

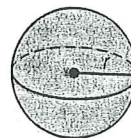
Name Key Hour _____

Int. Geometry

Ferrington

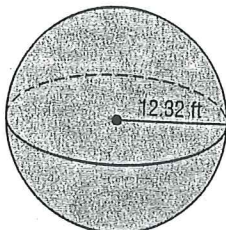
13-3: Volume of Spheres

If a sphere has a volume of V cubic units and a radius of r units, then $V = \frac{4}{3}\pi r^3$.



Example:

Find the volume of this



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

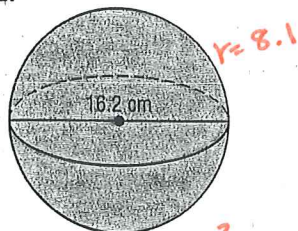
$$V = \frac{4}{3}\pi (12.32)^3$$

$$V = \frac{4}{3}\pi (1869.96)$$

$$V = 7828.9 \text{ ft}^3$$

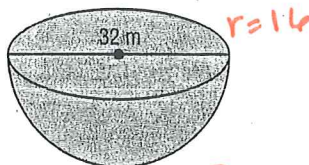
Find the volume of the following spheres.

1.



$$\begin{aligned} V &= \frac{4}{3}\pi (8.1)^3 \\ &= \frac{4}{3}\pi (531.4) \\ &= 2225.0 \text{ cm}^3 \end{aligned}$$

2.



$$\begin{aligned} V &= \frac{4}{3}\pi (16)^3 \\ &= \frac{17,148.6}{2} \\ &= 8574.3 \text{ m}^3 \end{aligned}$$

3.



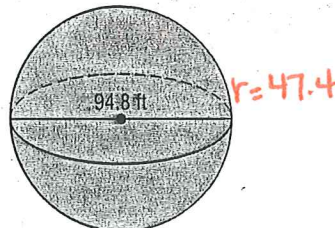
$$\begin{aligned} V &= \frac{4}{3}\pi (8)^3 \\ &= \frac{4}{3}\pi (512) \\ &= 2143.6 \text{ cm}^3 \end{aligned}$$

4.



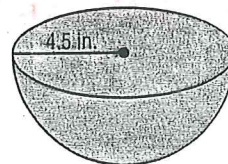
$$\begin{aligned} V &= \frac{4}{3}\pi (5)^3 \\ &= \frac{4}{3}\pi (125) \\ &= 523.3 \text{ ft}^3 \end{aligned}$$

5.



$$\begin{aligned} V &= \frac{4}{3}\pi (47.4)^3 \\ &= 445,865.0 \text{ ft}^3 \end{aligned}$$

6.



$$\begin{aligned} V &= \frac{4}{3}\pi (4.5)^3 \\ &= \frac{4}{3}\pi (91.1) \\ &= \frac{381.5}{2} \\ &= 190.8 \text{ in}^3 \end{aligned}$$

13-4: Similar and Congruent Solids

Similar solids are solids that have exactly the same shape, but not necessarily the same size. The corresponding measures of side lengths of similar solids are proportional and have *scale factor*.

Congruent solids are exactly the same shape and exactly the same size. They have a scale factor of 1.

Example:

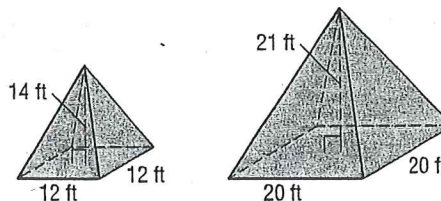
Determine whether the pair of solids is *similar*, *congruent*, or *neither*.

$$\frac{12}{20} = .6$$

$$\frac{12}{20} = .6$$

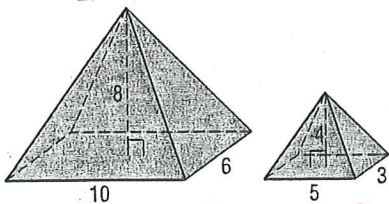
$$\frac{14}{21} = .66\bar{6}$$

NEITHER



Determine whether the pair of solids is *similar*, *congruent*, or *neither*.

1.



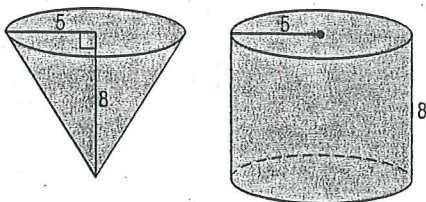
$$\frac{10}{5} = 2$$

$$\frac{6}{3} = 2$$

$$\frac{8}{4} = 2$$

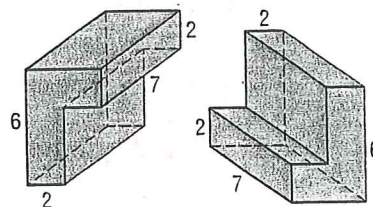
SIMILAR

2.



NEITHER

3.



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

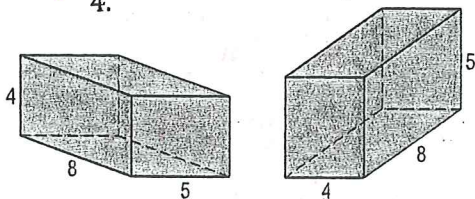
$$\frac{6}{6} = 1$$

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

$$\frac{7}{7} = 1$$

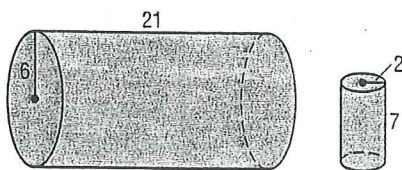
CONGRUENT

4.



CONGRUENT

5.

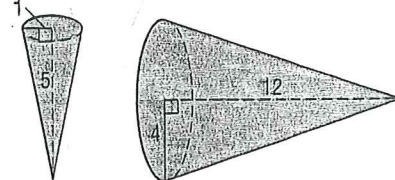


$$\frac{2}{6} = \frac{1}{3}$$

$$\frac{7}{21} = \frac{1}{3}$$

SIMILAR

6.



$$\frac{1}{4} = .25$$

$$\frac{5}{12} = .42$$

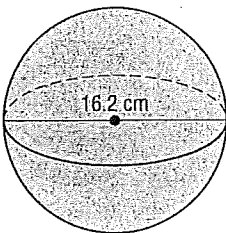
NEITHER

13-3 Skills Practice***Volumes of Spheres***

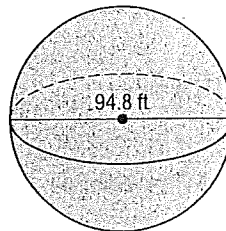
Find the volume of each sphere or hemisphere. Round to the nearest tenth.

1. The radius of the sphere is 9 centimeters.
2. The diameter of the sphere is 10 inches.
3. The circumference of the sphere is 26 meters.
4. The radius of the hemisphere is 7 feet.
5. The diameter of the hemisphere is 12 kilometers.
6. The circumference of the hemisphere is 48 yards.

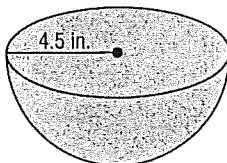
7.



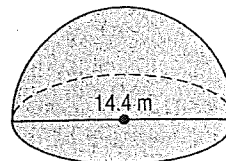
8.



9.



10.

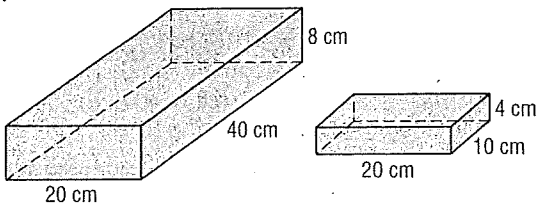


13-4 Skills Practice

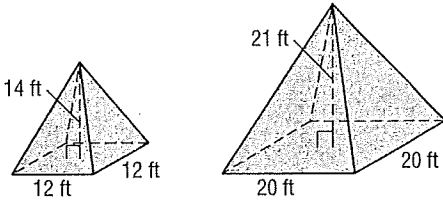
Congruent and Similar Solids

Determine whether each pair of solids are *similar*, *congruent*, or *neither*.

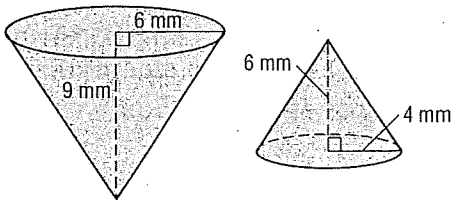
1.



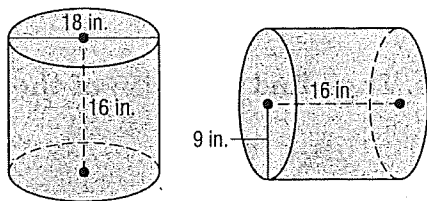
2.



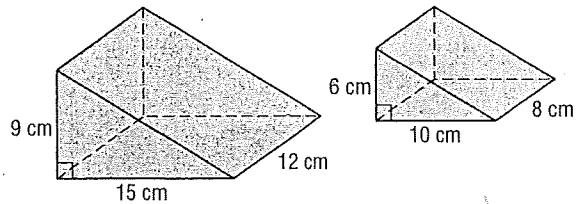
3.



4.



For Exercises 5-8, refer to the two similar prisms.



5. Find the scale factor of the two prisms.

6. Find the ratio of the surface areas.

7. Find the ratio of the volumes.

8. Suppose the volume of the larger prism is 810 cubic centimeters. Find the volume of the smaller prism.