

4.1 AREA OF PARALLELOGRAMS

ESSENTIAL QUESTION: How do you find the area of a parallelogram?

Parallelogram



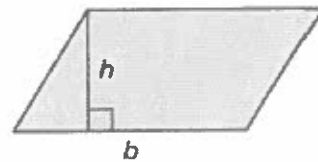
2 pairs of parallel sides.

Parallel sides are the same length.

Area of a Parallelogram

The area A of a parallelogram is the product of its base b and its height h .

$$A = b h$$



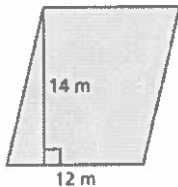
Base \rightarrow A side of the parallelogram

Height \rightarrow Perpendicular distance from a base to the opposite side (forms a right angle).

EXAMPLE 1

Find the area of each parallelogram.

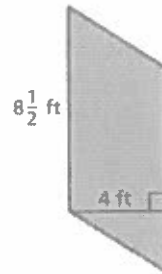
1)



$$A = 14 \cdot 12$$

$$A = 168 \text{ m}^2$$

2)



$$A = 8\frac{1}{2} \cdot 4$$

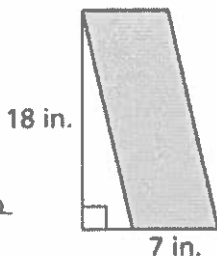
$$A = \frac{17}{2} \cdot \frac{4}{1}$$

$$A = 34 \text{ ft}^2$$

ON YOUR OWN

Find the area of each parallelogram

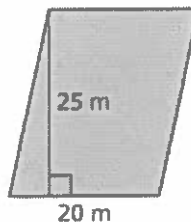
1)



$$A = 18 \cdot 7$$

$$A = 126 \text{ in}^2$$

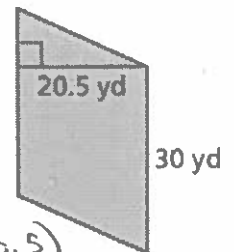
2)



$$A = 20(25)$$

$$A = 500 \text{ m}^2$$

3)



$$A = 30(20.5)$$

$$A = 615 \text{ yd}^2$$

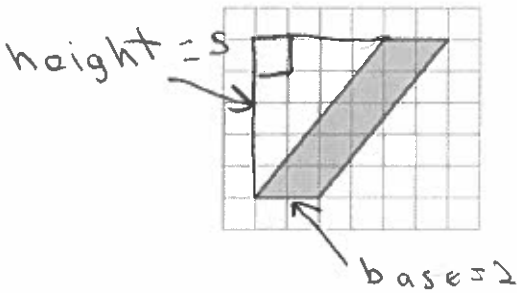
EXAMPLE 2

Find the area of the parallelogram.

1)

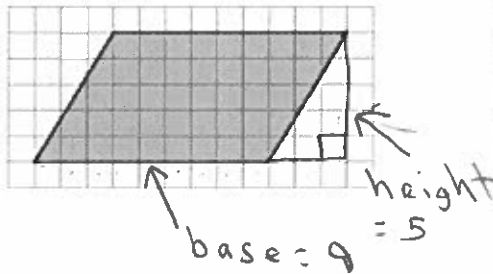
2)

3)



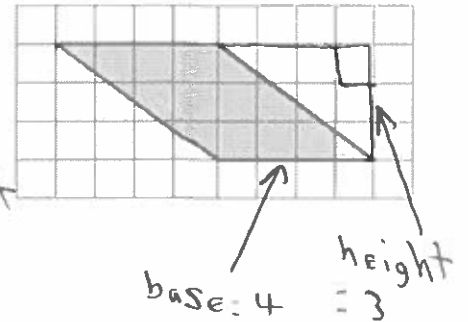
$$A = 2(5)$$

$$A = 10 \text{ units}^2$$



$$A = 9(5)$$

$$A = 45 \text{ units}^2$$



$$A = 4(3)$$

$$A = 12 \text{ units}^2$$

EXAMPLE 3

You make a photo prop for a school fair. You cut a 10-inch square out of a parallelogram-shaped piece of wood. What is the area of the photo prop?

① Convert feet to inches

② Area of Photo Prop = Area of (parallelogram) wood minus Area of cut out (square)

Area of parallelogram

$$A = 96(48)$$

$$A = 4608 \text{ in}^2$$

Area of square

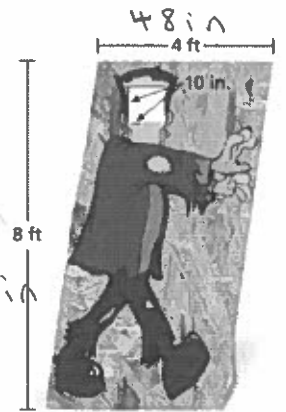
$$A = 10(10)$$

$$A = 100 \text{ in}^2$$

Area of photo prop

$$A = 4608 - 100$$

$$A = 4508 \text{ in}^2$$



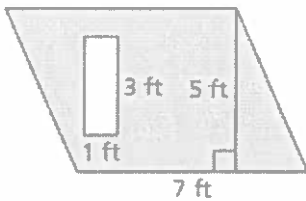
The area of the photo prop is 4508 in^2

Find the area of the shaded region.

1)

2)

3)



Area of Parallelogram

$$A = 7(5)$$

$$A = 35 \text{ ft}^2$$

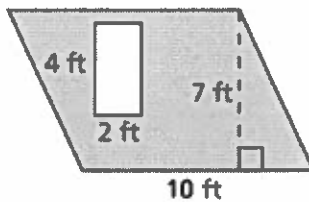
Area of Rectangle

$$A = 1(3)$$

$$A = 3 \text{ ft}^2$$

Area of Shaded Region

$$A = 35 \text{ ft}^2 - 3 \text{ ft}^2 = 32 \text{ ft}^2$$



Area of P. - Area of Rectangle

$$A = 10(7)$$

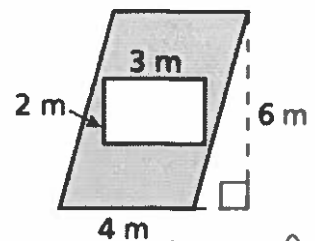
$$A = 70 \text{ ft}^2$$

$$A = 4(2)$$

$$A = 8 \text{ ft}^2$$

Area of shaded Region

$$A = 70 \text{ ft}^2 - 8 \text{ ft}^2 = 62 \text{ ft}^2$$



Area of Parallelogram - Area of Rectangle

$$A = 4(6)$$

$$A = 24 \text{ m}^2$$

$$A = 2(3)$$

$$A = 6 \text{ m}^2$$

Area of Shaded Region

$$A = 24 \text{ m}^2 - 6 \text{ m}^2 = 18 \text{ m}^2$$