Solids Exercise

Find the volume and surface area of each of the solids in #1–5. (Answers follow the exercise.)

1. A rectangular solid with dimensions 4, 6, and 8.

2. A rectangular solid with dimensions 3, 4, and 12.

3. A cube with edge 6.

4. A cube with edge $\sqrt{2}$.

5. A cylinder with height 12 and radius 6. (Find the total surface area.)

6. What is the area of a face of a cube with volume 64?

SOLIDS TEST

1. What is the ratio of the volume of a cylinder with radius r and height h to the volume of a cylinder with radius h and height r?

   ○ $\frac{r}{h}$

   ○ $\frac{h}{r}$

   ○ $\frac{1}{1}$

   ○ $\frac{\pi r}{h}$

   ○ $\frac{h}{\pi r}$

2. A cube and a rectangular solid are equal in volume. If the lengths of the edges of the rectangular solid are 4, 8, and 16, what is the length of an edge of the cube?

   ○ 4

   ○ 8

   ○ 12

   ○ 16

3. When 16 cubic meters of water are poured into an empty cubic container, it fills the container to 25 percent of its capacity. What is the length of one edge of the container, in meters?

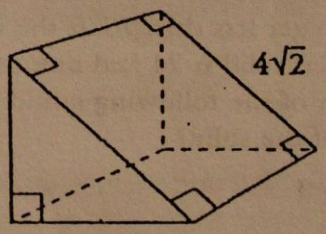
   ○ $2\sqrt{2}$

   ○ 4

   ○ $4\sqrt{2}$

   ○ 8

   ○ 16



4. If the solid above is half of a cube, then the volume of the solid is

   ○ 16

   ○ 32

   ○ 42

   ○ 64

   ○ $64\sqrt{2}$

5. Milk is poured from a full rectangular container with dimensions 4 inches by 9 inches by 10 inches into a cylindrical container with a diameter of 6 inches. Assuming the milk does not overflow the container, how many inches high will the milk reach?

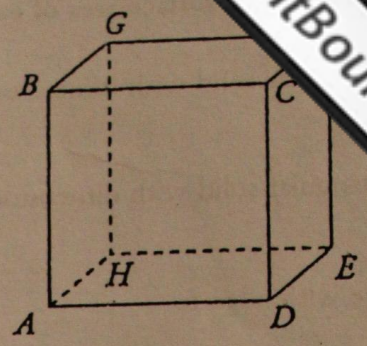
- ○ $\frac{60}{\pi}$
- ○ 24
- ○ $\frac{40}{\pi}$
- ○ 10
- ○ 3π

6. What is the radius of the largest sphere that can be placed inside a cube of volume 64?

- ○ $6\sqrt{2}$
- ○ 8
- ○ 4
- ○ $2\sqrt{2}$
- ○ 2

7. Each dimension of a certain rectangular solid is an integer less than 10. If the volume of the rectangular solid is 24 and one edge has length 4, which of the following could be the total surface area of the solid?

- ○ 48
- ○ 52
- ○ 56
- ○ 60
- ○ 96



8. Which of the following statements about the cube above must be true?

I. FD is parallel to GA.

II. $\triangle GCF$ and $\triangle AHD$ have the same area.

III. $AF = GD$

- ○ I only
- ○ I and II only
- ○ I and III only
- ○ II and III only
- ○ I, II, and III