

Name: ANSWER KEY

Monica

Geometry Period: _____

Date: _____

Directions: Answer all of the questions below and be sure to show all of your work! You may use the Regents reference sheet to help you.

- 1) Shannon has a rectangular prism with a length of 12 centimeters, a width of 6 centimeters, and an unknown height. She needs to build another rectangular prism with a length of 3 centimeters and the same height as the original prism. The volume of the two prisms will be the same. Find the width, in centimeters, of the new prism.

$$V = Lwh$$

$$V = 12 \cdot 6 \cdot h$$

$$V = 72h$$

$$V = 3 \cdot w \cdot h$$

$$\frac{72h}{3h} = \frac{3wh}{3h}$$

$$\boxed{24 = w}$$

- 2) A fish tank with a rectangular base has a volume of 3,360 cubic inches. The length and width of the tank are 14 inches and 12 inches, respectively. Find the height, in inches, of the tank.

$$V = Lwh$$

$$3360 = 14 \cdot 12 \cdot h$$

$$3360 = 168h$$

$$\boxed{20 = h}$$

- 3) The volume of a rectangular pool is 51,840 cubic feet. Its length, width, and depth are in the ratio 5:3:2. Find the number of feet in each of the three dimensions of the pool.

$$V = Lwh$$

$$51840 = 5x \cdot 3x \cdot 2x$$

$$51840 = 30x^3$$

$$1728 = x^3$$

$$12 = x$$

$$5(12) = 60$$

$$3(12) = 36$$

$$2(12) = 24$$

- 4) The lateral faces of a regular pyramid are composed of

1) squares

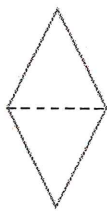
3) congruent right triangles

2) rectangles

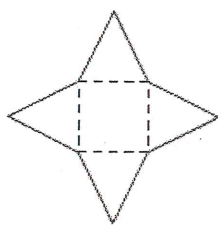
4) congruent isosceles triangles

5) Which piece of paper can be folded into a pyramid?

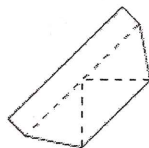
1)



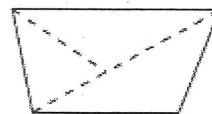
2)



3)



4)



6) The base of a pyramid is a rectangle with a width of 6 cm and a length of 8 cm. Find, in centimeters, the height of the pyramid if the volume is 288 cm^3 .

$$V = \frac{1}{3}Bh$$

$$V = \frac{1}{3}lwh$$

$$288 = \frac{1}{3}(6)(8)h$$

$$288 = 16h$$

$$\boxed{18 = h}$$

7) The similarity ratio of two similar solids is 3:5. If the volume of the smaller solid is 108 cubic inches, what is the volume of the larger solid?

$$\frac{3^3}{5^3} = \frac{27}{125}$$

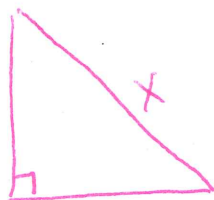
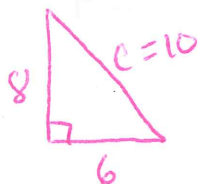
$$\frac{27}{125} = \frac{108}{x}$$

$$27x = 13500$$

$$\boxed{x = 500}$$

Eliminate Question #8

9) The legs of a right triangle are 6 and 8 inches. The area of a similar triangle is 384 square inches. What is the length of the hypotenuse of the larger triangle?



$$\frac{24}{384} = \frac{1}{16}$$

$$\frac{\sqrt{1}}{\sqrt{16}} = \frac{1}{4} = \frac{10}{x}$$

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}(6)(8)$$

$$\boxed{A = 24}$$

$$6^2 + 8^2 = c^2$$

$$36 + 64 = c^2$$

$$100 = c^2$$

$$10 = c$$

$$\boxed{x = 40}$$

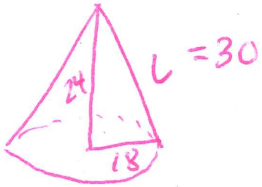
10) If the volume of a sphere is 4500π cubic inches, what is the surface area of the sphere?

$$V = \frac{4}{3}\pi r^3$$
$$\frac{4500\pi}{\frac{4}{3}\pi} = \frac{\frac{4}{3}\pi r^3}{\frac{4}{3}\pi}$$
$$3375 = r^3$$
$$15 = r$$

$$SA = 4\pi r^2$$
$$= 4\pi \cdot 15^2$$

$$SA = 900\pi$$

11) A cone has a diameter of 36 inches and a vertical height of 24 inches. What is the lateral area of the cone? Leave your answer in terms of π .



$$24^2 + 18^2 = L^2$$
$$900 = L^2$$
$$30 = L$$

$$L = \pi r L$$

$$L = \pi \cdot 18 \cdot 30$$

$$L = 540\pi$$

12) If the radius of a sphere is doubled, how does the volume of the sphere change?

$$V = \frac{4}{3}\pi r^3$$

$$V = \frac{4}{3}\pi (2r)^3$$

$$V = \frac{4}{3}\pi \cdot 8r^3$$

The volume is multiplied by 8.

13) If the length of a rectangular prism is tripled, the width is doubled, and the height is quadrupled, how does the volume of the rectangular prism change?

$$V = Lwh$$

$$V = 3L \cdot 2w \cdot 4h$$

$$V = 24Lwh$$

The volume is multiplied by 24.

