ALBERT

Name _____ Date _____

Area, Volume and Surface Area Worksheet

Grade 7 · Common Core 7.G.B.6

> Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Practice

Builds the skill step by step.

1. Find the area of a triangle with a base of 12 cm and a height of 7 cm.

2. Find the volume of a rectangular prism 6 in by 4 in by 5 in.

3. Find the surface area of a cube with 5 cm edges.

4. Find the area of a trapezoid with bases of 8 m and 12 m and a height of 5 m.

   A. $100\ m^2$

   B. $60\ m^2$

   C. $480\ m^2$

   D. $50\ m^2$

5. A triangular prism has a base with an area of $15\ cm^2$. The prism is 10 cm long. What is its volume?

6. Find the area of a parallelogram with a base of 9 ft and a height of 6 ft.

7. Find the surface area of a rectangular prism 4 m by 3 m by 2 m.

8. Which formula gives the volume of any right prism?

   A. V = Bh, where B is the area of the base

   B. V = 2B + h

   C. V = lw

   D. $V = \frac{1}{2}bh$

9. A cube has a volume of 64 in^3. How long is each edge?

10. A box is 10 cm long, 5 cm wide and 2.5 cm tall. What is its volume?

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On Level

Grade-level practice.

1. An L-shaped room is made of a 12 ft by 10 ft rectangle and a 6 ft by 4 ft rectangle. What is its total area?

2. A triangular prism has a right-triangle base with legs of 6 cm and 8 cm. The prism is 15 cm long. What is its volume?

3. A triangular prism has a right-triangle base with legs of 6 cm and 8 cm and a longest side of 10 cm. The prism is 15 cm long. What is its surface area?

4. A fish tank is 50 cm long, 30 cm wide and 40 cm tall. How many liters does it hold? (1 liter = 1,000 cm^3)

   A. 600 liters

   B. 60 liters

   C. 6 liters

   D. 6,000 liters

5. A regular hexagon is split into 6 equal triangles. Each has a base of 8 cm and a height of 6.9 cm. What is the area of the hexagon?

6. A box with no lid is 20 in long, 10 in wide and 8 in tall. How much cardboard is needed to make it?

7. A rectangular prism has a volume of 360 cm^3. Its base is 8 cm by 9 cm. What is its height?

8. A cube's edges grow from 3 cm to 6 cm. How does its volume change?

   A. It becomes 8 times as large.

   B. It becomes 2 times as large.

   C. It becomes 4 times as large.

   D. It becomes 6 times as large.

9. A swimming pool is 25 m long, 10 m wide and 2 m deep. How many cubic meters of water fill it?

10. Find the area of a trapezoid with bases of 7.5 in and 4.5 in and a height of 6 in.

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Challenge

Multi-step and word problems that stretch it.

1. A shed is a rectangular prism 8 ft long, 6 ft wide and 7 ft tall, with a roof shaped like a triangular prism. The roof's triangle has a base of 6 ft and a height of 3 ft, and the roof is 8 ft long. What is the total volume?

2. A gift box is a cube with 9 in edges. Wrapping paper costs $0.02 per square inch. How much does it cost to cover the box?

3. A prism has a square base and a height of 10 cm. Its volume is 490 cm^3. How long is each side of the base?

4. Box A is 2 by 4 by 6 units. Box B is 4 by 4 by 3 units. Both have a volume of 48 cubic units. Which needs less material to build?

   A. Box B, with 80 square units

   B. Box A, with 88 square units

   C. They need the same amount.

   D. Box A, with 80 square units

5. A wall 12 ft by 9 ft has a window 4 ft by 3 ft. One can of paint covers 50 ft^2. How many cans are needed to give the wall two coats?

6. A triangular prism has a base triangle with a base of 5 m and a height of 4 m. The prism is 12 m long. What is its volume?

7. An aquarium is 60 cm long, 30 cm wide and 35 cm tall. It is filled to 5 cm below the top. How many cubic centimeters of water does it hold?

8. A cube has a surface area of 54 cm^2. What is its volume?

9. A hexagonal prism has a base area of 41.6 cm^2 and a height of 12 cm. What is its volume?

10. A sandbox is 6 ft long, 4 ft wide and 1.5 ft deep. Sand comes in bags of 0.5 ft^3. How many bags fill the sandbox?