

Prisms: Surface Area, Volume and Composite Figures

Grade 7 math · Worksheet · Standards: 7.G.B.6

Name: _____ Date: _____ Class: _____

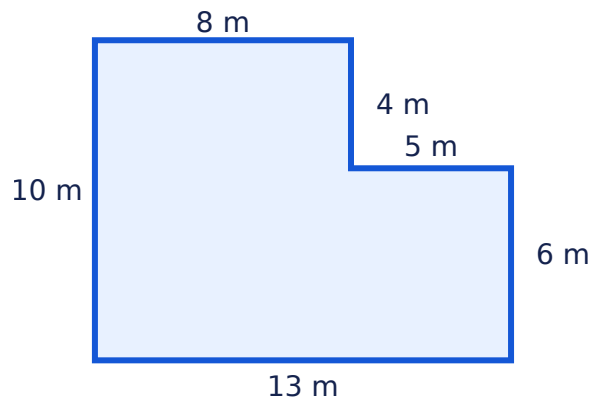
These 20 problems cover the area of composite figures and the volume and surface area of right prisms, including triangular prisms and solids built from blocks. Standard 7.G.B.6 is the focus.

Problems 1 to 7 use one formula. Problems 8 to 14 combine steps or work backward. Problems 15 to 20 are multi-step word problems about pools, crates, rooms and concrete.

Standards: 7.G.B.6 · **Level:** Grade 7

Problem 1 Area with a notch (easy)

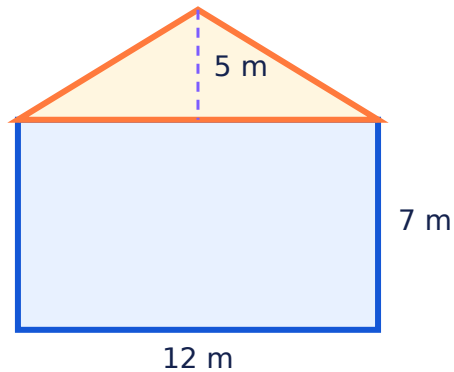
The floor plan shows a rectangle with a corner removed. Find its area.



Floor plan with a notch.

Problem 2 House outline (easy)

A diagram of a house front is a rectangle 12 m wide and 7 m tall with a triangular roof on top. The roof has a base of 12 m and a height of 5 m. Find the total area.



Rectangle with a triangular roof.

Problem 3 Volume of a box (easy)

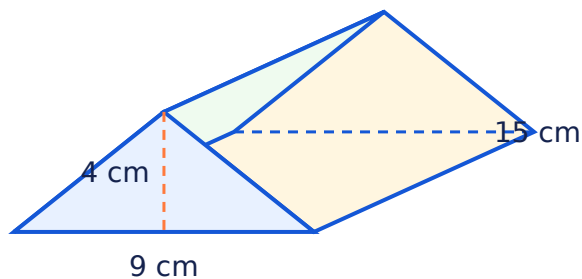
A storage bin is 11 in long, 3 in wide and 8 in tall. Find its volume.

Problem 4 Surface area of a box (easy)

A gift box is 7 ft long, 3 ft wide and 5 ft tall. Find its surface area.

Problem 5 Triangular prism volume (easy)

The base of a prism is a triangle with a base of 9 cm and a height of 4 cm. The prism is 15 cm long. Find its volume.



Triangular prism.

Problem 6 Cube measurements (easy)

A cube has an edge of 7 cm. Find its volume and its surface area.

Problem 7 Trapezoid area (easy)

A trapezoid has parallel sides of 11 m and 17 m, and the distance between them is 6 m. Find its area.

Problem 8 Volume from base area (medium)

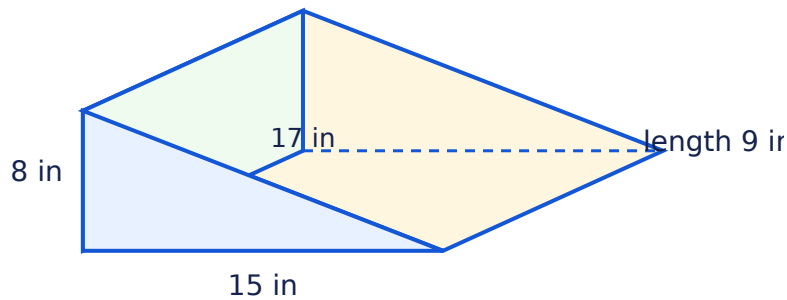
A prism has a base area of 36.5 cm^2 and a height of 12 cm. Find its volume.

Problem 9 Missing height (medium)

A rectangular prism has a volume of 360 in^3 , a length of 12 in and a width of 5 in. Find its height.

Problem 10 Triangular prism surface area (medium)

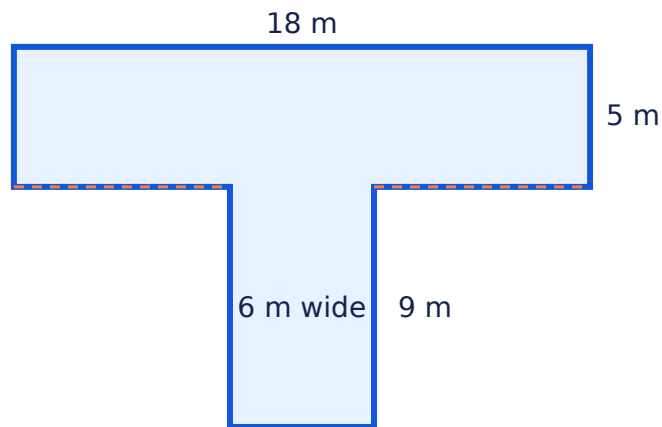
The base of a prism is a right triangle with legs of 8 in and 15 in and a hypotenuse of 17 in. The prism is 9 in long. Find its surface area.



Right triangular prism.

Problem 11 T-shaped figure (medium)

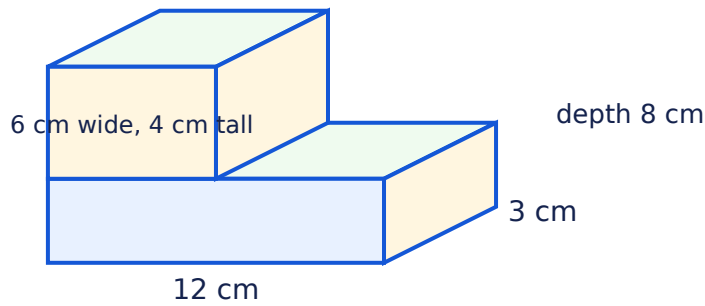
A T-shaped patio has a top rectangle 18 m by 5 m and a stem 6 m wide and 9 m long attached below it. Find the total area.



T-shaped patio.

Problem 12 Stacked blocks (medium)

A solid is made of a bottom block 12 cm wide, 8 cm deep and 3 cm tall, and a top block 6 cm wide, 8 cm deep and 4 cm tall. Find the total volume.



Two blocks stacked.

Problem 13 Missing base of a triangle (medium)

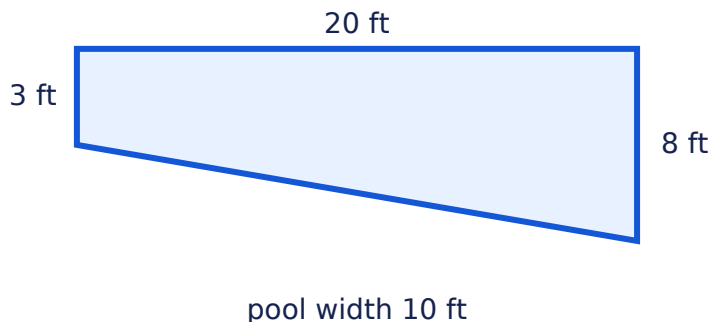
A triangle has an area of 84 cm^2 and a height of 12 cm. Find the length of its base.

Problem 14 Air in a tent (medium)

A tent is a triangular prism. The triangular front has a base of 6 ft and a height of 4 ft, and the tent is 8 ft long. Find the volume of air inside.

Problem 15 Swimming pool (hard)

A pool is 10 ft wide. Its side view is a trapezoid: 20 ft along the top and bottom, with a depth of 3 ft at the shallow end and 8 ft at the deep end. Find the volume of the pool and the gallons of water it holds. One cubic foot holds about 7.5 gallons.



Side view of the pool.

Problem 16 Painting a crate (hard)

A wooden crate is 5 ft long, 3 ft wide and 2.5 ft tall. All six faces are painted. One quart of paint covers 40 ft^2 . How many whole quarts are needed?

Problem 17 Carpet cost (hard)

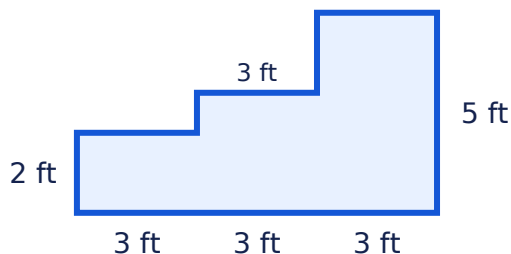
An L-shaped room is made from a 20 ft by 12 ft rectangle with an alcove 8 ft by 6 ft attached to one side. Carpet costs $\$2.75$ per square foot. Find the cost to carpet the whole floor.

Problem 18 Chocolate box (hard)

A chocolate box is a triangular prism. Its triangular base has a base of 10 cm, a height of 12 cm and two equal slanted sides of 13 cm. The box is 20 cm long. Find its volume and the amount of cardboard in its surface.

Problem 19 Concrete steps (hard)

A set of three concrete steps is 4 ft wide. Seen from the side, the steps rise 2 ft, 3 ft and 5 ft above the ground, and each step is 3 ft deep. Find the volume of concrete.



Side view of the steps.

Problem 20 Slab with a block (hard)

A cube with an edge of 6 cm sits in the middle of the top of a rectangular slab that is 10 cm long, 10 cm wide and 4 cm tall. Find the surface area of the whole solid, including the bottom.