

Exam Review ~ 8th Grade Math ~ Semester 1

Name: _____

Unit 1

1 (2 points) Classify each number as rational or irrational.

a) 4.125 _____

b) 3.3333... _____

c) $\frac{7}{12}$ _____

d) $\sqrt{55}$ _____

2 (3 points) Evaluate each square root. Round to the nearest hundredth if necessary.

a) $\sqrt{49}$

b) $\sqrt{100}$

c) $\sqrt{13}$

3 (2 points) Determine between which two consecutive whole number the square root will fall.

$\sqrt{85}$

4 (2 points) Solve the equation. Show all work. Round to the nearest tenth if necessary.

$x^2 = 31$

5 (1 point) Solve the equation.

$x^2 = 196$

A $x = 38,416$

B $x = 14$

C $x = 14, -14$

D $x = 196$

6 (1 point) Compare the numbers.

$\sqrt{82}$ _____ 8.98238023

A <

B >

C =

7 (1 point) Compare the numbers.

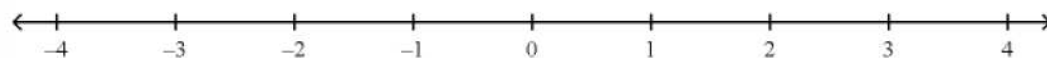
3.5 _____ $\sqrt{12}$

A <

B >

C =

8 (2 points) Plot $\sqrt{9}$, $-\sqrt{3}$, and $\sqrt{5}$ on the number line. Label which point is which.



9 (2 points) Use place value to write each rational number as a decimal. Show your work.

a) $\frac{7}{20}$

b) $\frac{1}{4}$

10 (2 points) Use place value to write each decimal as a fraction in simplest form. Show your work.

a) 1.9

b) .08

11 (1 point) Convert the repeating decimal to a fraction.

$\overline{.8}$

A $\frac{4}{5}$

B $\frac{8}{10}$

C $\frac{.8}{10}$

D $\frac{8}{9}$

12 (1 point) Convert the repeating decimal to a fraction.

$\overline{.71}$

A $\frac{71}{100}$

B $\frac{71}{99}$

C $\frac{7}{10}$

D $\frac{71}{9}$

13 (1 point) Find the cube root. $\sqrt[3]{64}$

A 8

B 262,144

C 4

D 21.3

14 (1 point) Simplify. $\sqrt[3]{512}$

A 170.7

B 8

C 22.6

D 134,217,728

15 (1 point) Find the side length of a cube with the given volume.

$V = 1000 \text{ meters}^3$

A 31.6 meters

B 100 meters

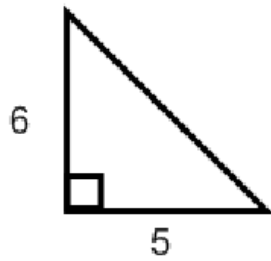
C 3,000 meters

D 10 meters

16 (2 points) How can you prove that the cube root of 1728 is 12? In other words, how could you explain to someone why the cube root of 1728 is 12?

$$\sqrt[3]{1728} = 12$$

- 17 (1 point) Find the length of the hypotenuse. Round your answer to the nearest tenth.

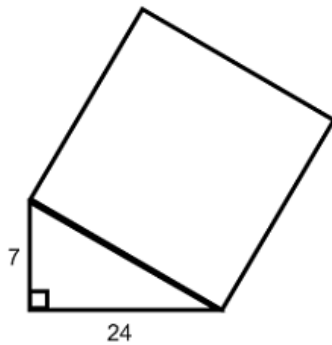


- A 7.8 B 11 C 61 D 3.3

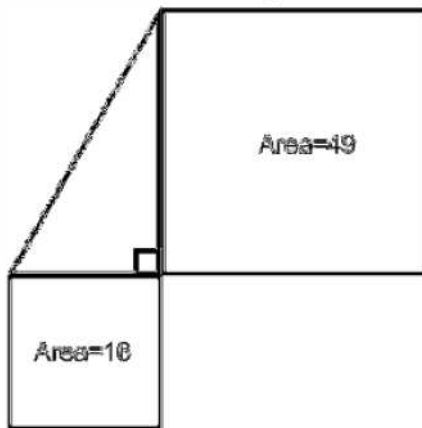
- 18 (2 points) Do the following side lengths form a right triangle? Show your work.

$a = 7, b = 9, c = 13$

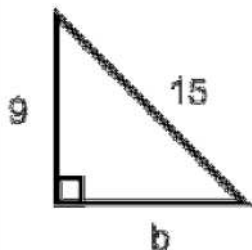
- 19 (2 points) Find the area of the square. Use pictures to find the answer.



- 20 (2 points) Find the length of the hypotenuse. Use pictures to find the answer.



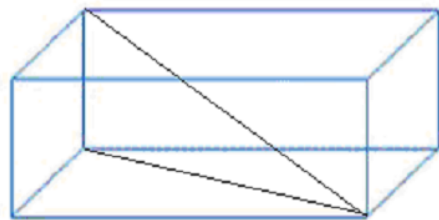
- 21 (2 points) Find the missing side length. Round to the nearest **tenth** if necessary. SHOW WORK



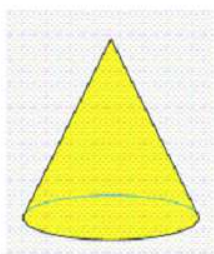
- 22** (3 points) You're locked out of your house and the only open window is on the second floor, 20 feet above the ground. You need to borrow a ladder from one of your neighbors. There's a bush along the edge of the house, so you'll have to place the ladder 7 feet from the house. What length of ladder do you need to reach the window?

Draw a diagram, then solve.

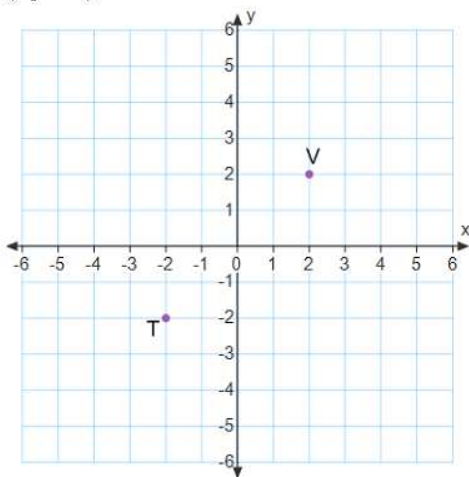
- 23** (2 points) The width of a rectangular prism is 5, the height is 8, and the length is 12. First label the diagram, then find the length of the diagonal of the entire prism. Round to the nearest tenth if necessary.



- 24** (2 points) A given cylinder has a radius of 9 cm and height of 40 cm. Label the diagram and then find the length of the diagonal.



- 25** (3 points) What is the distance between T and V? Draw a right triangle on the grid and then find the distance.



Unit 2

1. (1 point) Solve the equation. $w + 12 = 26$
- A. -38
 - B. 14
 - C. 38
 - D. -14
2. (1 point) Find the solution. $\frac{k}{-2} = -27$
- A. $\frac{27}{2}$
 - B. -25
 - C. -29
 - D. 54
3. (1 point) Solve for p. $-9p - 42 = -6$
- A. 27
 - B. -4
 - C. 41
 - D. -57
4. (1 point) Solve. $\frac{w}{5} - 10 = -7$
- A. -85
 - B. -12
 - C. 15
 - D. 8
5. (1 point) What are the solutions?
 $3n - 8 + 4n = 48$
- A. -8
 - B. 8
 - C. 10
 - D. 5
6. (1 point) Solve. $-6x + 8 + 3x = 8 - 3x$
- A. $-2\frac{2}{3}$
 - B. 0
 - C. No Solution
 - D. Infinitely Many Solution
7. (1 point) What would you do first to solve this equation?
 $-7 = 8 - \frac{2}{3}x$
- A. subtract 8
 - B. multiply by $-\frac{3}{2}$
 - C. add 7
 - D. add 8

Write and solve an equation.

8. (1 point) Jessie is saving money to buy a new phone that costs \$98. She plans to save \$7 per week. How many weeks w will it take her to save \$98?
- A. $\frac{w}{7} = 98$; 14 weeks
 - B. $w - 98 = 7$; 105 weeks
 - C. $7w = 98$; 14 weeks
 - D. $7 + w = 98$; 91 weeks

Short Answer.

Show all work!!!

9. (1 point) Solve the equation. $19d = 95$

$$d =$$

10. (2 points) Find the solution. $7x + 5 = -9$

$$x =$$

11. (2 points) Solve. $\frac{1}{3}d + 7 = 4$

$$d =$$

12. (3 points) Find the value of y. $5(y - 5) = 25$

$$y =$$

13. (3 points) Solve for x. $7x + 6 = 2x + 41$

$$x =$$

14. (3 points) Solve. $-3(m - 20) = 3m$

$$m =$$

15. (3 points) Find the solution. $9(x + 4) = 27 + 9x$

$$x =$$

16. (3 points) Ariel solved the following problem.
Explain her 2 errors and correct them.

$$4x + 1 = 3(x - 7)$$

$$4x + 1 = 3x - 7$$

$$7x + 1 = -7$$

$$7x = -7$$

$$x = -1$$

17. (4 points) Six Banners Amusement Park has a new pricing plan. It only costs \$15 to get into the park, but they charge \$4 for every ride. If you have \$63 to spend, how many rides can you go on?

a. Define your variable. (1 point)	b. Write an equation. (1 point)	c. Solve the equation. (2 points)
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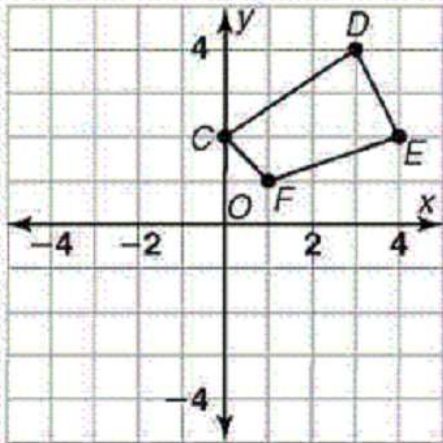
18. (5 points) Andrea is going to live with her grandparents in Florida for a month this summer and wants to join a gym while she is there. Gym A charges \$5 per day to use the facility. Gym B charges a membership fee of \$90 and only \$2 per day to use it. After how many days will the gyms be the same cost?

a. Define your variable. (1 point)	b. Write an equation. (1 point)	c. Solve the equation. (2 points)
d. <u>Give specific advice</u> to Andrea about which gym she should join <u>and why</u> . (1 point)		

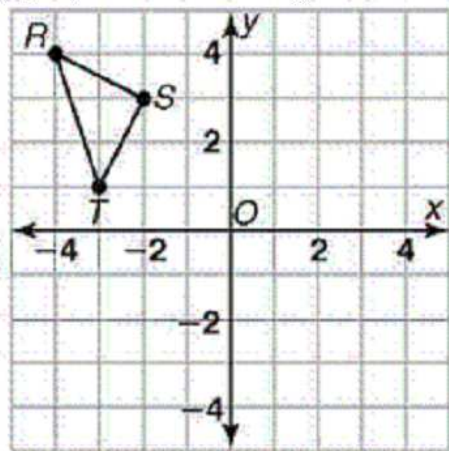
Unit 3

Use the graph on separate paper to help.

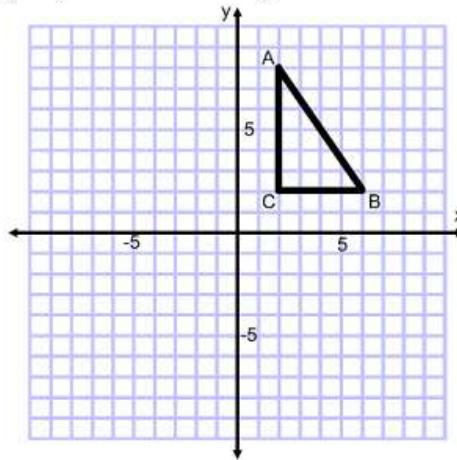
1. (2 points) Translate figure CDEF 3 units left and 4 units down. (1 point) Label the new figure C'D'E'F'.



2. (2 points) Reflect figure RST over the x-axis. (1 point) Label the new figure R'S'T'.

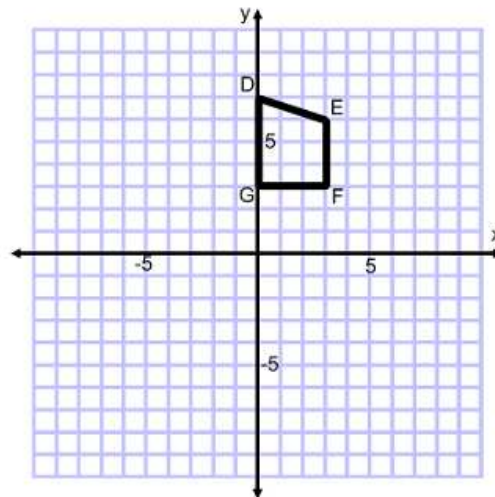


3. (2 points) Rotate the figure ABC 90° clockwise (to the right) around point C. (1 point) Label the new figure A'B'C'.



- (1 point) Write the coordinates for the new figure.
A' () B' () C' ()

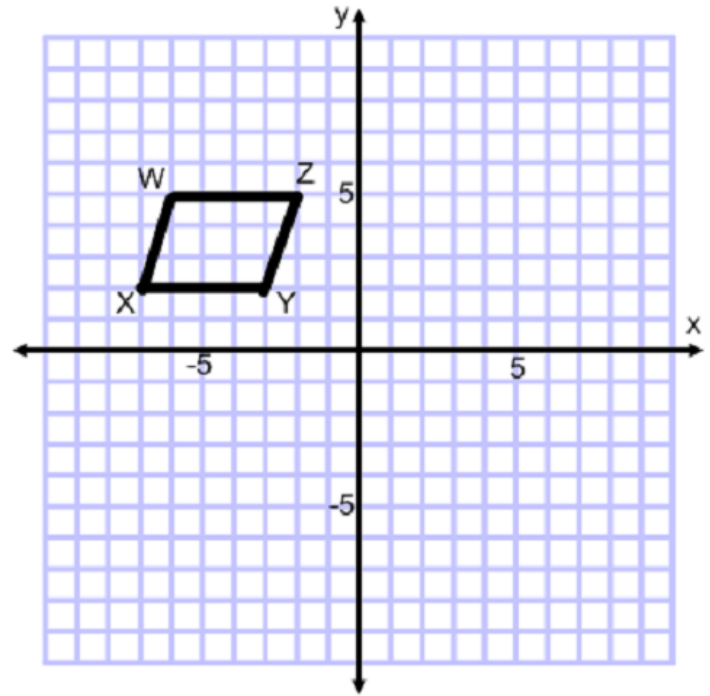
4. (2 points) Rotate the figure DEFG 90° counter-clockwise (to the left) around the origin. (1 point) Label the new figure D'E'F'G'.



5. (4 points) Perform the series of transformations on figure WXYZ.

A (2 points) Translate figure WXYZ so that: $(x, y) \rightarrow (x + 1, y - 6)$
Label it $W'X'Y'Z'$.

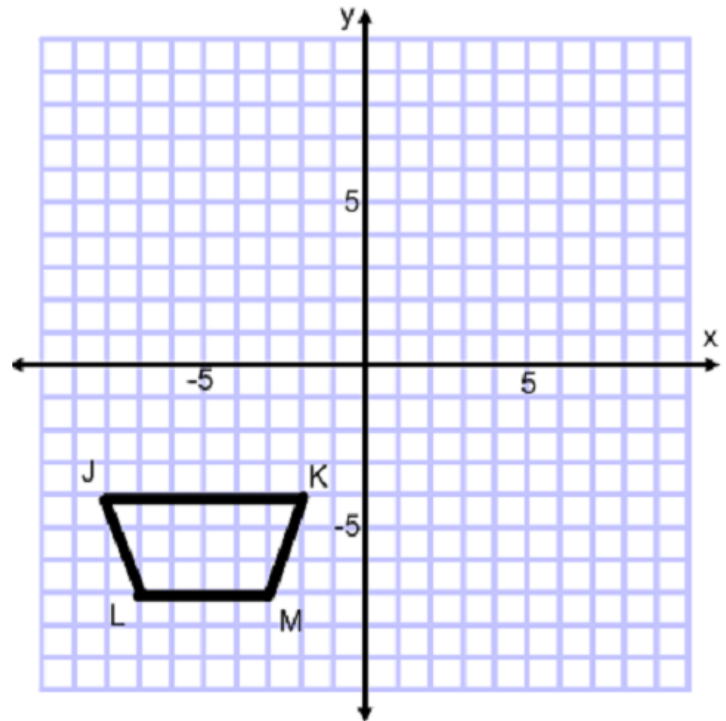
B (2 points) Reflect the new figure over the y-axis.
Label it $W''X''Y''Z''$.



6. (4 points) Perform the series of transformations on figure JKLM.

A (2 points) Translate figure JKLM so that: $(x, y) \rightarrow (x - 8, y + 2)$
Label it $J'K'L'M'$.

B (2 points) Rotate $J'K'L'M'$ 90° counter-clockwise around the origin.
Label it $J''K''L''M''$.

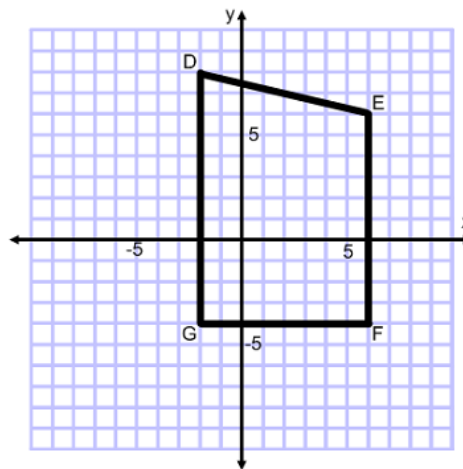


7. (2 points) What is the image of $(4, 6)$ after the dilation with scale factor 2?

8. (2 points) Write a rule to describe a dilation of $1/2$?
 $(x, y) \rightarrow (\quad , \quad)$

9. (3 points) Perform a dilation on the figure with a scale factor of $\frac{1}{2}$.

D () D' ()
 E () E' ()
 F () F' ()
 G () G' ()



16. (1 point) What is the image of (2, 3) after the translation $(x, y) \rightarrow (x - 5, y - 2)$?

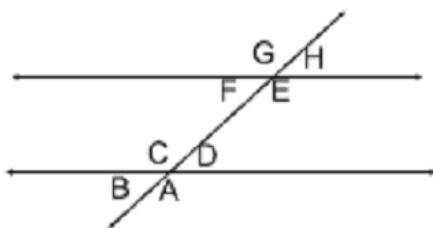
18. (1 point) What is the image of (2, 3) after the reflection across the x-axis?

17. (1 point) Which is a rule to describe the translation of left 3 and up 4? $(x, y) \rightarrow (\quad , \quad)$

19. (1 point) Which is a rule to describe the reflection over the y-axis? $(x, y) \rightarrow (\quad , \quad)$

Unit 4

1. (4 points) Give an example of the following pairs of angles.



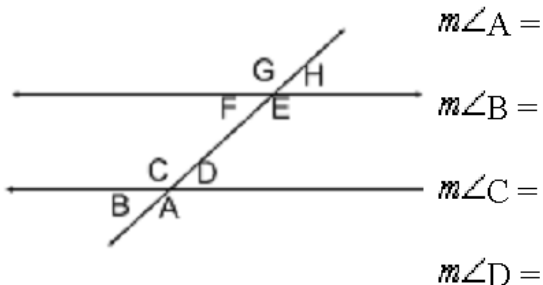
A) Corresponding _____

B) Alternate Interior _____

C) Alternate Exterior _____

D) Same-Side Interior _____

2. (4 points) The $m\angle H = 60^\circ$, Fill in the measure of all the angles. ($\frac{1}{2}$ point each)



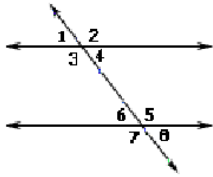
$m\angle E =$

$m\angle F =$

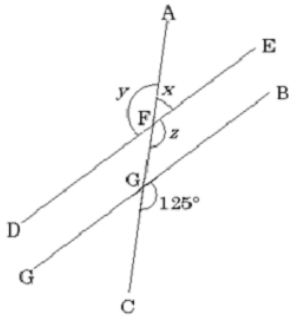
$m\angle G =$

$m\angle H =$

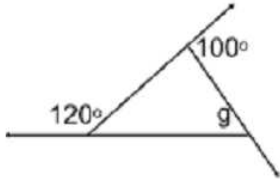
3. (1 point) Identify a pair of corresponding angles in the figure.



- a. $\angle 1$ and $\angle 4$
 b. $\angle 3$ and $\angle 7$
 c. $\angle 3$ and $\angle 5$
 d. $\angle 3$ and $\angle 6$
4. (1 point) What is the measure of angle z ?



- a. 55°
 b. 125°
 c. 35°
 d. 65°
7. (2 points) Find the measure of $\angle g$.

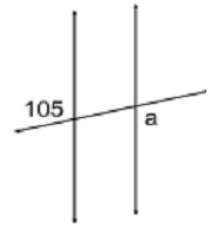


- a. 60°
 b. 80°
 c. 40°
 d. 100°

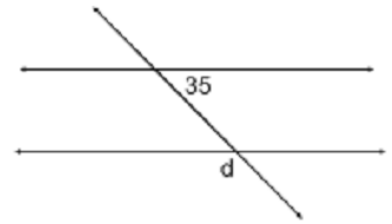
5. (2 points) Identify the type of angle. Find the measure of $\angle a$.

A. Name of angle pair:

B. $\angle a =$ _____



6. (2 points) Find the measure of angle d . Show your work.



$m\angle d =$ _____

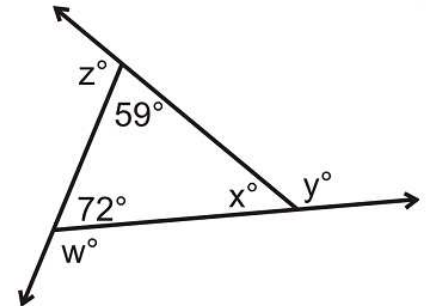
11. (4 points) Find all the missing angles. Show your work.

$m\angle w =$

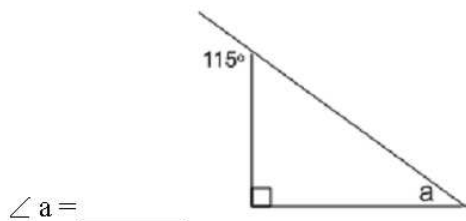
$m\angle x =$

$m\angle y =$

$m\angle z =$



8. (2 points) Find the measure of $\angle a$. Show your work.



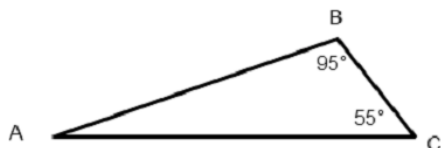
$\angle a =$ _____

9. (2 points) Find the measure of $\angle k$. Show your work.



$m\angle k =$ _____

10. (1 point) Two interior angles of triangle ABC measure 55° and 95° . What is the measure of $\angle A$?



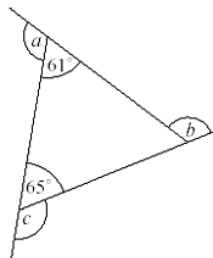
- a. 30°
- b. 105°
- c. 45°
- d. 20°

13. (4 points) Find all three missing exterior angles. Then, find the sum of the exterior angles.

$m\angle a =$

$m\angle b =$

$m\angle c =$



Sum of exterior angles _____

14. (3 points) 1. Find the sum of the two given angles.
2. Then find the missing angle.
3. How are the two answers related?

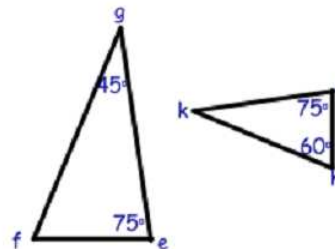


1. _____

2. $m\angle ? =$ _____

3. _____

12. (1 point) Which statement best describes these two figures?:



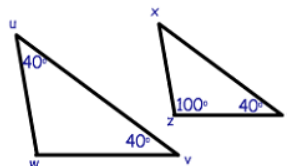
- a. not similar, because the side length information is not given.
- b. congruent, because two corresponding angles are congruent, so the third angle must also be congruent
- c. not similar, because only two of the corresponding angles are congruent
- d. similar, because two of the corresponding angles are congruent, so the third angle must also be congruent

15. (3 points) a. Are the triangles similar? YES or NO
b. Explain how you know:

(ex. "corresponding sides are proportional")
(ex. "corresponding angles are congruent")

c. Write a similarity statement:

(ex. " $\triangle STU \sim \triangle XYZ$ ")

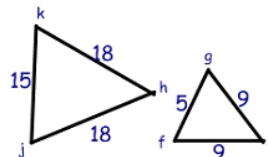


16. (3 points) a. Are the triangles similar? YES or NO
b. Explain how you know:

(ex. "corresponding sides are proportional")
(ex. "corresponding angles are congruent")

c. Write a similarity statement:

(ex. " $\triangle STU \sim \triangle XYZ$ ")



17. (3 points) Write the formula for the volume of the each.

Cylinder: $V =$

Cone: $V =$

Sphere: $V =$

18. (2 points) A pringles can has a **diameter** of 8 centimeters. If the height of the can is 30 centimeters, what is the volume of the can?

1. Write the formula:

2. Replace with Numbers

3. Solve & label

19. (2 points) A globe has a radius of 1.5 feet. What is the volume of the globe?

1. Write the formula:

2. Replace with Numbers

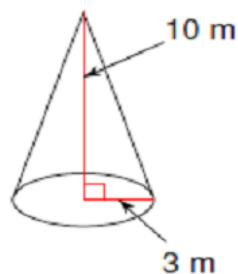
3. Solve & label

20. (2 points) Find the volume of the cone.

1. Write the formula:

2. Replace with Numbers

3. Solve & label



21. (2 points) A can of chicken noodle soup (a cylinder) has a radius of 2.5 inches and a height of 8 inches. What is the volume of the can?

1. Write the formula:

2. Replace with Numbers

3. Solve & label