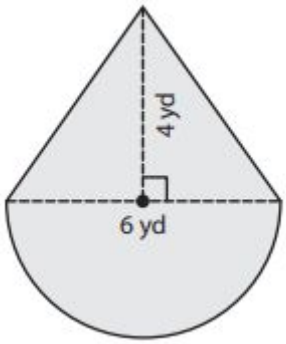
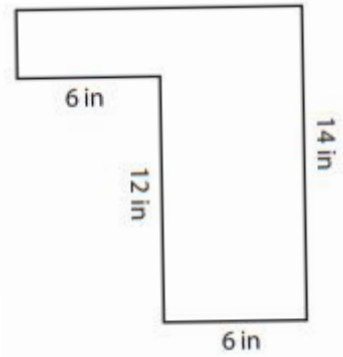


8.



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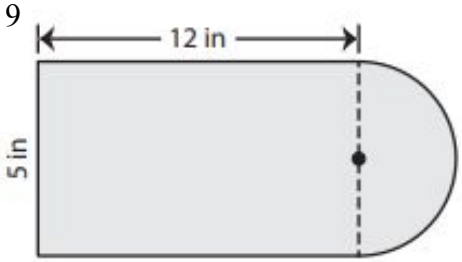
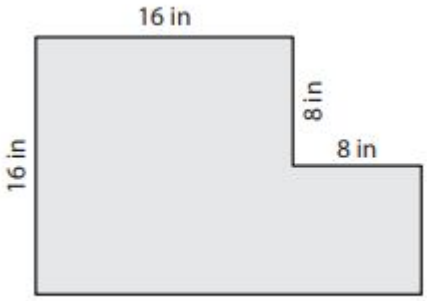


10



11.