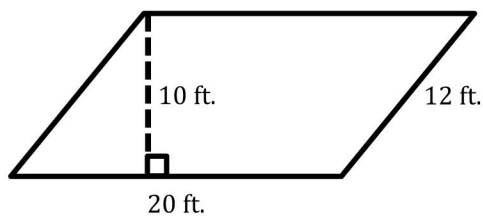# The Area of Parallelograms Through Rectangle Facts
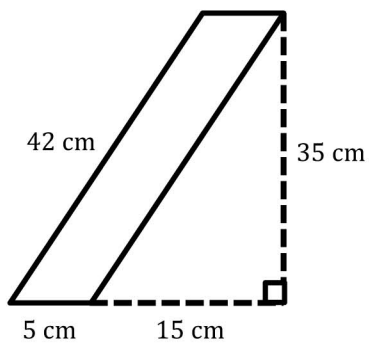
Calculate the area of each parallelogram. Note that the figures are not drawn to scale.

1.

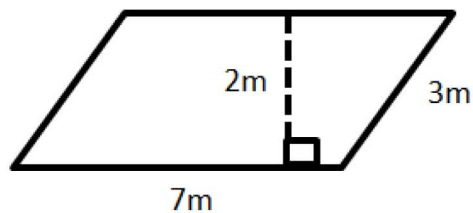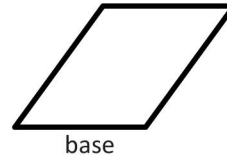10 ft.

12 ft.

20 ft.

2.

42 cm

35 cm

5 cm   15 cm

3.

2m

3m

7m

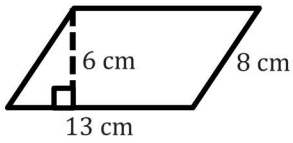Draw and label the height of each parallelogram.

1.

base

2.

base

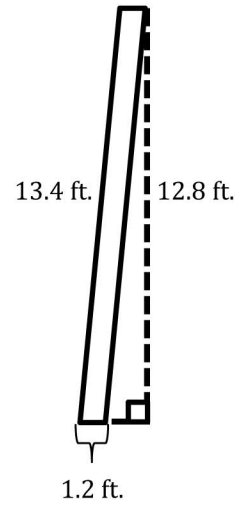Calculate the area of each parallelogram. Note that the figures are not drawn to scale.
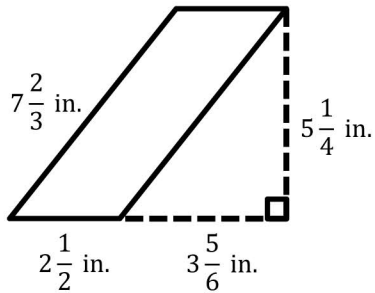
3.

6 cm   8 cm

13 cm

4.

13.4 ft.   12.8 ft.

1.2 ft.

5.

$7\frac{2}{3}$ in. $5\frac{1}{4}$ in.

$2\frac{1}{2}$ in. $3\frac{5}{6}$ in.

6.

$3\frac{1}{2}$ m

$4\frac{1}{3}$ m $3\frac{5}{6}$ m

7. Brittany and Sid were both asked to draw the height of a parallelogram. Their answers are below.

Brittany   Sid

height   height

base   base
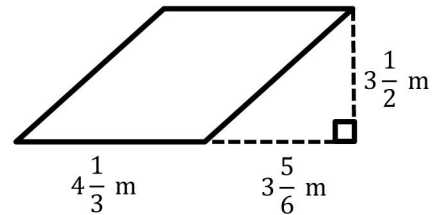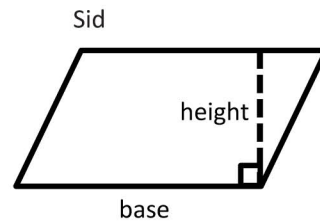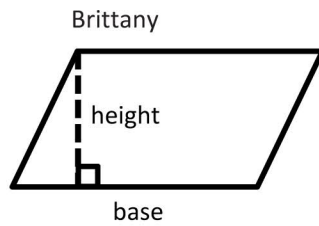
Are both Brittany and Sid correct? If not, who is correct? Explain your answer.

8. Do the rectangle and parallelogram below have the same area? Explain why or why not.

8 ft.

15 ft.

10 ft. 8 ft.

15 ft.

9. A parallelogram has an area of 20.3 sq. cm and a base of 2.5 cm. Write an equation that relates the area to the base and height, h. Solve the equation to determine the length of the height.

Calculate the area of each parallelogram. Note that the figures are not drawn to scale.

1.

10 ft.   12 ft.

20 ft.

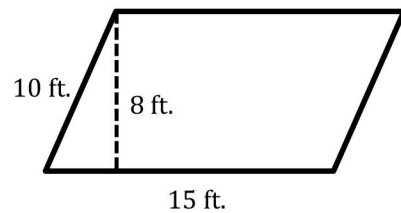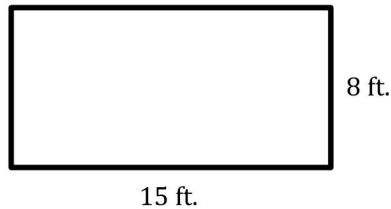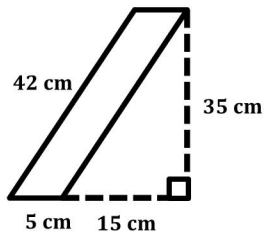$A = bh = 20 \text{ ft.} (10 \text{ ft.}) = 200 \text{ ft}^2$

2.

42 cm   35 cm

5 cm   15 cm
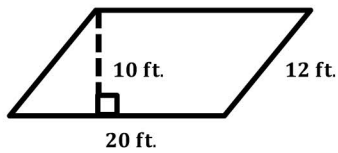
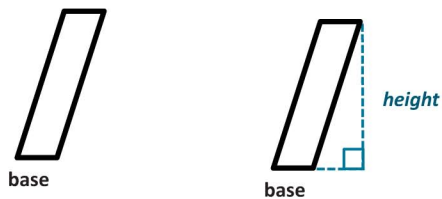$A = bh = 5 \text{ cm} (35 \text{ cm}) = 175 \text{ cm}^2$

3.

2m   3m

7m
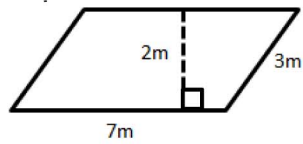
$A = bh = 7 \text{ m} (2 \text{ m}) = 14 \text{ m}^2$
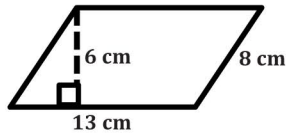
Draw and label the height of each parallelogram.

1.

base   base   *height*

2.

base   *height*   base
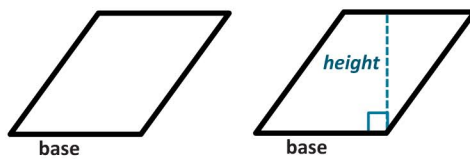
Calculate the area of each parallelogram. The figures are not drawn to scale.

3.

6 cm

8 cm

13 cm

$A = bh$

$\quad = 13 \text{ cm}(6 \text{ cm})$

$\quad = 78 \text{ cm}^2$

4.

13.4 ft.
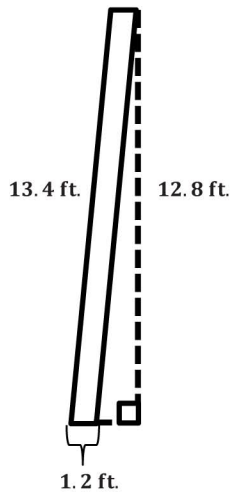
12.8 ft.

1.2 ft.

$A = bh$

$\quad = 1.2 \text{ ft.} (12.8 \text{ ft.})$

$\quad = 15.36 \text{ ft}^2$

5.

$7\frac{2}{3}$ in.

$5\frac{1}{4}$ in.

$2\frac{1}{2}$ in.

$3\frac{5}{6}$ in.
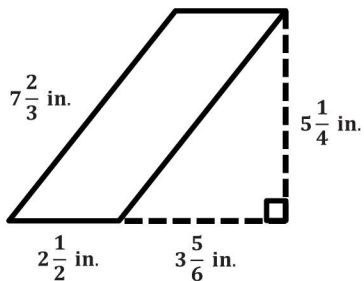
$A = bh$

$\quad = 2\frac{1}{2} \text{ in.} \left(5\frac{1}{4} \text{ in.} \right)$

$\quad = \frac{5}{2} \text{ in.} \left(\frac{21}{4} \text{ in.} \right)$

$\quad = \frac{105}{8} \text{ in}^2$

$\quad = 13\frac{1}{8} \text{ in}^2$

6.

$3\frac{1}{2}$ m

$4\frac{1}{3}$ m

$3\frac{5}{6}$ m
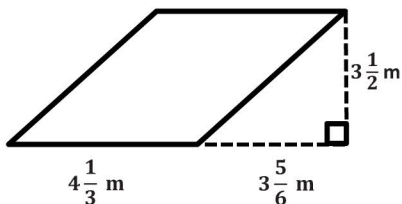
$A = bh$

$\quad = 4\frac{1}{3} \text{ m} \left(3\frac{1}{2} \text{ m} \right)$

$\quad = \frac{13}{3} \text{ m} \left(\frac{7}{2} \text{ m} \right)$

$\quad = \frac{91}{6} \text{ m}^2$

$\quad = 15\frac{1}{6} \text{ m}^2$

7. Brittany and Sid were both asked to draw the height of a parallelogram. Their answers are below.

Brittany

Sid
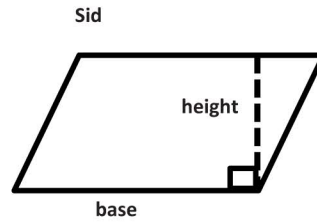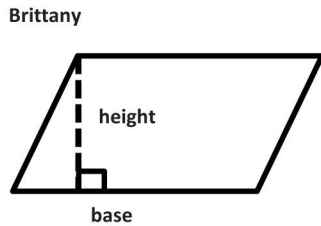
Are both Brittany and Sid correct? If not, who is correct? Explain your answer.

Both Brittany and Sid are correct because both of their heights represent a line segment that is perpendicular to the base and whose endpoint is on the opposite side of the parallelogram.

8. Do the rectangle and parallelogram below have the same area? Explain why or why not.

8 ft.

15 ft.

10 ft.   8 ft.

15 ft.
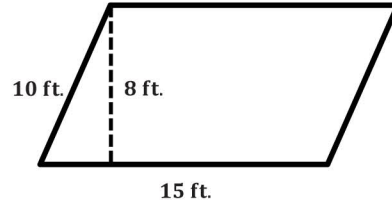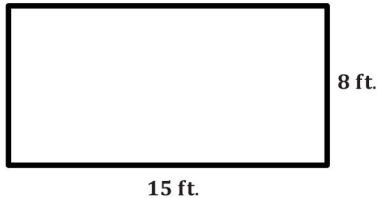
Yes, the rectangle and parallelogram have the same area because if we cut off the right triangle on the left side of the parallelogram, we can move it over to the right side and make the parallelogram into a rectangle. At this time, both rectangles would have the same dimensions; therefore, their areas would be the same.

9. A parallelogram has an area of 20.3 sq. cm and a base of 2.5 cm. Write an equation that relates the area to the base and height, h. Solve the equation to determine the length of the height.

$$20.3 \text{ cm}^2 = 2.5 \text{ cm}(h)$$
$$20.3 \text{ cm}^2 \div 2.5 \text{ cm} = 2.5 \text{ cm}(h) \div 2.5 \text{ cm}$$
$$8.12 \text{ cm} = h$$

Therefore, the height of the parallelogram is 8.12 cm.