

Standard 4: Students use concepts and tools of measurement to describe and quantify the world.

Directions: Select the best choice for each of the following questions.

1. If the radius of a sphere is tripled, then the new surface area of the sphere is _____ times larger than the original sphere's surface area. (Standard 9-10.4.2)
 - a. three
 - b. nine
 - c. twenty-seven
 - d. not enough information
2. If the radius of a sphere is tripled, then the new volume of the sphere is _____ times larger than the original sphere's volume. (Standard 9-10.4.2)
 - a. three
 - b. nine
 - c. twenty-seven
 - d. not enough information
3. If there are 2.54 centimeters in 1 inch, then how many inches are there in 2 meters (to the nearest hundredth)? (Standard 9-10.4.4)
 - a. 78.74 inches
 - b. 508.00 inches
 - c. 5.08 inches
 - d. none of these
4. If 1 kilogram is equal to 2.2 pounds, then how many pounds is 62 kilograms (to the nearest pound)? (Standard 9-10.4.4)
 - a. 28 pounds
 - b. 140 pounds
 - c. 136 pounds
 - d. none of these
5. What is the best estimate of weight for a speck of sawdust? (Standard 9-10.4.1)
 - a. 1 mg
 - b. 1 g
 - c. 1 kg
6. What is the best estimate of metric volume for a soft-drink can? (Standard 9-10.4.1)
 - a. 4 mL
 - b. 40 mL
 - c. 400 mL
 - d. 4000 mL
7. Which is the larger measurement 100 meters or 100 yards? (Standard 9-10.4.3)
 - a. 100 meters
 - b. 100 yards
 - c. they are equal
8. The area of a regular polygon is given by the formula $A = \frac{1}{2} ap$, where A is area, a is apothem, and p is perimeter. If a regular octagon has an apothem of 3 and its side lengths are 5, then what is the area of the regular octagon? (Standard 9-10.4.8)
 - a. 7.5
 - b. 45
 - c. 60
 - d. not enough information

Formula List for Surface Area and Volume

Figure

Surface Area

Volume

Right Prism

$$SA = ph + 2B$$

$$V = Bh$$

Right Cylinder

$$SA = 2\pi rh + 2\pi r^2$$

$$V = \pi r^2 h$$

Right Pyramid

$$SA = \frac{1}{2}pl + B$$

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

Right Cone

$$SA = \pi l + B$$

$$V = \frac{1}{3}\pi r^2 h$$

Sphere

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

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

9. What is the surface area of a right prism whose side lengths are 15 cm, 30 cm, and 40 cm? (Standard 9-10.4.9)

a. 18000 cm^2

b. 85 cm^2

c. 4500 cm^2

d. none of these

10. What is the volume of a right cone whose base has a radius of 6 cm and a height of 0.08 m? Use $\pi = 3.14$. (Standard 9-10.4.9)

a. 3.0144 cm^3

b. 301.44 cm^3

c. 904.32 cm^3

d. none of these

Directions: Complete each of the following questions.

11. Name the unit of measure. (Standard 9-10.4.7)

$$360 \text{ minutes} \cdot \frac{1 \text{ hour}}{60 \text{ minutes}} = 6 \underline{\hspace{2cm} ? \hspace{2cm}}$$