

### 9.3 Area of Trapezoids (6.G.1)

#### Vocabulary

trapezoid

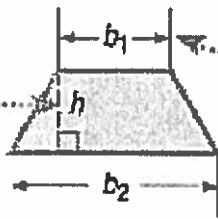
- a quadrilateral with one set of parallel sides.

#### Key Concepts: Trapezoid

$$A = \frac{1}{2} \cdot \text{height} \cdot (\text{base}_1 + \text{base}_2) \quad \text{OR}$$

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

The height is the perpendicular distance between the bases.



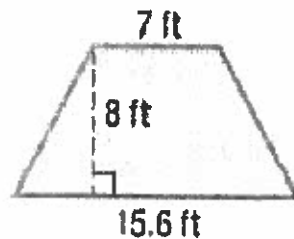
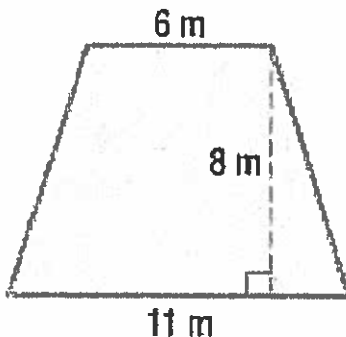
The two bases are parallel. They will always be the same distance apart.

#### Step:

- 1.) Write the formula.
- 2.) Fill in the numbers.
- 3.) Answer.

#### Guided Practice:

Find the area of each trapezoid. Round to the nearest tenth if necessary.



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

$$A = \frac{1}{2} \cdot 8 \text{ m} \cdot (6 \text{ m} + 11 \text{ m})$$

$$A = 68 \text{ m}^2$$

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

$$A = \frac{1}{2} \cdot 8 \text{ ft} \cdot (7 \text{ ft} + 15.6 \text{ ft})$$

$$A = 90.4 \text{ ft}^2$$

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4.) A trapezoid has an area of 15 square feet. If the bases are 4 feet and 6 feet, what is the height of the trapezoid?

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

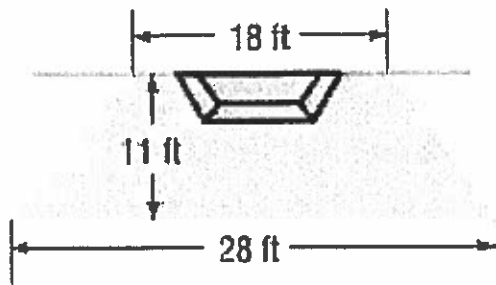
$$15 = \frac{1}{2} \cdot h \cdot (\overset{10 \text{ ft}}{4 \text{ ft} + 6 \text{ ft}})$$

$$15 = 5 \text{ ft} \cdot h$$

$$\div 5 \quad \div 5$$

$$\boxed{3 \text{ ft} = h}$$

5.) In the National Hockey League, goaltenders can play the puck behind the goal line only in a trapezoid-shaped area, as shown. Find the area of the trapezoid.



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

$$A = \frac{1}{2} \cdot 11 \text{ ft} \cdot (\overset{46}{18 + 28})$$

$$\boxed{A = 253 \text{ ft}^2}$$

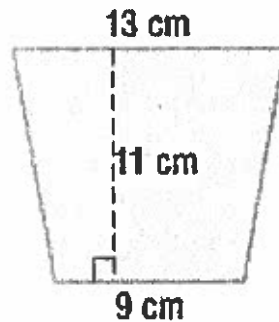
#### Partner Talk

Find the area of the figure.

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

$$A = \frac{1}{2} \cdot 11 \text{ cm} \cdot (\overset{22 \text{ cm}}{13 + 9})$$

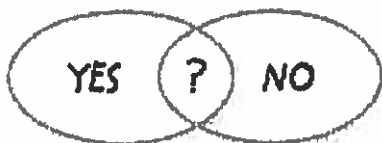
$$\boxed{A = 121 \text{ cm}^2}$$



**Building on the Essential Question** - How is the formula for the area of a trapezoid related to the formula for the area of a parallelogram?

Two congruent trapezoids make a parallelogram.

**Rate Yourself** - Are you ready to move?



← Rate yourself!