

Area, Surface Area, and Volume: math practice, Grade 6 – download the PDF

21 problems graded by difficulty (★ easy, ★★ medium, ★★★ hard). Try first, without looking at the solutions!

1 Area of a triangle

★ ★ ★

A triangular sail has a base of 12 cm and a height of 7 cm. Find its area.

2 Area of a parallelogram

★ ★ ★

A parallelogram-shaped garden bed has a base of 15 in and a height of 6 in. The slanted side measures 8 in. Find the area.

3 True or false: triangle area

★ ★ ★

Leo says: "A triangle with base 10 m and height 6 m has an area of 60 m²." Is he right? Explain.

4 Area of a trapezoid

★ ★ ★

A trapezoid has bases of 5 cm and 9 cm and a height of 4 cm. Find its area.

5 Rectangle on a grid



Plot the points $(2, 1)$, $(8, 1)$, $(8, 5)$, and $(2, 5)$ on a coordinate plane and join them in order. What shape do you get, and what is its area?

6 Name the solid from its net



Name the solid that each net folds into.

- a. 6 congruent squares
- b. 1 square and 4 triangles
- c. 2 triangles and 3 rectangles

7 Volume of a box



A box is 8 cm long, 5 cm wide, and 3 cm tall. Find its volume.

8 Finding a missing height



A triangular piece of land has an area of 54 m^2 and a base of 12 m. What is its height?

9 Mulch for a flower bed



A flower bed is a parallelogram with base 3.5 m and height 2 m. One bag of mulch covers 1.75 m^2 . How many bags are needed to cover the whole bed?

10 A trapezoid sail



A sail is a trapezoid with parallel sides of 4 ft and 6 ft that are 3.5 ft apart. Fabric costs \$4 per square foot. How much does the fabric for the sail cost?

11 Carpeting a room

A room is a 9 m by 6 m rectangle with a 4 m by 3 m alcove attached to one wall. Carpet costs \$12 per square meter. What does it cost to carpet the room and the alcove?

12 Triangle on the coordinate plane

A triangle has vertices $A(1, 2)$, $B(7, 2)$, and $C(4, 8)$. Find its area.

13 Wrapping a cube

A cube-shaped gift box has edges of 7 cm. How much paper is needed to cover all of its faces, with no overlap?

14 A box with mixed numbers

A box is $3\frac{1}{2}$ in long, 2 in wide, and $1\frac{1}{2}$ in tall. Find its volume.

15 Gift box surface area

A rectangular box is 12 cm long, 5 cm wide, and 4 cm tall. (a) Find its surface area. (b) Its lid and bottom are not painted. How much area is painted?

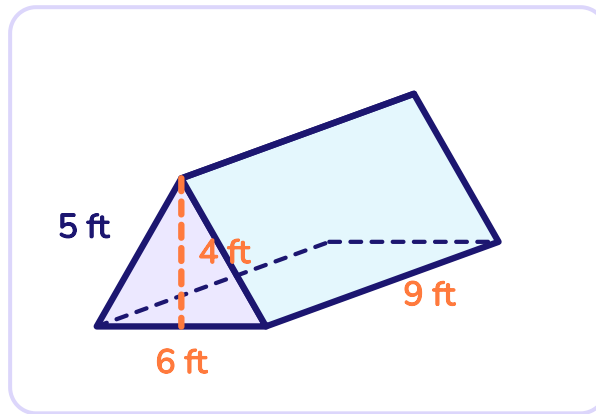
16 A square pyramid

A square pyramid has a base of 10 cm by 10 cm. Each triangular face has a slant height of 13 cm. Find (a) the lateral area and (b) the total surface area.

17 The camping tent

★★★

A tent is a triangular prism. Each triangular end has a base of 6 ft and a height of 4 ft, the two sloping sides are 5 ft wide, and the tent is 9 ft long. (a) Find the area of the fabric for the two sloping sides and the two ends (no floor). (b) Find the total surface area including the floor.



18 A swallowtail banner

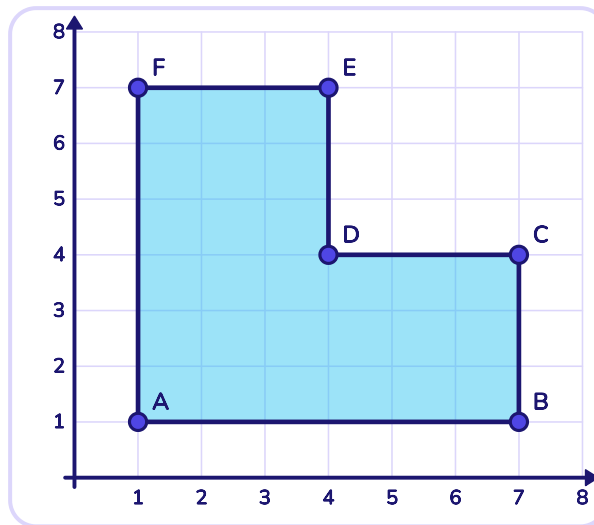
★★★

A banner is a rectangle 18 cm long and 10 cm tall. A triangular notch is cut from one short end: the notch has a base of 10 cm (the whole short side) and a depth of 4 cm. Find the area of the banner that remains.

19 An L-shaped polygon on the grid

★★★

A polygon has vertices $A(1, 1)$, $B(7, 1)$, $C(7, 4)$, $D(4, 4)$, $E(4, 7)$, and $F(1, 7)$. (a) Find the length of each side. (b) Find the perimeter. (c) Find the area.



20 Water in a fish tank

★★★

A fish tank is $2\frac{1}{2}$ ft long, $1\frac{1}{2}$ ft wide, and 2 ft tall. It is filled with water to $\frac{3}{4}$ of its height. (a) Find the volume of the tank. (b) Find the volume of the water.

21 Same base, same height

★★★

Triangle 1 has vertices $(0, 0)$, $(8, 0)$, and $(2, 5)$. Triangle 2 has vertices $(0, 0)$, $(8, 0)$, and $(6, 5)$. Without drawing, explain why they have the same area, then find it.



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