

Unfolding Solids: Nets and Surface Area

Grade 6 math · Worksheet · Standards: 6.G.A.4

Name: _____ Date: _____ Class: _____

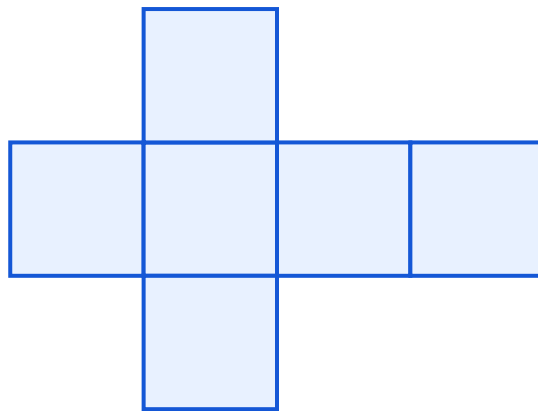
These twenty problems train standard 6.G.A.4: representing three-dimensional figures with nets made of rectangles and triangles, and using the nets to find surface area.

The problems start with naming solids and counting faces, move to cubes, boxes and nets, and finish with wrapping, painting and building situations. Write square units in every answer.

Standards: 6.G.A.4 · **Level:** Grade 6

Problem 1 Name the solid (easy)

The net shown folds into a solid. Name the solid and tell how many faces it has.



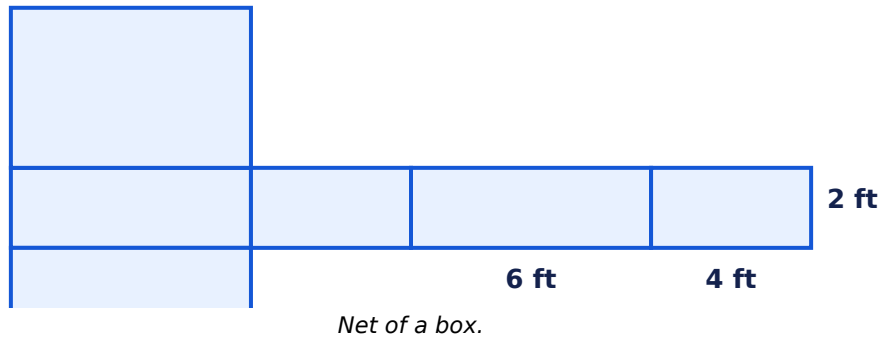
A net made of six identical squares.

Problem 2 Surface area of a cube (easy)

Each edge of a cube-shaped gift cube is 7 inches long. How much fabric covers the whole cube?

Problem 3 Faces of a box net (easy)

Find the area of each different face in the net, then find the surface area of the box.



Problem 4 Surface area of a box (easy)

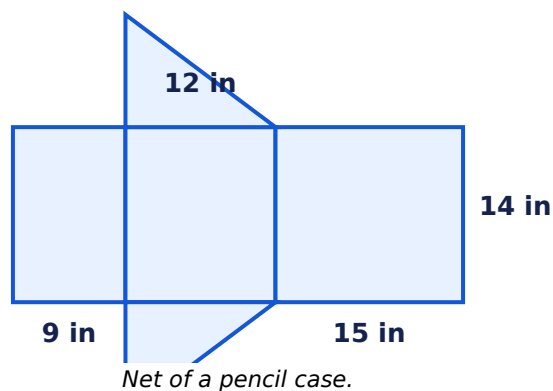
A box measures 9 centimeters by 3 centimeters by 2 centimeters. Find its surface area.

Problem 5 Parts of a triangular prism (easy)

Name the shapes of the faces of a triangular prism, then give its number of faces, edges and vertices.

Problem 6 Triangular prism from a net (medium)

A wedge-shaped pencil case unfolds into the net below. Calculate how much material covers the whole case.



Problem 7 Pyramid with a decimal slant height (medium)

A square pyramid has a base side of 6 meters and a slant height of 8.5 meters. Find its surface area.

Problem 8 Cube with a decimal edge (medium)

Calculate the outer surface of a cube whose edge is 3.5 meters.

Problem 9 Missing height from surface area (medium)

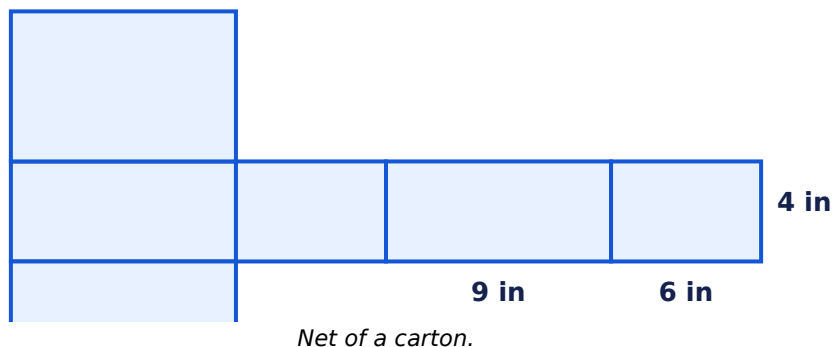
A box has a length of 10 inches, a width of 4 inches and a surface area of 220 square inches. Find its height.

Problem 10 Open-top terrarium (medium)

A glass terrarium has no lid. It is 15 inches long, 9 inches wide and 10 inches tall. How much glass does it need?

Problem 11 Carton from a net (medium)

Find the surface area of the carton whose net is shown.

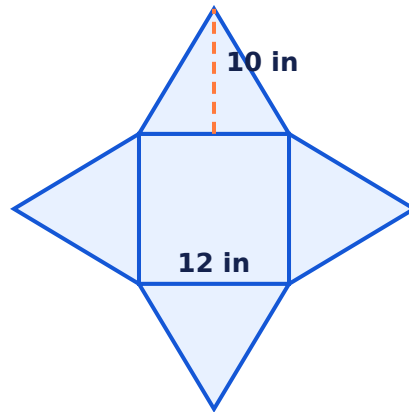
**Problem 12 Camping tent** (medium)

A tent is a triangular prism. The floor is 6 feet by 9 feet. The two ends are triangles with a base of 6 feet and a height of 4 feet. The two slanted sides are rectangles that measure 5 feet by 9

feet. Find the amount of fabric in the whole tent, floor included.

Problem 13 Square pyramid from a net (medium)

Find the surface area of the square pyramid whose net is shown.



Net of a square pyramid.

Problem 14 Which box needs more paper? (hard)

Box A measures 10 inches by 6 inches by 4 inches. Box B measures 8 inches by 8 inches by 4 inches. Which box has the greater surface area, and by how much?

Problem 15 Wrapping a gift (hard)

A gift box is 14 inches long, 10 inches wide and 6 inches tall. Wrapping paper comes in sheets of 400 square inches that cost \$2.75 each. Assume no overlap.

- Find the surface area of the box.
- Find the number of sheets needed.
- Find the cost.

Problem 16 Painting a shed (hard)

A shed is 12 feet long, 8 feet wide and 7 feet tall. Paint the four walls and the flat roof, but not the floor. A gallon covers 100 square feet and costs \$27.50.

- Find the area to be painted.
- Find the number of gallons to buy.
- Find the cost.

Problem 17 Candy box (hard)

A candy box is a triangular prism 20 centimeters long. Its ends are right triangles with legs of 8 centimeters and 15 centimeters and a hypotenuse of 17 centimeters. Find the area of cardboard needed.

Problem 18 Gazebo roof (hard)

The roof of a gazebo is a square pyramid without a base. Each side of the square is 10 feet and the slant height is 8 feet. Shingles cost \$2.40 per square foot. Find the cost of covering the roof.

Problem 19 Painting a planter (hard)

A planter is a cube with edges of 2.5 feet and no top. Both the inside and the outside surfaces will be painted, and a pint of paint covers 25 square feet.

- a. Find the area to be painted.
- b. Find the number of pints to buy.

Problem 20 Same volume, different surface (hard)

A cube and a box each have a volume of 64 cubic inches. The cube has edges of 4 inches. The box measures 8 inches by 4 inches by 2 inches. Find the surface area of each solid and the difference.