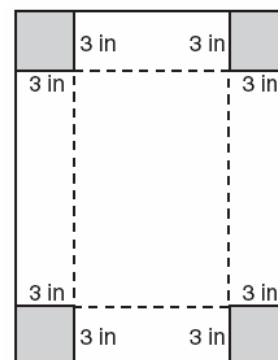


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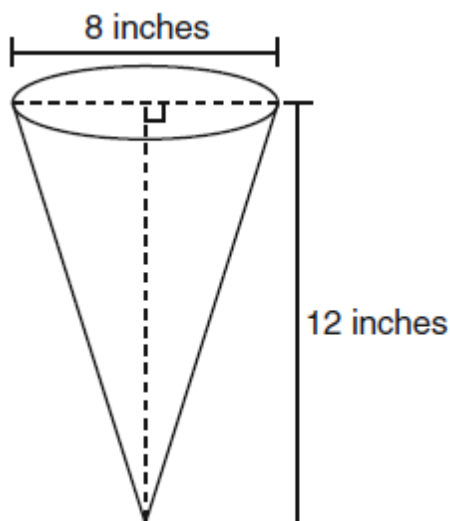
1. 060427a, P.I. G.G.12
 A box in the shape of a cube has a volume of 64 cubic inches. What is the length of a side of the box?
 [A] 16 in [B] 8 in
 [C] 4 in [D] $21\frac{1}{3}$ in
2. 010324a, P.I. G.G.12
 A fish tank with a rectangular base has a volume of 3,360 cubic inches. The length and width of the tank are 14 inches and 12 inches, respectively. Find the height, in inches, of the tank.
3. fall0815ge, P.I. G.G.12
 A rectangular prism has a volume of $3x^2 + 18x + 24$. Its base has a length of $x + 2$ and a width of 3. Which expression represents the height of the prism?
 [A] 3 [B] $x + 2$
 [C] $x^2 + 6x + 8$ [D] $x + 4$
4. 010030a, P.I. G.G.12
 The volume of a rectangular pool is 1,080 cubic meters. Its length, width, and depth are in the ratio 10:4:1. Find the number of meters in each of the three dimensions of the pool.
5. 060103a, P.I. G.G.12
 If the length of a rectangular prism is doubled, its width is tripled, and its height remains the same, what is the volume of the new rectangular prism?
 [A] six times the original volume
 [B] double the original volume
 [C] triple the original volume
 [D] nine times the original volume
6. 010711a, P.I. G.G.12
 A planned building was going to be 100 feet long, 75 feet deep, and 30 feet high. The owner decides to increase the volume of the building by 10% without changing the dimensions of the depth and the height. What will be the new length of this building?
 [A] 112 ft [B] 108 ft
 [C] 110 ft [D] 106 ft
7. 060724b
 Denise is designing a storage box in the shape of a cube. Each side of the box has a length of 10 inches. She needs more room and decides to construct a larger box in the shape of a cube with a volume of 2,000 cubic inches. By how many inches, to the *nearest tenth*, should she *increase* the length of each side of the original box?
8. 060331a, P.I. G.G.12
 Deborah built a box by cutting 3-inch squares from the corners of a rectangular sheet of cardboard, as shown in the accompanying diagram, and then folding the sides up. The volume of the box is 150 cubic inches, and the longer side of the box is 5 inches more than the shorter side. Find the number of inches in the shorter side of the *original* sheet of cardboard.



NAME: _____

9. 060921ge, P.I. G.G.15

In the diagram below, a right circular cone has a diameter of 8 inches and a height of 12 inches.



What is the volume of the cone to the *nearest cubic inch*?

- [A] 481 [B] 603 [C] 201 [D] 804

10. 080926ge, P.I. G.G.14

A right circular cylinder has a volume of 1,000 cubic inches and a height of 8 inches. What is the radius of the cylinder to the *nearest tenth of an inch*.

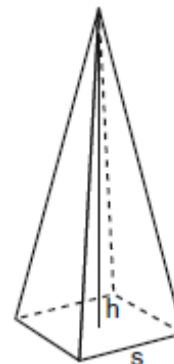
- [A] 11.2 [B] 6.3 [C] 39.8 [D] 19.8

11. fall0833ge, P.I. G.G.14

The volume of a cylinder is $12,566.4 \text{ cm}^3$. The height of the cylinder is 8 cm. Find the radius of the cylinder to the *nearest tenth of a centimeter*.

12. 080930ge, P.I. G.G.13

A regular pyramid with a square base is shown in the diagram below.



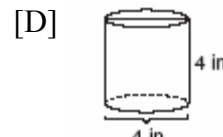
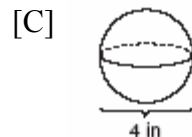
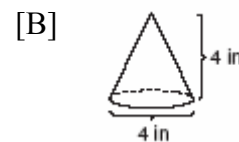
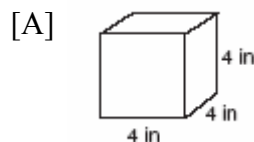
A side, s , of the base of the pyramid is 12 meters, and the height, h , is 42 meters. What is the volume of the pyramid in cubic meters?

13. 060028a, P.I. G.G.16

Tamika has a hard rubber ball whose circumference measures 13 inches. She wants to box it for a gift but can only find cube-shaped boxes of sides 3 inches, 4 inches, 5 inches, or 6 inches. What is the *smallest* box that the ball will fit into with the top on?

14. 080403a

Which diagram represents the figure with the greatest volume?



[1] C _____

[2] 20, and appropriate work is shown, such as $3,360 \div (14 \times 12)$.

[1] Appropriate work is shown, but one computational error is made.

or [1] 20, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[2] incorrect procedure.

[3] D _____

[3] 3, 12, and 30 and an appropriate arithmetic method or equation is shown, such as $40x^3 = 1080$.

[2] An appropriate equation or method is shown, but not all three dimensions are found.

or [2] An appropriate method is shown, and although one computational mistake is made, the student does find three dimensions based on this mistake, such as dividing 1080 by 40 incorrectly.

[1] The student shows that multiplication is required to find volume but sets up an incorrect method and does not find three dimensions.

or [1] 3, 12, and 30 and no work is shown.

[0] The sum is used instead of the product,

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[4] obviously incorrect procedure.

[5] A _____

[6] C _____

[2] 2.6, and appropriate work is shown, such as solving the equation $(10 + x)^3 = 2000$.

[1] Appropriate work is shown, but one computational or rounding error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] The equation $(10 + x)^3 = 2000$ is written, but no further correct work is shown.

or [1] An incorrect equation of equal difficulty is solved appropriately.

or [1] 2.6, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[7] incorrect procedure.

[4] 11, and appropriate work is shown, such as solving the quadratic equation $3x(x+5)=150$ or trial and error with at least three trials and appropriate checks.

[3] Appropriate work is shown, but one computational error is made.

or [3] Appropriate work is shown to determine that 5 is the shorter side of the box, but the shorter side of the original sheet is not found or is found incorrectly.

or [3] An incorrect quadratic equation of equal difficulty is solved appropriately, and an appropriate shorter side of the original sheet is found.

[2] Appropriate work is shown, but more than one computational error is made.

or [2] Appropriate work is shown, but one conceptual error is made.

or [2] An incorrect quadratic equation of equal difficulty is solved appropriately, but the shorter side of the original sheet is not found.

or [2] A correct quadratic equation is set equal to zero, but no further correct work is shown.

or [2] The trial-and-error method is used to find a correct solution, but only two trials and appropriate checks are shown.

[1] Appropriate work is shown, but one conceptual error and one computational error are made.

or [1] One conceptual error is made in finding the shorter side of the box, and the corresponding shorter side of the original sheet is not found or is found incorrectly.

or [1] A correct quadratic equation is written, but it is not set equal to zero, and no further correct work is shown.

or [1] 11, but no work or only one trial with an appropriate check is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[8] incorrect procedure.

[9] C

[10] B

[2] 22.4, and appropriate work is shown.

[1] Appropriate work is shown, but one computational or rounding error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] 22.4, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[11] incorrect procedure.

[2] 2016, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] 2016, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[12] incorrect procedure.

[3] 5-inch box and appropriate work is shown, including showing a diameter between 4 and 5.

[2] The correct diameter is shown, but the wrong box size is chosen.

or [2] The correct radius is shown, but the 3-inch box is chosen.

[1] The correct diameter or radius is shown, but no box is chosen.

or [1] An appropriate radius between 2 and 3 is shown, using the incorrect formula

$A = \pi r^2$, and the 3-inch box is chosen.

or [1] An appropriate diameter, using

$A = \pi r^2$, is shown, but the appropriate box is chosen.

or [1] An appropriate radius, using $A = \pi r^2$, is shown, but no box is chosen.

or [1] The 5-inch box is chosen, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[13] incorrect procedure.

[14] A