6-1 Area of Polygons & Complex Figures

- I can find the area of polygons.
- I can find the area fo complex figures.

Vocabulary:
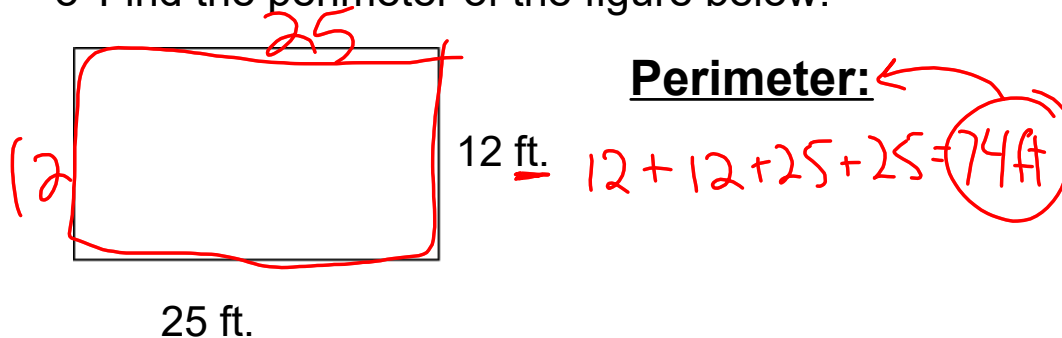
- **Perimeter:** the distance around the outside of a polygon.

- **Area:** the space inside a polygon.

- Perimeter Review

  o To find the <u>perimeter</u> of a figure you can add up all the sides of the figure.

  o Perimeter is a distance. Some sample units for perimeter are inches, feet, centimeters, and <u>meters</u>

  o Find the perimeter of the figure below:

  25

  (12

  12 ft.

  25 ft.

  Perimeter:

  $12 + 12 + 25 + 25 = 74 ft$

Steps to Follow when Finding Area:

1. Write the correct <u>Formula</u> for the area of the figure you are trying to find.

2. <u>Plug</u> in the correct information to the formula.

3. Solve and DON'T Forget to <u>label</u> with the correct units.

Area of a Rectangle:

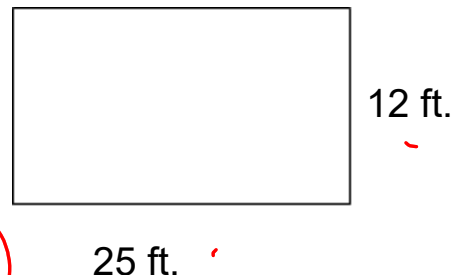○ The formula for area (A) of a rectangle is length (l) multiplied by width (w).

A = L x W

o Area is measured in square units such as square feet (ft^2) and square centimeters (cm^2).
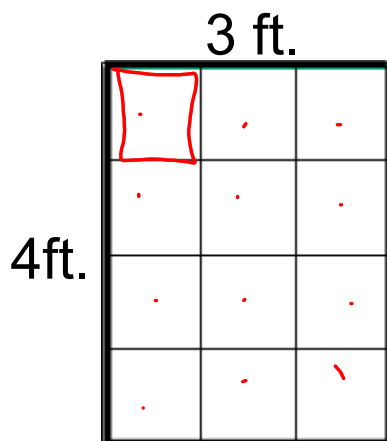
$A = \ell \times w$

$A = 12 \times 25$

$A = 300 \, ft^2$

12 ft.

25 ft.

Area of a Rectangle:

○ What is the area of this rectangle? How many square units fit inside it?

3 ft.

4ft.

3×4

1. Area = Length × width

2. Area = 4ft. × 3ft.

3. Area = 12 square feet

$12 \, ft^2$

Area of a Parallelogram

- A **parallelogram** is a quadrilateral where the opposite sides are congruent and parallel.

- **Congruent:** have the same length.

- A ***rectangle*** is a type of parallelogram, but we often see parallelograms that are ***not*** rectangles (parallelograms without right angles).
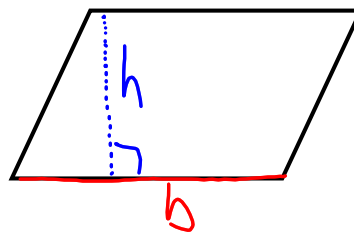
Area of a Parallelogram

- Any side of a parallelogram can be considered a **base (b)**.

- The **height (h)** of a parallelogram is the perpendicular distance between opposite bases.
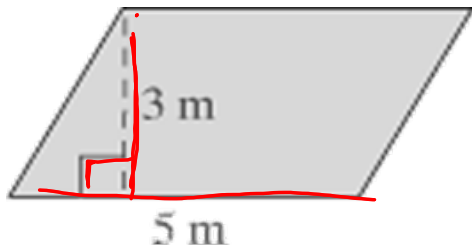
The area formula is Area = base × height

or
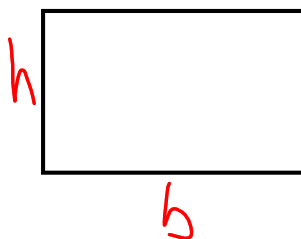
A=bh

Area of a Parallelogram

– Find the area of the parallelogram below:

Work Space:

A = base × height

A = 3 × 5

A = 15m²

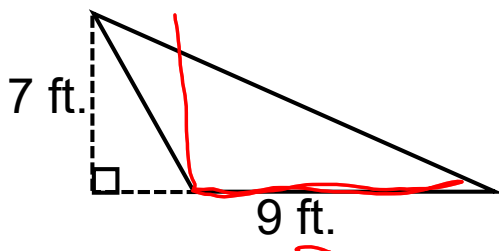## Area of a Triangle:

– A **triangle** (which can be formed by splitting a parallelogram in half) has a similar area formula:

Area= **½ × base × height** or A = **½ bh.**

.5 ×

Find the area of the triangle below:

Work Space:

A = ½ × b × h

A = ½ × 9 × 7

A = 31.5 ft²

7 ft.

9 ft.

Area of a Trapezoid:

- A ***trapezoid's*** area can be found by the formula:

Area = **½ × height × (the sum of base 1 & base 2)**

or

$$A = \tfrac{1}{2}h(b_1 + b_2)$$

b_1

h

b_2
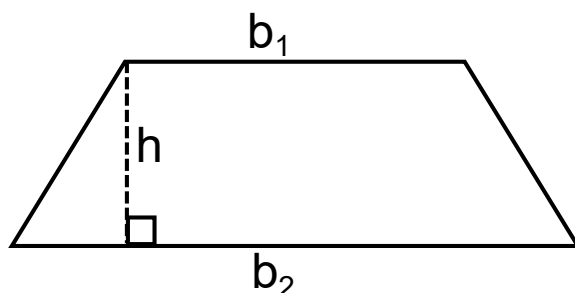
Area of a Trapezoid:

- Find the area of the trapezoid below:

11 cm

8 cm

14 cm
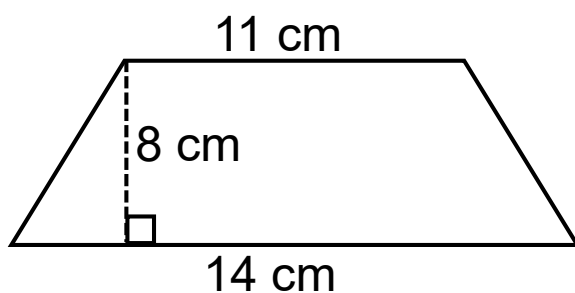
Work Space:

$A = \dfrac{1}{2} \times h \times (b_1 + b_2)$

$A = \tfrac{1}{2} \times 8 (14 + 11)$

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