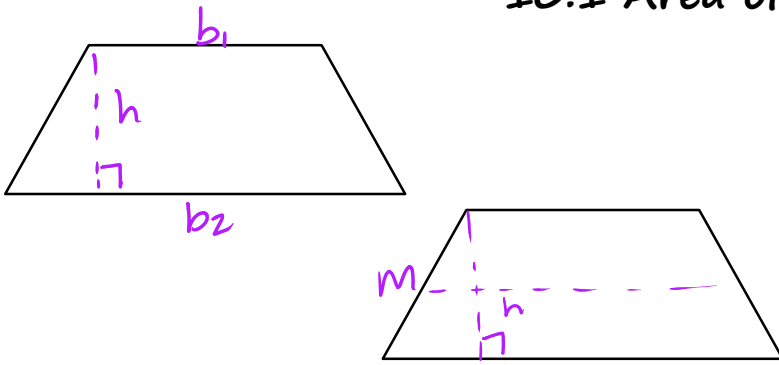


Key

# 10.1 Area of a Trapezoid



**Area of a Trapezoid**

$$A = M \cdot h \text{ OR } A = \frac{b_1 + b_2}{2} \cdot h$$

$$M = \frac{b_1 + b_2}{2}$$

↓  
median

Example 1: Given that the height of a trapezoid is 12. The bases are 6 and 14. Find:

a) the median

$$M = \frac{6 + 14}{2} = \frac{20}{2} = 10$$

b) the area of the trapezoid

$$\begin{aligned} A &= M \cdot h \\ &= 10 \cdot 12 \\ &= 120 \end{aligned}$$

Example 2: Given: Trapezoid WXYZ, with height 7, lower base 18, and upper base 12.

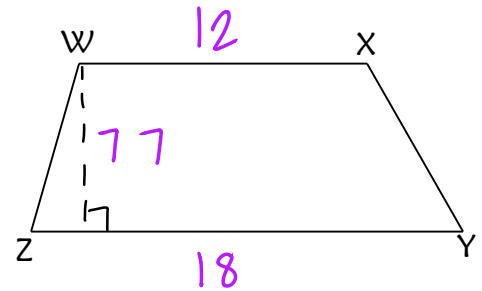
Find: The area of WXYZ.

$$A = 7 \cdot \left( \frac{18 + 12}{2} \right)$$

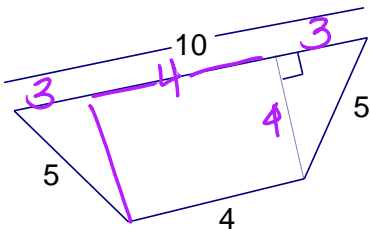
$$A = 7 \left( \frac{30}{2} \right)$$

$$A = 7(15)$$

$A = 105$



Example 3: Find the area of the trapezoid below.



$$A = \frac{1}{2} (10 + 4) \cdot 4$$

$$\frac{1}{2} (14) \cdot 4$$

$$\begin{aligned} &7 \cdot 4 \\ &\boxed{28} \end{aligned}$$

WORK WITH A PARTNER!

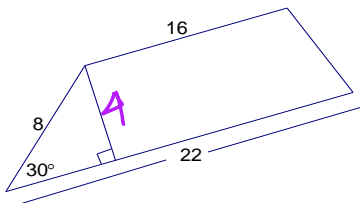
1) If a trapezoid has a median with length 12 cm and a height of 5 cm, find the area of the trapezoid.

$$\begin{aligned} A &= M \cdot h \\ &= 12 \cdot 5 \\ &= 60 \text{ u}^2 \end{aligned}$$

2) A trapezoid has bases with measures of 3 in. and 16 in., and a height of 10 in. Find the area of the trapezoid.

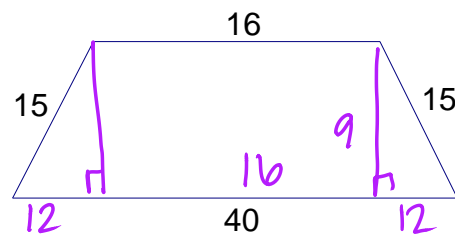
$$\begin{aligned} A &= \frac{(3+16) \cdot 10}{2} \\ A &= \frac{19}{2} \cdot 10 \\ A &= 95 \text{ u}^2 \end{aligned}$$

3) Find the area of the trapezoid below.



$$\begin{aligned} A &= \frac{1}{2} (22+16) \cdot 4 \\ &= \frac{1}{2} (38) \cdot 4 \\ &= 19 \cdot 4 \\ &= 76 \text{ u}^2 \end{aligned}$$

4) Find the area of the trapezoid below.



$$\begin{aligned} A &= \frac{1}{2} (16+40) \cdot 9 \\ &= \frac{1}{2} (56) \cdot 9 \\ &= 28 \cdot 9 \\ &= 252 \text{ u}^2 \end{aligned}$$