4.1 AREA OF PARALLELOGRAMS

ESSENTIAL QUESTION:

How do you find the area of a parallelogram?

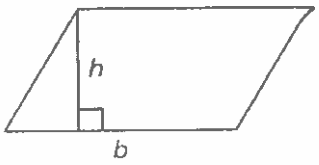
Parallelogram

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*.



$A = bh$

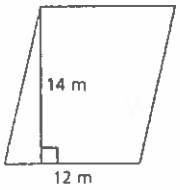
Base-> A side of the parallelogram

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

EXAMPLE 1

Find the area of each parallelogram.

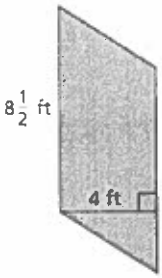
1)



$A = 14 \cdot 12$

$A = 168\ m^2$

2)



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

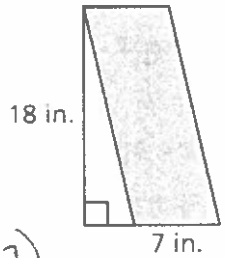
$A = \frac{17}{2} \cdot \frac{4}{1}$

$A = 34\ ft^2$

ON YOUR OWN

Find the area of each parallelogram

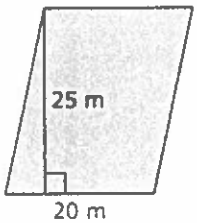
1)



$A = 18(7)$

$A = 126\ in^2$

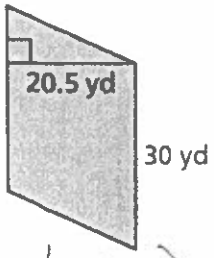
2)



$A = 20(25)$

$A = 500\ m^2$

3)



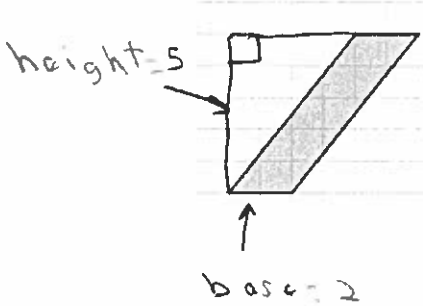
$A = 30(20.5)$

$A = 615\ yd^2$

EXAMPLE 2

Find the area of the parallelogram.

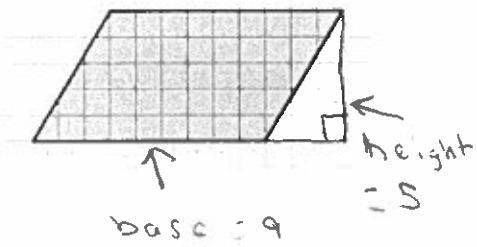
1)



$A = 2(5)$

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

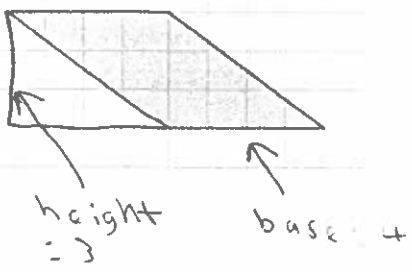
2)



$A = 9(5)$

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

3)

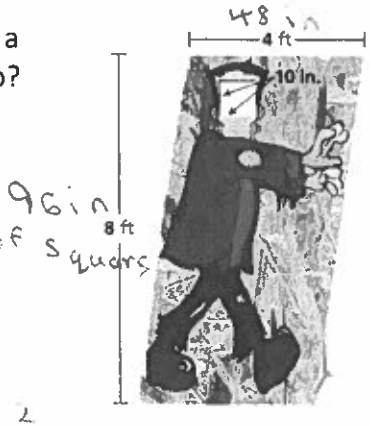


$A = 4(3)$

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

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?



Convert inches to feet

Area of Photo Prop = Area of wood - Area of Square

$A = 96(48) - A = 10 \cdot$

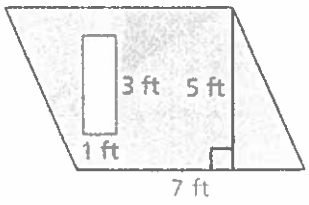
$A = 4608 \text{ in}^2 - A = 100 \text{ in}^2$

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

The area of the photo prop is 4508 in^2

Find the area of the shaded region.

1)



Area of Parallelogram − Area of Rectangle

$A = 5 \cdot 7$

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

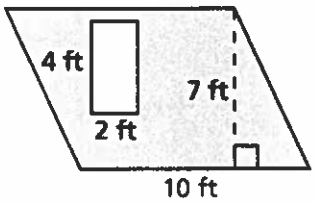
$A = 3 \cdot 1$

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

Area of Shaded Region

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

2)



Area of Parallelogram − Area of Rectangle

$A = 7 \cdot 10$

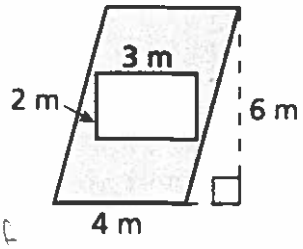
$A = 70 \text{ ft}^2$

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

Area of Shaded Region

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

3)



Area of Parallelogram − Area of Rectangle

$A = 4 \cdot 6$

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

$A = 2 \cdot 3$

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

Area of Shaded region

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

$= 18 \text{ ft}^2$