

Grade 6 - Area of Triangles and Polygons - Answer Key

Common Core 6.G.A.1 · maths-pdf.fr/en/

Check each area here. The solutions name the formula or decomposition, show the base and height used, and give the answer in square units in bold. Diagrams are included for many problems.

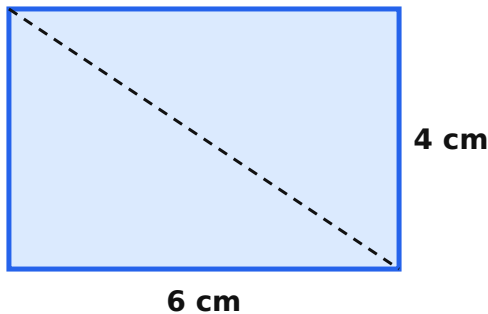
Grade 6 · Common Core State Standards: 6.G.A.1

Exercise 1 - Area of a right triangle

A triangle is half of a rectangle with the same base and height.

$$A = \frac{1}{2} \cdot 6 \cdot 4 = 12$$

12 cm²



Two triangles make a 6 by 4 rectangle with area 24.

Exercise 2 - Area of a triangle

$$A = \frac{1}{2} \cdot 10 \cdot 7 = 35$$

35 in²

Exercise 3 - Triangle with a decimal height

$$A = \frac{1}{2} \cdot 5 \cdot 3.5 = \frac{1}{2} \cdot 17.5 = 8.75$$

8.75 m²

Exercise 4 - Area of a parallelogram

Cut off the triangle on one side and move it to the other side to make a rectangle with base 8 and height 5.

$$A = bh = 8 \cdot 5 = 40$$

$$40 \text{ cm}^2$$

Exercise 5 - Another parallelogram

$$A = 12 \cdot 7 = 84$$

$$84 \text{ ft}^2$$

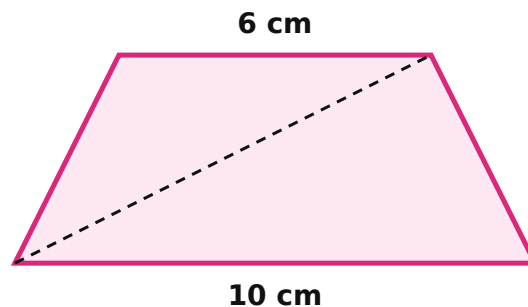
Exercise 6 - Area of a trapezoid

Draw a diagonal. One triangle has base 10 and height 4; the other has base 6 and height 4.

$$\frac{1}{2} \cdot 10 \cdot 4 = 20 \text{ and } \frac{1}{2} \cdot 6 \cdot 4 = 12.$$

$$20 + 12 = 32$$

$$32 \text{ cm}^2$$



Triangle areas 20 and 12 give 32 square centimeters.

Exercise 7 - Find the height

$$30 = \frac{1}{2} \cdot 12 \cdot h = 6h.$$

$$h = 30 \div 6 = 5$$

5 inches

Exercise 8 - Find the base

$$42 = \frac{1}{2} \cdot b \cdot 7 = 3.5b.$$

$$b = 42 \div 3.5 = 12$$

12 meters

Exercise 9 - L-shaped region

Method: find the area of the 10 by 6 rectangle and subtract the 4 by 3 corner that is missing.

$$10 \cdot 6 - 4 \cdot 3 = 60 - 12 = 48$$

$$48 \text{ ft}^2$$

Exercise 10 - Square plus triangle

Rectangle: $8 \cdot 5 = 40$. Triangle: $\frac{1}{2} \cdot 8 \cdot 3 = 12$.

$$40 + 12 = 52$$

$$52 \text{ m}^2$$

Exercise 11 - Quadrilateral from two triangles

$$\frac{1}{2} \cdot 10 \cdot 3 = 15 \text{ and } \frac{1}{2} \cdot 10 \cdot 4 = 20.$$

$$15 + 20 = 35$$

$$35 \text{ cm}^2$$

Exercise 12 - Triangle on the coordinate plane

The base on the x-axis is 6 units. The height is the y-coordinate of the top vertex, 5 units.

$$A = \frac{1}{2} \cdot 6 \cdot 5 = 15$$

$$15 \text{ units}^2$$

Exercise 13 - Pentagon on the coordinate plane

Rectangle: width 8 and height 4: $8 \cdot 4 = 32$.

Triangle on top: base 8 and height $6-4=2$: $\frac{1}{2} \cdot 8 \cdot 2 = 8$.

$$32+8=40$$

$$40 \text{ units}^2$$

Exercise 14 - Triangular sail

$$A = \frac{1}{2} \cdot 4 \cdot 6 = 12$$

$$12 \text{ m}^2$$

Exercise 15 - Garden soil

Area: $14 \cdot 9 = 126$ square feet.

Cost: $126 \cdot \$0.50 = \$63.00$.

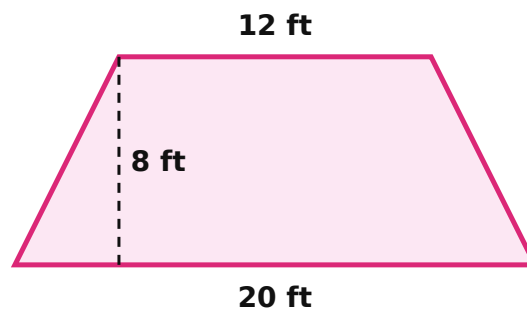
126 ft^2 ; **\$63.00**

Exercise 16 - Trapezoid garden

Average the bases: $\frac{12+20}{2} = 16$.

$$A = 16 \cdot 8 = 128$$

$$128 \text{ ft}^2$$



The area is 128 square feet.

Exercise 17 - Compare areas

Triangle: $\frac{1}{2} \cdot 10 \cdot 6 = 30$.

Rectangle: $5 \cdot 6 = 30$.

The areas are equal (30 square units).

Exercise 18 - Corner cut off

Rectangle: $14 \cdot 9 = 126$.

Triangle: $\frac{1}{2} \cdot 4 \cdot 3 = 6$.

$$126 - 6 = 120$$

$$120 \text{ in}^2$$

Exercise 19 - Painting a gable

Area: $\frac{1}{2} \cdot 12 \cdot 8 = 48$ square feet.

$$48 \div 24 = 2$$

2 cans

Exercise 20 - Quilt triangles

One triangle: $\frac{1}{2} \cdot 5 \cdot 4 = 10$ square inches.

$$6 \cdot 10 = 60$$

$$60 \text{ in}^2$$