10-3 Area of Parallelograms - Practice and Problem Solving

Find the area of each parallelogram.

7.
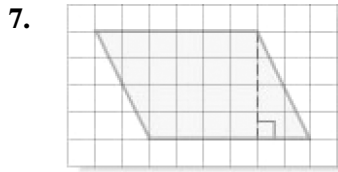
$A = bh$

$\quad = 6 \times 4$

$\quad = 24$ square units

9.
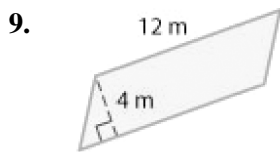
$A = bh$

$\quad = 12 \times 4$

$\quad = 48$ square meters

11.

$A = bh$

$\quad = 37 \times 22$

$\quad = 814 \text{ ft}^2$

13. Find the area of a parallelogram with base 6.75 meters and height 4.8 meters.

$A = bh$

$\quad = 6.75 \times 4.8$

$\quad \approx 7 \times 5 \text{ or } 35 \text{ m}^2$

15. MAPS What is the area of the region shown on the map?
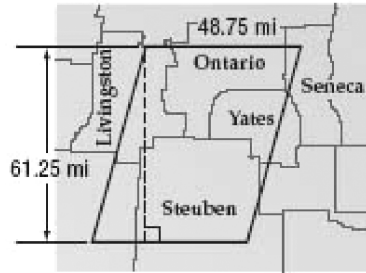
$A = bh$

$\quad = 61.25 \times 48.75$

$\quad = 2985.9375 \text{ mi}^2$

Find the area of the shaded region in each figure.

17.
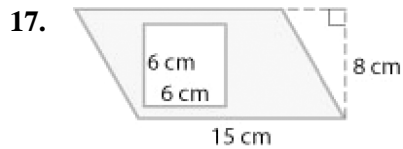
Find the area of the parallelogram.

$A_\text{P} = bh$

$\quad = 15 \times 8$

$\quad = 120 \text{ cm}^2$

Find the area of the rectangle.

$A_\text{R} = 6 \times 6$

$\quad = 36 \text{ cm}^2$

Find the area of the shaded region.

$A_\text{S} = A_\text{P} - A_\text{R}$

$\quad = 120 - 36$

$\quad = 84 \text{ cm}^2$

19. **ANALYZE TABLES** An architect designed three different parallelogram-shaped brick patios. Find the missing dimensions in the table.

Patio	Base (ft)	Height (ft)	Area (ft²)
1	$15\frac{3}{4}$	■	147
2	■	$11\frac{1}{4}$	$140\frac{5}{8}$
3	$10\frac{1}{4}$	■	$151\frac{3}{16}$

Patio 1:
$$h = 147 \div 15\frac{3}{4}$$
$$h = 9\frac{1}{3}$$

Patio 2:
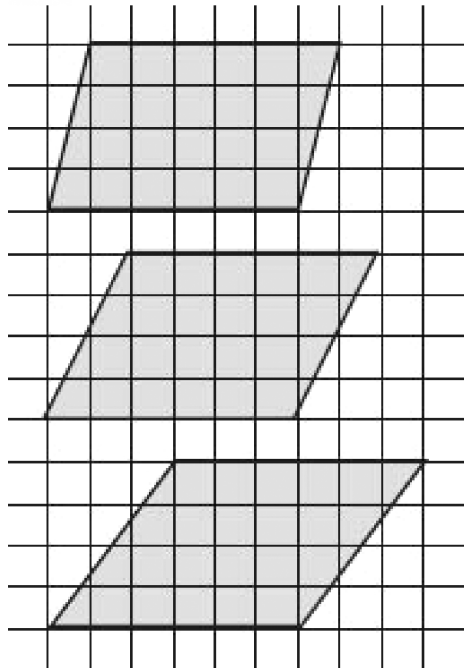$$b = 140\frac{5}{8} \div 11\frac{1}{4}$$
$$b = 12\frac{1}{2}$$

Patio 3:
$$h = 151\frac{3}{16} \div 10\frac{1}{4}$$
$$h = 14\frac{3}{4}$$

21. **OPEN ENDED** On grid paper, draw three different parallelograms that each have an area of 24 units and a height of 4 units. Compare and contrast the parallelograms.

Sample answer: Each parallelogram has the same base, height, and area, but each parallelogram has a different slant.

23. **WRITING IN MATH** Explain how the formula for the area of a parallelogram is related to the formula for the area of a rectangle.

The formula for the area of a parallelogram $A = bh$ corresponds to the formula for the area of a rectangle $A = \ell w$ in that the base b corresponds to the length ℓ and the height h corresponds to the width w.

25. A family has a flower garden in the shape of a parallelogram in their backyard. They planted grass in the rest of the yard. What is the area of the backyard that is planted with grass?

Backyard

75 ft

12 ft

5 ft

120 ft
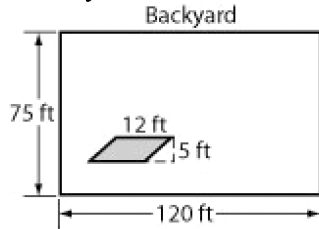
F 390 sq ft
G 8,940 sq ft
H 9,060 sq ft
J 9,144 sq ft

Find the area of the backyard.
$A_B = lw$

$\quad = 120 \times 75$

$\quad = 9,000 \text{ ft}^2$

Find the area of the flower garden.
$A_F = bh$

$\quad = 12 \times 5$

$\quad = 60 \text{ ft}^2$

Find the area planted with grass.
$A_G = A_B - A_F$

$\quad = 9,000 - 60$

$\quad = 8,940 \text{ ft}^2$

The answer is G.

Estimate the circumference of each circle.

27. $r = 19$ m

$C = 2\pi r$

$\quad \approx 2 \cdot 3 \cdot 19 \text{ or } 114 \text{ m}$

29. **MONUMENTS** The Lincoln Memorial is a rectangular structure whose base is 188 feet by 118 feet. What is the perimeter of the base of the Lincoln Memorial?

$P = 2l + 2w$

$\quad = 2(188) + 2(118)$

$\quad = 376 + 236$

$\quad = 612 \text{ ft}$

PREREQUISITE SKILL Find the value of each expression.

31. $\dfrac{5 \times 12}{2}$

$\dfrac{5 \times 12}{2} = \dfrac{60}{2}$

$\qquad = 30$

33. $\dfrac{14 \times 12}{2}$

$\dfrac{14 \times 12}{2} = \dfrac{168}{2}$

$\qquad = 84$