

Area, Surface Area, and Volume: math test, Grade 10 – download the PDF

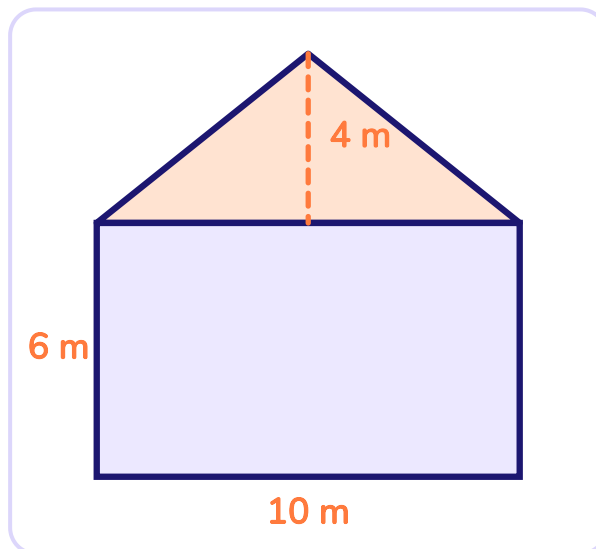
Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1

A shed wall

/ 3 pts

The front wall of a shed is a 10 m by 6 m rectangle topped by a triangle of height 4 m (the triangle's base is the 10 m side).



- Find the area of the wall.
- Paint costs 3.50 dollars per square meter. How much does it cost to paint the wall?

2 A fish tank

/ 3 pts

An open-top fish tank is a rectangular prism 60 cm long, 30 cm wide, and 40 cm high. (1 L = 1,000 cm³.)

- Find its capacity in liters.
- How much water is in it when it is three-quarters full?
- Find the area of glass needed (no top).

3 Cylinder and cone

/ 4 pts

A cylinder and a cone both have radius 4 cm and height 9 cm. Give exact values and decimals to the nearest hundredth.

- Volume of the cylinder.
- Volume of the cone.
- Total surface area of the cylinder.
- How many times does the cone fit in the cylinder?

4 A ball

/ 3 pts

A ball has diameter 24 cm.

- Find its surface area and its volume in terms of π .
- How many liters of air does it hold, to the nearest hundredth? (1 L = 1,000 cm³.)

5

Slicing a pyramid

/ 4 pts

A square pyramid has base side 16 cm and height 12 cm. A plane parallel to the base is 3 cm above the base.

- Find the volume of the pyramid.
- Find the side and the area of the cross section.
- Find the volume of the small pyramid above the plane.

6

Steel ball and Cavalieri

/ 3 pts

A solid steel ball has radius 3 cm and density 7.85 g/cm^3 .

- Find its volume to the nearest hundredth.
- Find its mass to the nearest tenth of a gram.
- A stack of 50 identical cards is straight; another is leaning, with the same height. Explain why both have the same volume.

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