

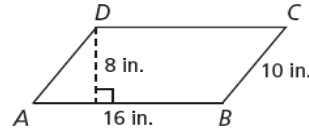
Problem

What is the area of $\square ABCD$?

\overline{AB} is the correct base to use for the given altitude.

$$A = bh \quad \text{Substitute and simplify.}$$

$$A = 8(16) = 128 \text{ ft}^2$$



Problem

What is the value of x ?

Step 1: Find the area of the parallelogram using the altitude perpendicular to \overline{LM} .

$$A = bh \quad \text{Substitute and simplify.}$$

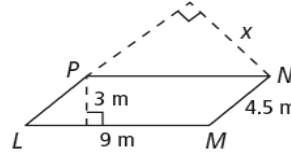
$$A = 9(3) = 27 \text{ m}^2$$

Step 2: Use the area of the parallelogram to find the value of x .

$$A = bh \quad \text{Substitute.}$$

$$27 = 4.5x \quad \text{Simplify.}$$

$$x = 6 \text{ m}$$



Problem

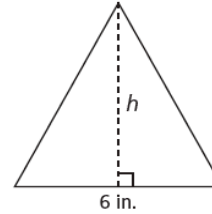
A triangle has an area of 18 in.^2 . The length of its base is 6 in. What is the corresponding height?

Draw a sketch. Then substitute into the area formula, and solve for h .

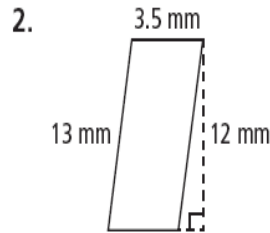
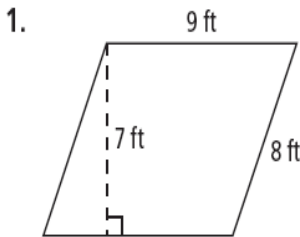
$$A = \frac{1}{2}bh \quad \text{Substitute.}$$

$$18 = \frac{1}{2}(6)h = 3h \quad \text{Simplify.}$$

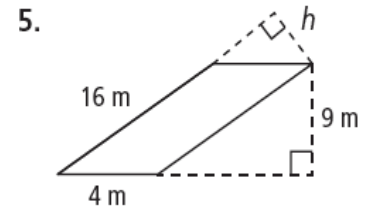
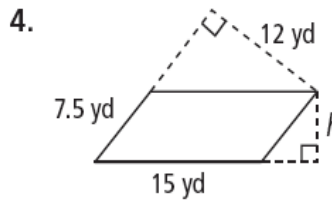
$$h = 6$$



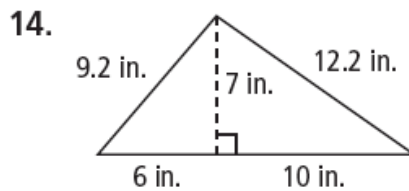
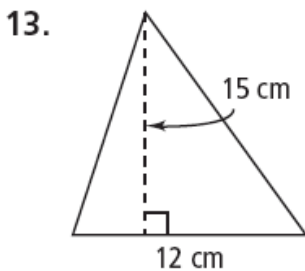
Find the area of each parallelogram.



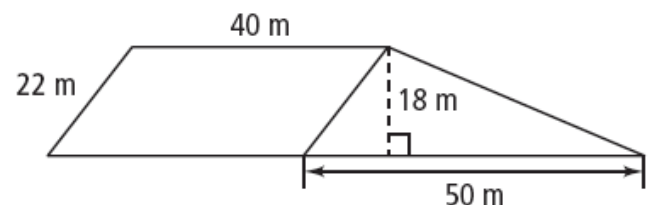
Find the value of h for each parallelogram.



Find the area of each triangle.



16. The figure at the right consists of a parallelogram and a triangle. What is the area of the figure?



Problem

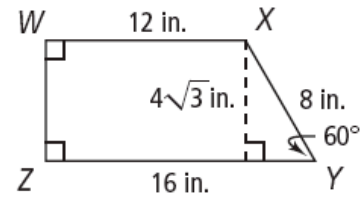
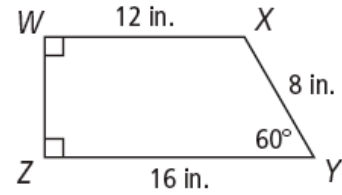
What is the area of trapezoid $WXYZ$?

Draw an altitude to divide the trapezoid into a rectangle and a 30° - 60° - 90° triangle. In a 30° - 60° - 90° triangle, the length of the longer leg is $\frac{\sqrt{3}}{2}$ times the length of the hypotenuse.

$$h = \frac{\sqrt{3}}{2}(8) = 4\sqrt{3}$$

Use the formula for the area of a trapezoid.

$$\begin{aligned} A &= \frac{1}{2}h(b_1 + b_2) && \text{Substitute.} \\ &= \frac{1}{2}(4\sqrt{3})(12 + 16) && \text{Simplify.} \\ &= 56\sqrt{3} \end{aligned}$$



In a 30° - 60° - 90° triangle, the longer leg is opposite the 60° angle and the shorter leg is opposite the 30° angle.

$$\begin{aligned} \text{longer leg} &= \sqrt{3} \times \text{shorter leg} \\ \text{hypotenuse} &= 2 \times \text{shorter leg} \end{aligned}$$

In a 45° - 45° - 90° triangle, the legs are the same length.

$$\text{hypotenuse} = \sqrt{2} \times \text{leg}$$

Find the area of each trapezoid. If necessary, leave your answer in simplest radical form.

