Finding the Volume of Solid Figures

Answer Key

1) Answer: D
Explanation: The formula for the volume of a cube is:

$$V_{cube} = s^3$$

Where s is the length of a side or edge of a cube.

The cube in the problem has a side which is 8 cm long. Thus, we substitute s = 8 in the problem:

$$V_{cube} = (8)^3$$
$$V_{cube} = 8 \times 8 \times 8$$
$$V_{cube} = 512$$

Therefore, the volume of the cube in the given problem is 512 cm^3.

2) Answer: A
Explanation: The volume of a rectangular prism is just the product of the measurements of its length, width, and height:

$$V_{rectangular\ prism} = lwh$$

So, based on the given problem, we have l = 4, w = 3, and h = 2. We just input these values in the formula above:

$$V_{rectangular\ prism} = lwh$$

$$V_{rectangular\ prism} = (4)(3)(2) = 24$$

Thus, the volume of the rectangular prism is 24 cubic centimeters.

3) Answer: A
Explanation: The given figure is a sphere and the formula for the volume of this solid figure is:

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$$V_{sphere} = \frac{4}{3}\pi r^3$$

Based on the given illustration, the radius of the sphere is 3 cm long. Hence, we have r = 3.

Let us substitute r = 3 in the formula above:

$$V_{sphere} = \frac{4}{3}\pi r^3$$
$$V_{sphere} = \frac{4}{3}\pi(3)^3$$

$$V_{sphere} = \frac{4}{3}\pi(27)$$
$$V_{sphere} = \frac{4(27)}{3}\pi$$
$$V_{sphere} = \frac{108}{3}\pi$$
$$V_{sphere} = 36\pi$$

Thus, the volume of the sphere is 36π cubic units.

4) Answer: D
Explanation: The problem provided to us the radius of the circular base and the height of the cone. Hence, it is convenient to use this formula to determine the cone's volume:

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

We have r = 5 and h = 4.

Inputting these values in the formula above:

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

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$V_{cone} = \frac{1}{3}(3.14)(5)^2(4)$
$V_{cone} = \frac{1}{3}(3.14)(25)(4)$
$V_{cone} = \frac{1}{3}(3.14)(100)$
$V_{cone} = \frac{1}{3}(314)$
$V_{cone} = 104.67$

Thus, the volume of the cone is 104.67 cubic units

5) Answer: C
Explanation: Let *s* be the measurement of a side of a certain cube. If we double the measurement of the side of that cube, then we have 2*s*.

If *s* is the measurement of the side of the cube, then the volume is:
$V_{old} = s^3$

Meanwhile, if *2s* (double of the measurement of the cube's side), then the volume is:
$V = s^3$
$V = (2s)^3$
$V_{new} = 8s^3$

Compare the old volume and the new volume. What have you noticed?

The new volume is increased by 8 times when we have doubled the measurement of the side of the cube. Therefore, the answer for this question is "increased by 8 times".