

Grade 6 · Area of Triangles, Quadrilaterals and Polygons · Worksheet Answer Key

Common Core 6.G.A.1 · mathovore.fr

This answer key gives complete worked solutions for all 20 problems on the area of polygons worksheet. Each solution shows the formula, the substitution, and the final area in square units, so students can find exactly where an error happened.

Grade 6 Common Core: 6.G.A.1

Problem 1: Right triangle

The legs are perpendicular, so use them as base and height.

$$A = \frac{1}{2} \times 9 \times 4 = \frac{1}{2} \times 36 = 18$$

The area is 18 ft².

Problem 2: Triangle area

$$A = \frac{1}{2} \times 14 \times 6 = 7 \times 6 = 42$$

The area is 42 m².

Problem 3: Triangle on a Grid

The base is 8 units and the height is 5 units.

$$A = \frac{1}{2}bh = \frac{1}{2}(8)(5) = \frac{1}{2}(40) = 20$$

The area is 20 square units.

Problem 4: Parallelogram area

$$A = bh = 12 \times 7 = 84$$

The area is 84 in².

Problem 5: Obtuse Triangle

Use the base of 11 cm and the perpendicular height of 6 cm, even though the height meets the extended base.

$$A = \frac{1}{2}(11)(6) = \frac{1}{2}(66) = 33$$

The area is 33 cm².

Problem 6: Rectangle Square Parallelogram

- a. $A = 13 \times 7 = 91 \text{ ft}^2$
- b. $A = 9 \times 9 = 81 \text{ m}^2$
- c. $A = bh = 15 \times 4.5 = 67.5$, so 67.5 ft²

Problem 7: Missing height

$$45 = \frac{1}{2} \times 10 \times h, \text{ so } 45 = 5h.$$

$$h = 45 \div 5 = 9$$

The height is 9 yd.

Problem 8: Missing base

$$72 = b \times 9$$

$$b = 72 \div 9 = 8$$

The base is 8 cm.

Problem 9: Missing Dimensions

- a. $84 = 12h$, so $h = 84 \div 12 = 7 \text{ cm}$. Check: $12 \times 7 = 84$.
- b. $60 = \frac{1}{2}(b)(8) = 4b$, so $b = 60 \div 4 = 15 \text{ ft}$. Check: $\frac{1}{2}(15)(8) = 60$.

Problem 10: Trapezoid area

$$A = \frac{1}{2}(b_1 + b_2)h = \frac{1}{2}(6 + 10)(4)$$

$$= \frac{1}{2} \times 16 \times 4 = 8 \times 4 = 32$$

The area is 32 ft².

Problem 11: Trapezoid Height

$$54 = \frac{1}{2}(7 + 11)h = \frac{1}{2}(18)h = 9h$$

$$h = 54 \div 9 = 6$$

The height is 6 m. Check: $\frac{1}{2}(18)(6) = 54$.

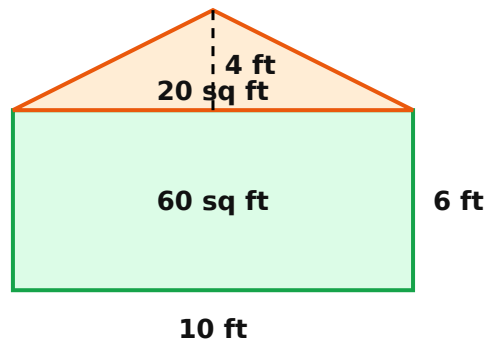
Problem 12: Rectangle plus triangle

Rectangle: $10 \times 6 = 60 \text{ ft}^2$.

Triangle: $\frac{1}{2} \times 10 \times 4 = 20 \text{ ft}^2$.

Total: $60 + 20 = 80$

The area is 80 ft^2 .



Solution figure: the two pieces and their areas.

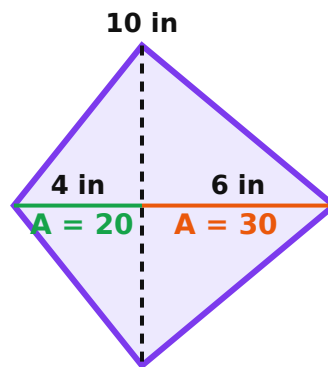
Problem 13: Kite from Two Triangles

Both triangles use the dashed line as their base, $b = 10 \text{ in}$.

Left: $\frac{1}{2}(10)(4) = 20 \text{ in}^2$. Right: $\frac{1}{2}(10)(6) = 30 \text{ in}^2$.

Total: $20 + 30 = 50$

The area of the sign is 50 in^2 .



Sum of the two triangle areas.

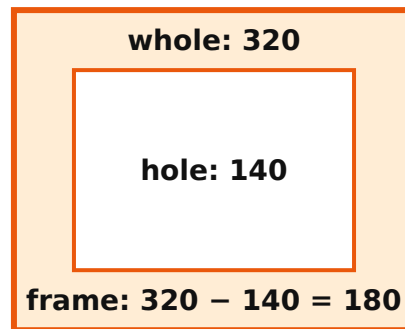
Problem 14: Picture Frame

Subtract the area of the opening from the area of the whole rectangle.

Whole: $20 \times 16 = 320 \text{ in}^2$. Opening: $14 \times 10 = 140 \text{ in}^2$.

$$320 - 140 = 180$$

The frame has an area of 180 in^2 .



Whole minus opening.

Problem 15: Garden beds

$$\text{Area: } \frac{1}{2}(9+15)(8) = \frac{1}{2} \times 24 \times 8 = 96 \text{ m}^2.$$

$$\text{Bags: } 96 \div 12 = 8$$

Sofia needs **8 bags**.

Problem 16: Sailcloth Cost

$$A = \frac{1}{2}(4.5)(6) = \frac{1}{2}(27) = 13.5 \text{ m}^2$$

$$\text{Cost: } 13.5 \times 8 = 108$$

The sail has an area of 13.5 m^2 and the cloth costs **\$108**.

Problem 17: Painting a gable wall

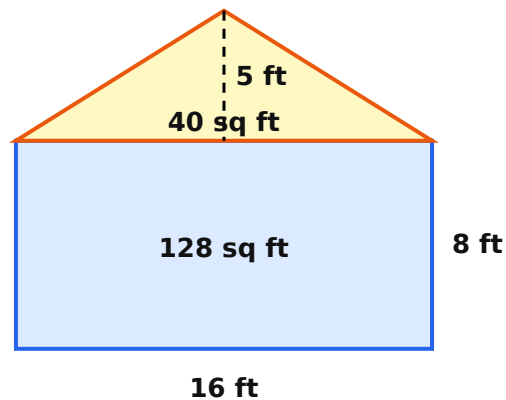
$$\text{Rectangle: } 16 \times 8 = 128 \text{ ft}^2.$$

$$\text{Triangle: } \frac{1}{2} \times 16 \times 5 = 40 \text{ ft}^2.$$

$$\text{Total area: } 128 + 40 = 168 \text{ ft}^2.$$

$$\text{Gallons: } 168 \div 84 = 2. \text{ Cost: } 2 \times \$32 = \$64.$$

The wall is 168 ft^2 and the paint costs \$64.



Solution figure: the two pieces and their areas.

Problem 18: Shingling a Roof

One side: $\frac{1}{2}(30+22)(12) = \frac{1}{2}(52)(12) = 312 \text{ ft}^2$.

Two sides: $2 \times 312 = 624 \text{ ft}^2$.

Bundles: $624 \div 33 \approx 18.9$. Partial bundles cannot be bought, so round up to 19 bundles.

Cost: $19 \times 27 = 513$

The roof area is 624 ft^2 ; Liam needs **19 bundles**, which cost **\$513**.

Problem 19: Patio pavers

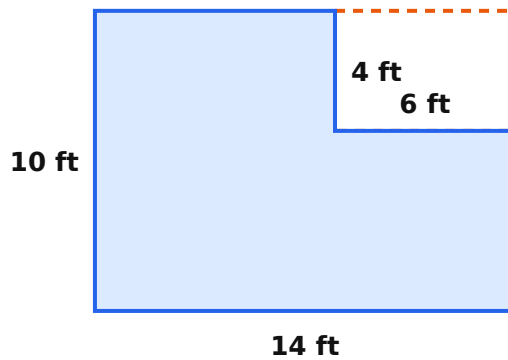
Full rectangle: $14 \times 10 = 140 \text{ ft}^2$.

Corner: $6 \times 4 = 24 \text{ ft}^2$.

Patio: $140 - 24 = 116 \text{ ft}^2$.

Cost: $116 \times \$3.50 = \$406$.

The patio is 116 ft^2 and the pavers cost \$406.



Solution figure: subtract the removed corner (24 sq ft) from the full rectangle (140 sq ft).

Problem 20: Community Garden Plan

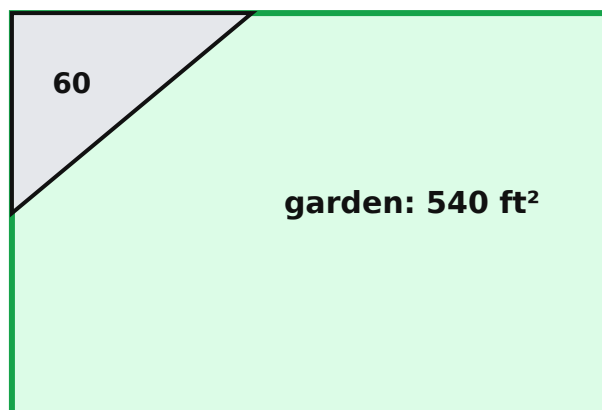
Lot: $30 \times 20 = 600 \text{ ft}^2$.

Shed triangle: $\frac{1}{2}(12)(10) = 60 \text{ ft}^2$.

Planting area: $600 - 60 = 540 \text{ ft}^2$.

Plants: $540 \div 6 = 90$. Cost: $90 \times 1.25 = 112.5$.

The planting area is 540 ft^2 ; **90 plants** fit and cost **\$112.50**.



Lot minus shed corner.