

Finding the Area of Flat Shapes

Grade 6 math · Worksheet Answer Key · Standards: 6.G.A.1

Each solution shows the formula, the substitution and a check. Pay attention to which length is the true perpendicular height, and compare your decomposition of each composite shape with the one shown.

Standards: 6.G.A.1 · **Level:** Grade 6

Problem 1 Area of a rectangle

Area = length $\times$ width = $14 \times 6 = 84$.

84 square feet

Problem 2 Area of a parallelogram

Use the perpendicular height, 7 inches. $A = bh = 12 \times 7 = 84$.

84 square inches

Problem 3 Area of a triangle

$A = \frac{1}{2} \times 16 \times 5 = 8 \times 5 = 40$.

40 square meters

Problem 4 Area of a right triangle

The legs are the base and height. $A = \frac{1}{2} \times 8 \times 15 = 4 \times 15 = 60$.

60 square feet

Problem 5 Area of a trapezoid

$A = \frac{1}{2} (5 + 9) \times 6 = \frac{1}{2} \times 14 \times 6 = 7 \times 6 = 42$.

42 square meters

Problem 6 Missing height of a triangle

$48 = \frac{1}{2} \times 16 \times h = 8h$, so $h = 48 \div 8 = 6$. Check: $\frac{1}{2} \times 16 \times 6 = 48$.

6 inches

Problem 7 Missing base of a parallelogram

$117 = b \times 9$, so $b = 117 \div 9 = 13$. Check: $13 \times 9 = 117$.

13 feet

Problem 8 Trapezoid with a figure

$A = \frac{1}{2} (7 + 13) \times 8 = 10 \times 8 = 80$.

80 square meters

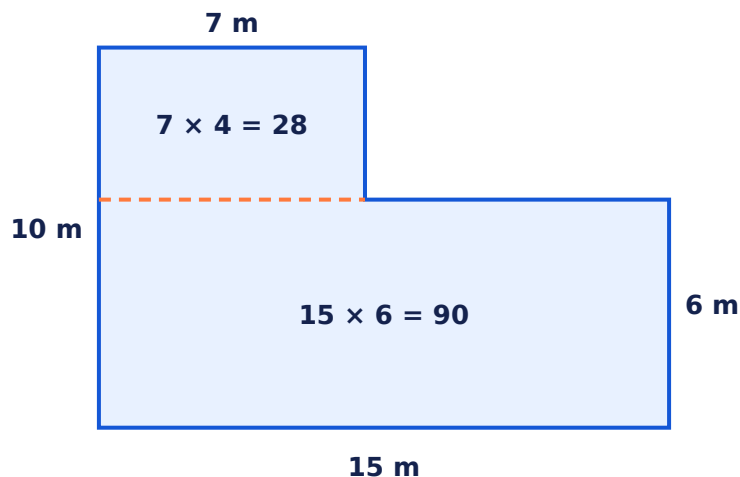
Problem 9 Rhombus in four triangles

Each triangle has legs of 5 and 12 (half of each diagonal): $\frac{1}{2} \times 5 \times 12 = 30$. Four triangles: $4 \times 30 = 120$. Check: $\frac{1}{2} \times 10 \times 24 = 120$.

30 square inches for one triangle; 120 square inches for the rhombus

Problem 10 L-shaped patio

Split the patio into a 15 by 6 rectangle and a 7 by 4 rectangle, since $10 - 6 = 4$ and the top width is 7.



Split into a 15 by 6 rectangle and a 7 by 4 rectangle.

$90 + 28 = 118$. Check by subtraction: $15 \times 10 = 150$ and the notch is $8 \times 4 = 32$, so $150 - 32 = 118$.

118 square meters

Problem 11 Obtuse triangle

The height is the perpendicular distance, 9 meters, even though it lies outside the triangle. $A = \frac{1}{2} \times 14 \times 9 = 7 \times 9 = 63$.

63 square meters

Problem 12 Deck shaped like a trapezoid

$A = \frac{1}{2} (12 + 20) \times 9 = 16 \times 9 = 144$.

144 square feet

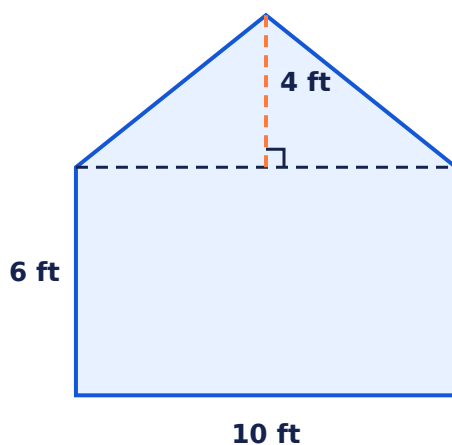
Problem 13 Triangle or rectangle?

Triangle: $\frac{1}{2} \times 15 \times 8 = 60$. Rectangle: $6 \times 9 = 54$. The difference is $60 - 54 = 6$.

The triangle is greater by 6 square feet

Problem 14 House shape

Rectangle: $10 \times 6 = 60$. Triangle roof: $\frac{1}{2} \times 10 \times 4 = 20$. Total: $60 + 20 = 80$.



The dashed line splits the house into two pieces.

80 square feet

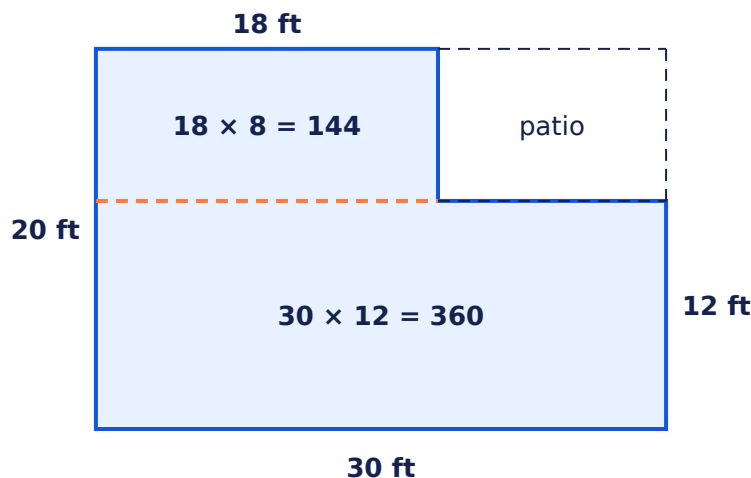
Problem 15 Painting a mural wall

- a. $A = \frac{1}{2} (24 + 16) \times 10 = 20 \times 10 = 200$ square feet.
- b. Two coats cover $2 \times 200 = 400$ square feet. $400 \div 40 = 10$ quarts.
- c. $10 \times 14.50 = 145$.

(a) 200 square feet; (b) 10 quarts; (c) \$145

Problem 16 Laying sod

- a. Split into 30 by 12 and 18 by 8 rectangles: $360 + 144 = 504$. Check: $30 \times 20 - 12 \times 8 = 600 - 96 = 504$.
- b. $504 \div 36 = 14$.
- c. $14 \times 4.25 = 59.50$.



Split into 30 by 12 and 18 by 8 rectangles.

(a) 504 square feet; (b) 14 rolls; (c) \$59.50

Problem 17 Sails for a sailboat

- a. First sail: $\frac{1}{2} \times 6 \times 11 = 33$. Second sail: $\frac{1}{2} \times 5 \times 9 = 22.5$. Total area 55.5 square meters.
- b. $55.5 \times 18 = 999$.

(a) 33 square meters and 22.5 square meters; (b) \$999

Problem 18 Quilt block

- a. $24 \times 24 = 576$.
- b. Each corner triangle has legs of 12 and 12: $\frac{1}{2} \times 12 \times 12 = 72$.
- c. The four corners total $4 \times 72 = 288$, so the diamond is $576 - 288 = 288$. Check: $\frac{1}{2} \times 24 \times 24 = 288$.

(a) 576 square inches; (b) 72 square inches; (c) 288 square inches

Problem 19 Painting a barn wall

- a. Rectangle: $24 \times 12 = 288$. Gable: $\frac{1}{2} \times 24 \times 7 = 84$. Door: $8 \times 9 = 72$. Painted area: $288 + 84 - 72 = 300$.
b. $300 \div 150 = 2$.

(a) 300 square feet; (b) 2 gallons

Problem 20 Finding a trapezoid height

Trapezoid: $91 = \frac{1}{2} (8 + 18) \times h = 13h$, so $h = 91 \div 13 = 7$. Triangle: $91 = \frac{1}{2} \times 14 \times h = 7h$, so $h = 91 \div 7 = 13$.

Trapezoid height 7 meters; triangle height 13 meters