Herndon High School
Geometry Honors Summer Assignment

Name: _____

Welcome to Geometry Honors!

This summer packet is for all students enrolled in Geometry Honors at Herndon High School for Fall 2023. The problems and content included are a mix of past Geometry content and an Algebra review.

The packet will be assigned as homework during our first week together. Starting it early will give you more time to review prerequisite content and assess how comfortable you are with the concepts. Be ready to reach out for help at the start of the year with the problems that are difficult for you.

These problems should be completed WITHOUT the help of Desmos or a graphing calculator.

Geometry ideas from elementary and middle school are listed in the table. As you work through the packet, record how you feel about each topic and note questions you may have.

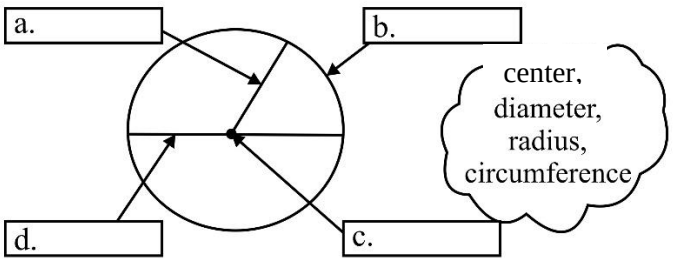
Grade Level	Standard	Great!	OK	HELP!	Notes:
6.7	I know how to use π (pi) to calculate circumference and area of a circle.				
	I can solve problems involving area and perimeter of triangles and rectangles.				
6.8	I know the parts of the coordinate plane I can identify the coordinates of a point I can graph ordered pairs.				
7.4	I can find the volume and surface area of rectangular prisms and cylinders;				
7.5	I can write proportions using the relationship between corresponding sides and angles of similar quadrilaterals and triangles.				
7.6	I can compare quadrilaterals based on their properties. I can use quadrilateral properties to solve for unknown side lengths or angle measures.				
8.5	I can use the relationships among pairs of angles that are vertical, adjacent, supplementary, and complementary to determine the measure of unknown angles.				

8.7	I can apply transformation to a polygon in a coordinate plane and identify practical applications of transformations.				
8.8	I can construct a 3-D model given the top, bottom, side, and front views.				
8.9	I can use the Pythagorean Theorem				
8.10	I can solve area and perimeter problems involving composite figures.				
Algebra Review					
A.	Slope				
B.	Distance				
C.	Solving Equations				
D.	Simplifying Radicals				
E.	Solving Systems of Equations				

Geometry Review:

6.7 Calculate circumference and area of a circle: $C = 2\pi r$ or $C = \pi d$ $A = \pi r^2$ Use 3.14 for π.

Label the parts of the circle:



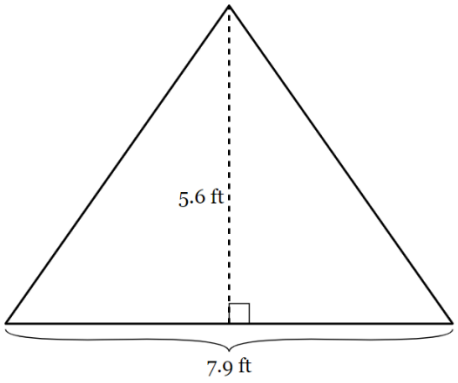
1. The diameter of a circle is 4 inches. Find the circumference.	2. The radius of a circle of 10 cm. Find the circumference.
3. The diameter of a circle is 18 meters. Find the area.	4. The radius of a circle is 7 feet. Find the area.

Herndon High School
Geometry Honors Summer Assignment

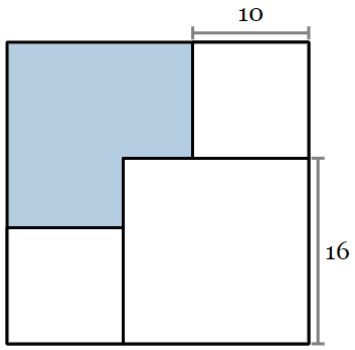
Name: _____

6.7 Find the area of the given figures: $A = \frac{1}{2}bh, A = lw, or\ A = s^2$

5.



6. Each shape in the figure is a square. Find the area of the shaded region.



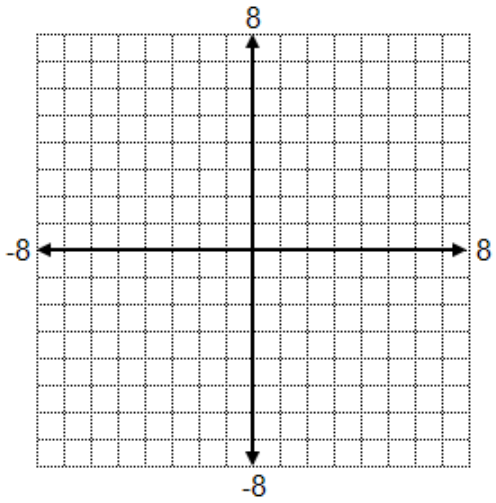
6.8 Identify the parts of the coordinate plane and write the coordinates of the points from the graph.

7. Label the vocabulary in the coordinate plane:

x axis y axis origin

Quadrant 1 Quadrant 2

Quadrant 3 Quadrant 4



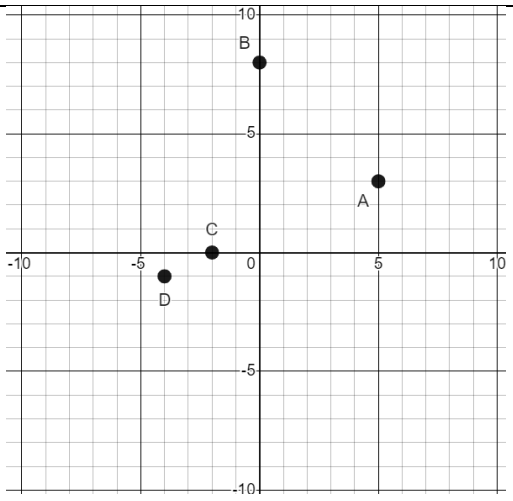
8. Plot and label the ordered pairs:

$E(7,6), F(-4,-6), G(-5,6), H(1,0)$

9. Write the (x, y) ordered pair for each point in the graph to the right:

A _____ B_____

C_____ D_____

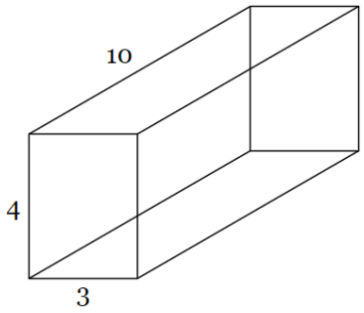


Herndon High School
Geometry Honors Summer Assignment

Name: _____

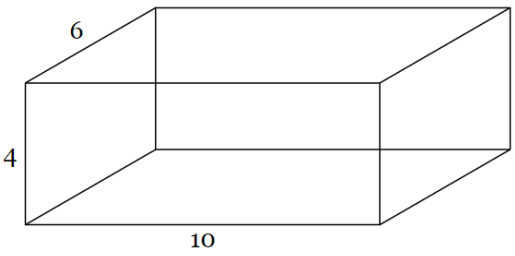
7.4 Find the volume and surface area of the following: $V = Bh$, or $V = lwh$

10.



SA=_____ V=_____

11.

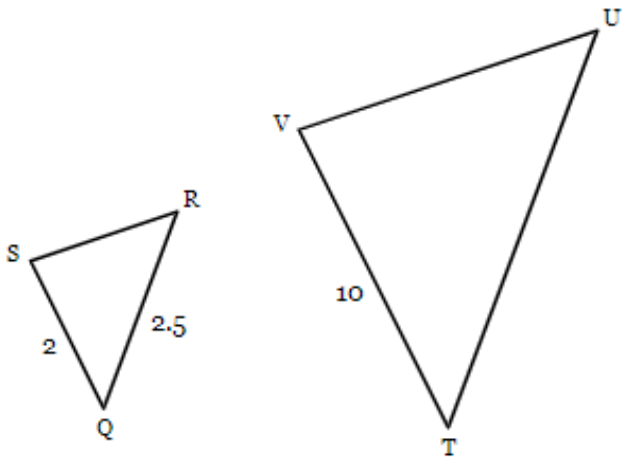


SA=_____ V=_____

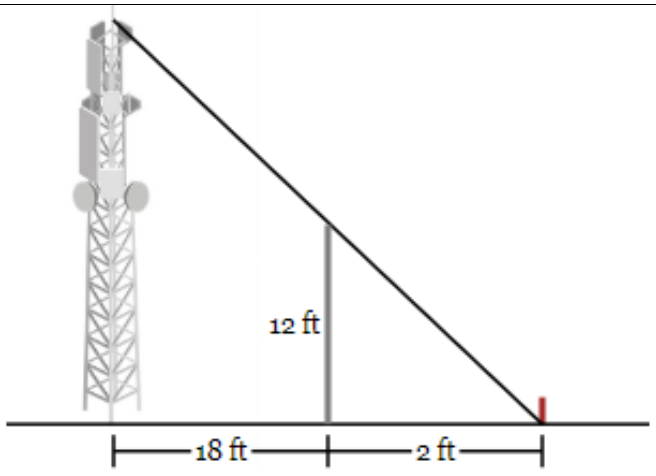
7.5 Write and solve a proportion to solve for the missing side or angle.

12. Triangle QRS is similar to triangle TUV.

Use a proportion to find the measure of side TU.



14. A pole 12 feet tall supports a wire for a tower. Given the diagram, how tall is the tower to the nearest foot?



Herndon High School
Geometry Honors Summer Assignment

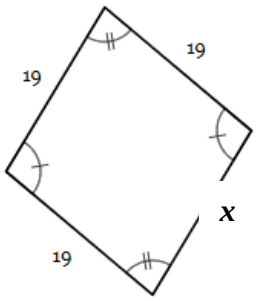
Name: _____

7.6 Given the word bank, identify the shape and solve for unknown side lengths or angle measures.

Word bank:

Parallelogram
Rectangle
Rhombus
Square

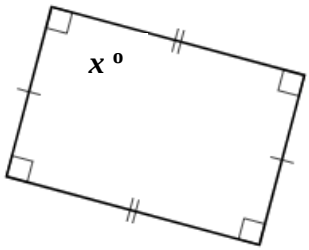
15.



Shape:

x = _____

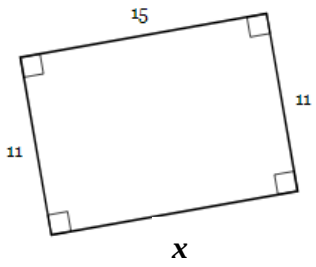
16.



Shape Name:

x = _____

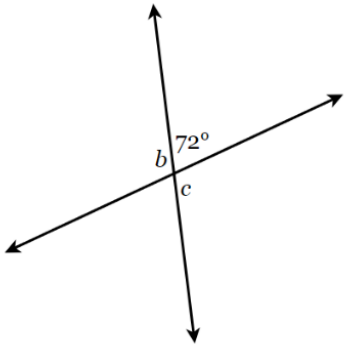
17.



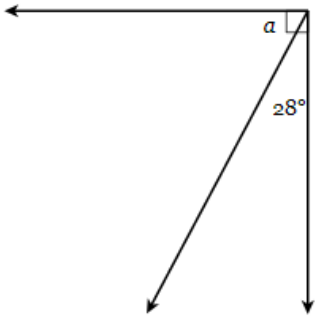
Shape Name:

x = _____

8.5 Determine the measure of the unknown angles: (Vertical angles are congruent, supplementary angles add to 180^o)

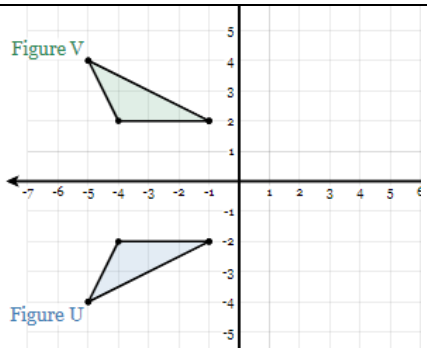


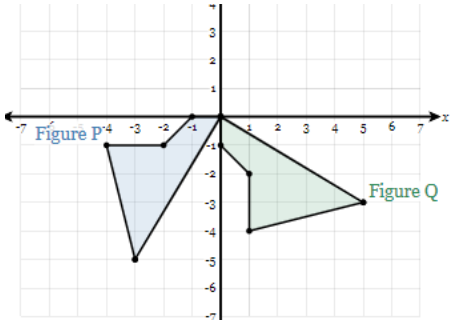
b= _____ **c =** _____

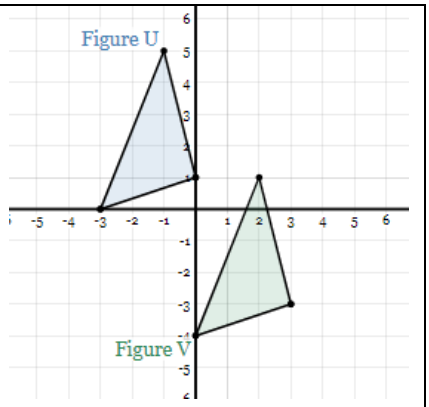


a = _____

8.7 Identify the transformation (reflection, rotation and translation)

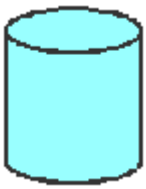


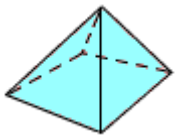




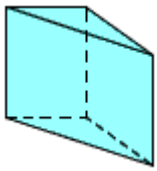
Name: _____

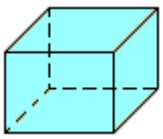
8.8 Name the 3-D solid described in each box.


Cylinder


Square Pyramid


Cone


Triangular Prism


Rectangular Prism

1. My top view is a square and my front and side views are triangles. What am I?

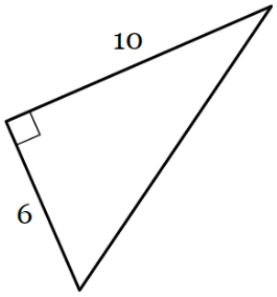
2. My top view is a circle, and my front and side views are rectangles. What am I?

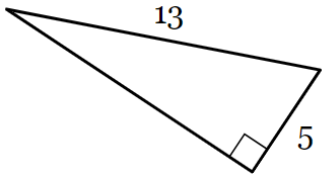
3. My top view is a circle, and my side and front views are triangles. What am I?

4. My top view is a triangle, and my side and front views are rectangles. What am I?

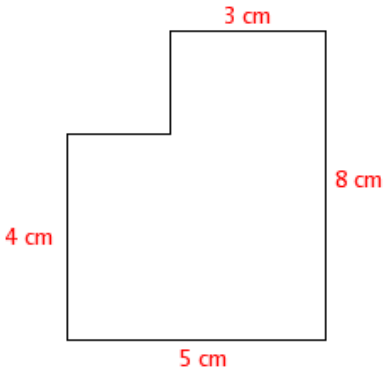
8.9 Use the Pythagorean Theorem to find the length of the third side. Round to two decimal places if necessary:

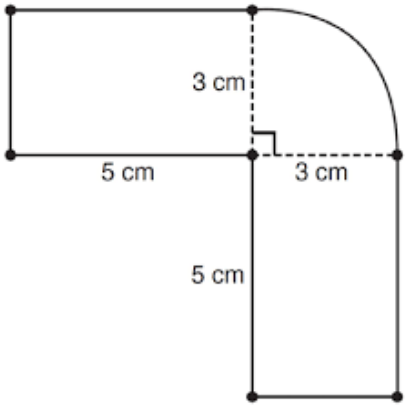
$a^2 + b^2 = c^2$





8.10 Solve for the area and perimeter of each composite figures:





Name: _____

Algebra 1 Review:

A. Calculating Slope

Example: Find the slope of a line passing through (3, -9) and (2, -1).

$m = \frac{y_2 - y_1}{x_2 - x_1}$ Formula for slope

$m = \frac{-1-(-9)}{2-3} = \frac{-1+9}{-1}$ Substitute values and simplify

$m = \frac{8}{-1} = -8$ Slope is -8

Practice: Calculate the slope of the line passing through each set of coordinate points	
1. (5, 6) (9, 8)	2. (-6, -4) (1, 10)
3. (14, -5) (7, 8)	4. (-9, 13) (2, -10)

B. Distance Formula

Example: Find the distance between the points (-4, 3) and (-7, 8).

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ Substitute coordinate values to find the distance

$= \sqrt{(-7-(-4))^2 + (8-3)^2}$ Simplify.

$= \sqrt{(-3)^2 + (5)^2}$

$= \sqrt{34}$

Practice: Find the distance between the following points:	
5. (-3, 4) (1, 4)	6. (-8, 5) (-1, 1)

Name: _____

C. Solving Equations

Practice: Solve for x.

7. $8x+1=7x-9$	8. $3x-12=-6x-12$
9. $\frac{1}{2}(4x-6)=3(x+5)$	10. $9x+10=3\left(\frac{2}{3}x-6\right)$
11. $\frac{x+a}{2}=b$	12. $ax+by=c$
13. $\frac{x}{27}=\frac{4}{9}$	14. $\frac{27}{5}=\frac{3}{x}$
15. $\frac{1}{18}=\frac{5}{-4(x-1)}$	16. $\frac{x}{3x+1}=\frac{2}{3}$

Name: _____

D. Simplifying Radicals

Example 1: Simplify $\sqrt{20}$:

$$\sqrt{20} = \sqrt{4} \cdot \sqrt{5}$$
$$= 2\sqrt{5}$$

Simplify: $\sqrt{\frac{25}{9}}$

$$\sqrt{\frac{25}{9}} = \frac{\sqrt{25}}{\sqrt{9}}$$
$$= \frac{5}{3}$$

Simplify: $\frac{\sqrt{32}}{\sqrt{50}}$

$$\frac{\sqrt{32}}{\sqrt{50}} = \sqrt{\frac{32}{50}}$$
$$= \sqrt{\frac{16}{25}} = \frac{\sqrt{16}}{\sqrt{25}}$$
$$= \frac{4}{5}$$

Helpful hints with radicals: a radical is in simplest form if there are 1) no fractions in the radicand, 2) no perfect squares in the radicand and 3) no radicals in the denominator.

Practice: Simplify		
17. $\sqrt{12}$	$\sqrt{72}$	22. $\sqrt{200}$
23. $\sqrt{\frac{27}{4}}$	$\sqrt{40}$	24. $\frac{\sqrt{12}}{\sqrt{3}}$

Name: _____

E. Solving Systems of Equations

Use Substitution to solve the linear system: $3x+2y=16$ *equation* 1
$x+3y=10$ *equation* 2

Solve for *x* in the second equation: $x = 10 - 3y$
Substitute $(10 – 3y)$ for *x* in the first equation: $3(10 – 3y) + 2y = 16$.
Solve for *y*: $y = 2$.
Substitute the value for *y* in the equation to solve for x: $x = 10 – 3(2)$
$x = 4$
The solution is (4, 2), the ordered pair that makes BOTH equations true.

Practice: Use Substitution to solve the system of linear equations.	
$\begin{cases}2x-3y=-16\\y=5x+1\end{cases}$	18. $\begin{cases}3x+y=6\\5(x+y)=20\end{cases}$
$\begin{cases}6x+2y=13\\4x+y=11\end{cases}$	19. $\begin{cases}x=\frac{1}{2}y+3\\2x-y=3\end{cases}$

Herndon High School
Geometry Honors Summer Assignment

Name: _____