



Preparation for Geometry
Summer Learning Experience Packet

Module 1: Problem Investigation

Important Review Equations/Definitions

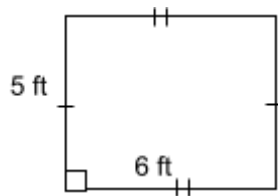
Area of a rectangle: $A = bh$ Area of a square: $A = \text{side} * \text{side}$
Perimeter- distance around the shape; sum of the lengths of each side

Question 1:

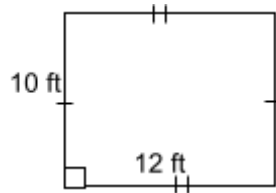
- 1. Label the important information (height & ratio) about the shape in the chart.
- 2. Find the area and perimeter of each of the shapes below. Show ALL work. Please include the information in the chart.
- 3. Write the ratio of Shape 1 to Shape 2 on the third row
- 4. Answer the questions below the chart

The first column has been filled out for you as an example.

Shape 1



Shape 2

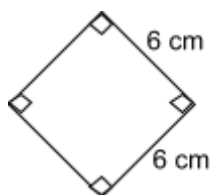


	Base	Height	Perimeter	Area
Shape 1	6			
Shape 2	12			
Ratio = $\frac{\text{Shape 1}}{\text{Shape 2}}$	$\frac{6}{12} = \frac{1}{2}$			

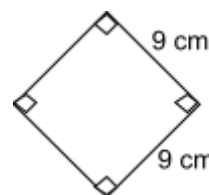
What pattern do you notice about the ratios? Which ratios are the same? (Please answer the question in at least three complete sentences, using math-specific terms)

What is the relationship between the ratio of the base/height and the ratio of the areas? **(Please answer the question in at least three complete sentences, using math-specific terms)**

Shape 3



Shape 4



	Sides	Perimeter	Area
Shape 1	6		
Shape 2	9		
$\frac{\text{Shape 1}}{\text{Shape 2}}$			

What pattern do you notice about the ratios? Which ratios are the same? **(Please answer the question in at least three complete sentences, using math-specific terms)**

What is the relationship between the ratio of the base/height and the ratio of the areas? **(Please answer the question in at least three complete sentences, using math-specific terms)**

Wrap Up Question:

What is the pattern you observe about:

The ratio of the side or base and the ratio of the perimeter?

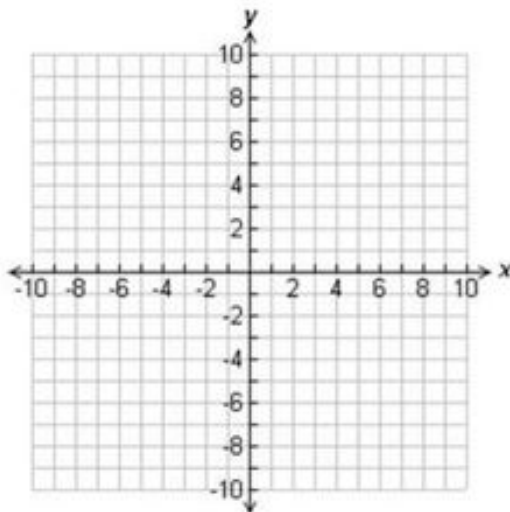
The ratio of the side or base and the ratio of the area?

Question 2:

Graph the following pairs of linear equations. Make one a **solid line** and one a **dotted line**.

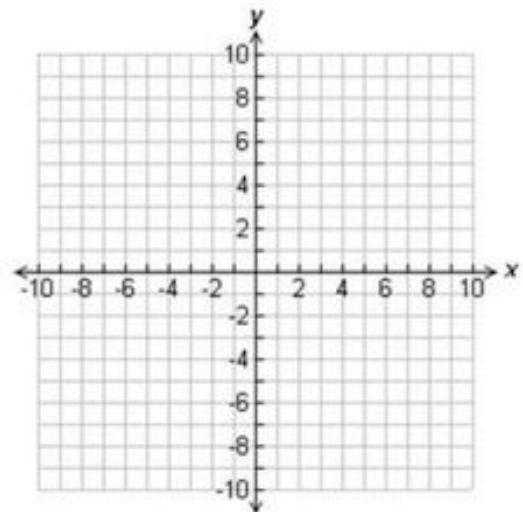
1. Solid line: $y=3x+2$

Dotted line: $y=3x-1$



2. Solid Line: $y = \frac{1}{2}x + 1$

Dotted Line: $-x+2y=-2$



What do you notice about these sets of lines? Are there any relationships between the lines? (Parallel? Perpendicular? Intersecting? None?)



What is the pattern you notice about their slopes? Is there a pattern for the y-intercepts?

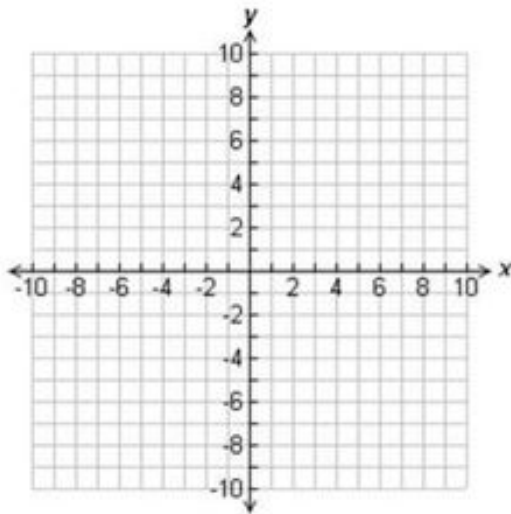
Fill in the blank:

_____ lines have the _____ slope.

Graph the following pairs of linear equations. Make one a solid line and one a dotted line.

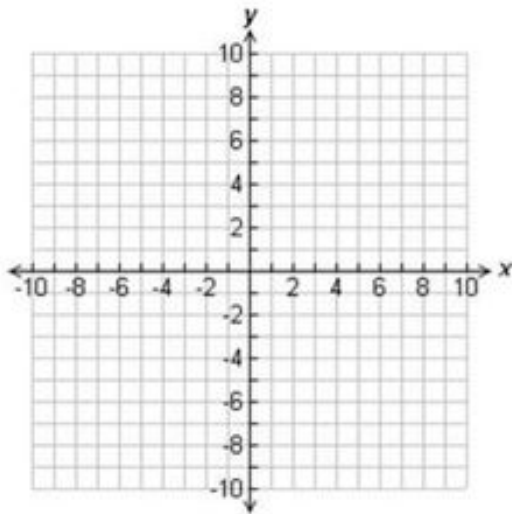
Solid line: $y = 2x + 1$

Dotted line: $y = -\frac{1}{2}x - 1$



2. Solid Line: $y = \frac{2}{3}x - 1$

Dotted Line: $y = -\frac{3}{2}x + 2$



What do you notice about these sets of lines? Are there any relationships between the lines? (Parallel? Perpendicular? Intersecting? None?)

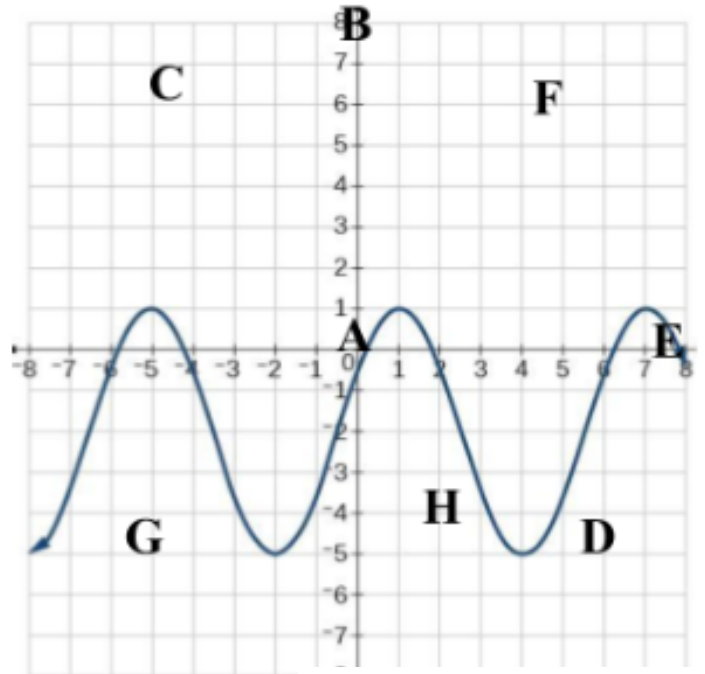
What is the pattern you notice about their slopes? Is there a pattern for the y-intercepts?

Module 2

Part A – Vocabulary

- Match the letters on the image to the right with the appropriate vocabulary word below.

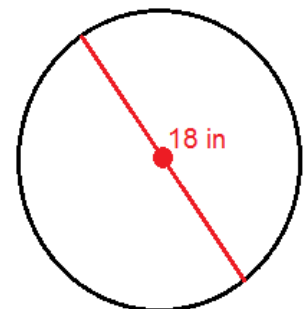
- x - axis _____
- y - axis _____
- origin _____
- Quadrant I _____
- Quadrant II _____
- Quadrant III _____
- Quadrant IV _____



- Identify the ordered pair for Point H. _____

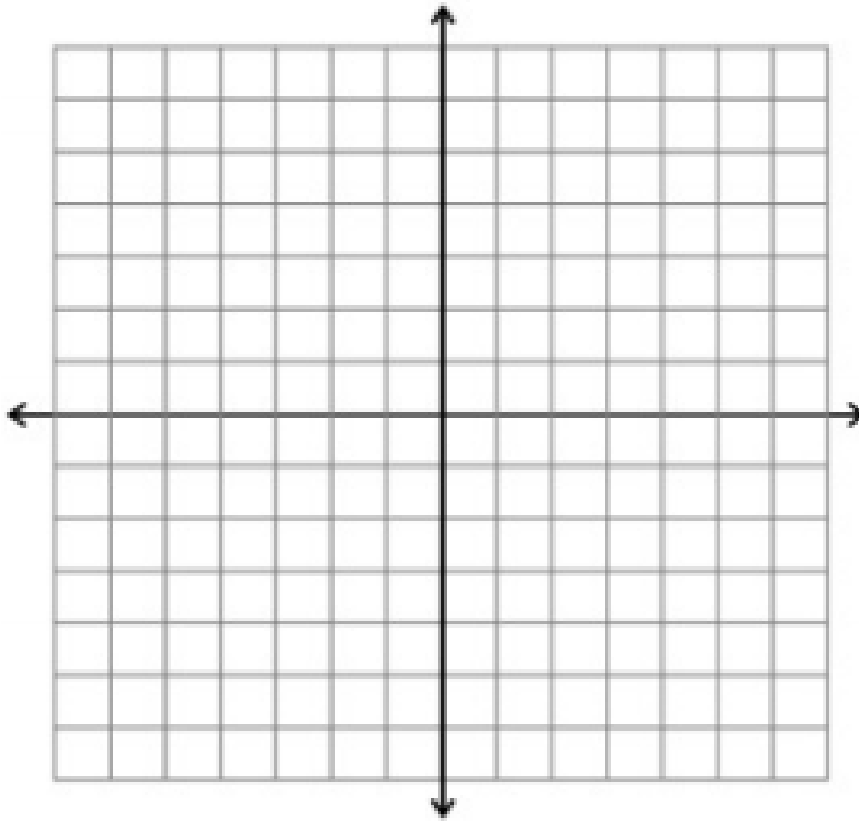
- Plot Point J on the coordinate plane to the right at $(-3, -4)$.

- The diameter of the circle to the right is _____ inches and the radius is _____ inches.



Part B – Transformations

- In the first quadrant of the coordinate grid to the right, draw a heart. The bottom-most point of the heart should land on an intersection of grid-lines.
- Translate the heart down three units.
- Reflect your image from Step 2 over the y-axis.
- Translate your image from Step 3 up 2 units.
- What is the ordered pair of the lowest point of the last heart you've drawn? _____



Part C – Area & Volume

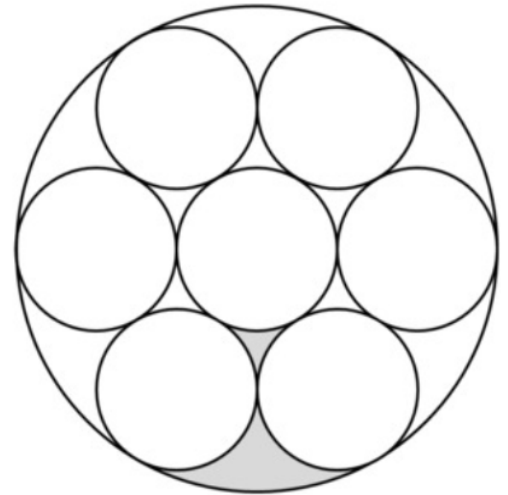
1. Draw a right triangle with an area of 14 units. All sides should be labeled and the right angle should be noted.

Place drawing here!

2. The image to the right contains eight circles, seven small circles and one large circle encompassing them all. Adjacent circles only share one point, and two regions between the smaller circles have been shaded. The small circles each have a radius of 6 cm.

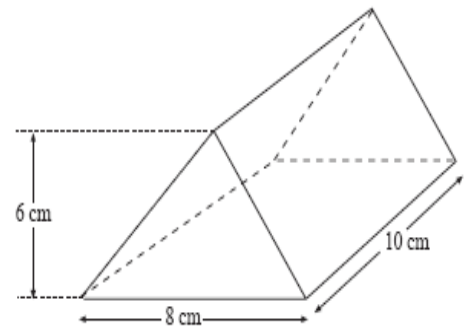
a. What is the area of the large circle? Show all of your work and use appropriate units in your answer.

b. What is the area of the non-shaded region? Show all of your work and use appropriate units in your answer.



3. Refer to the triangular prism shown to the right.

a. What is the **surface area** of the triangular prism to the right? Show all of your work and use appropriate units in your answer.



b. What is the **volume**? Show all of your work and use appropriate units in your answer.

Part D – Pythagorean Theorem

- During the 2009 Wildcard Playoff game between The Baltimore Ravens and The New England Patriots, Ravens player Ed Reed intercepted Tom Brady around the goal line (see the dashed line). He ran the ball nearly all the way to other goal line. Rob Gronkowski of the New England Patriots (see the solid line) chased after Reed and tracked him down just before the other goal line.



In the image above, each hash mark is equal to two yards. Note that the field is 53 yards wide.

- Approximately how far did Ed Reed run during this play? How do you know?

- How much farther did Ed Reed run than Gronkowski?
