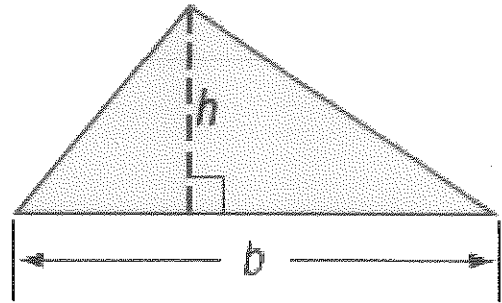


Area Triangles, Trapezoids and Rhombi

Area of a Triangle:

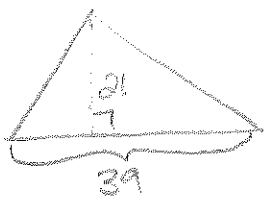
$$A = \frac{bh}{2}$$



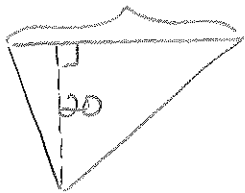
\*\*\* The base and the height are always perpendicular \*\*\*

Example 1:

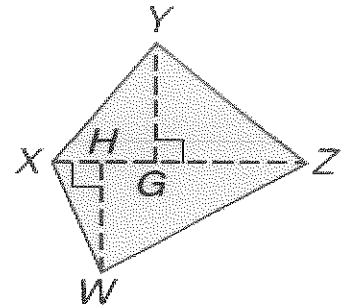
Find the area of quadrilateral XYZW if XZ = 39, HW = 20, and YG = 21.



$$A = \frac{bh}{2} = \frac{(39)(21)}{2} = 409.5$$



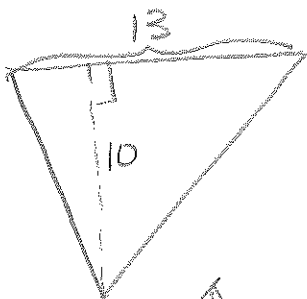
$$A = \frac{bh}{2} = \frac{(39)(20)}{2} = 390$$



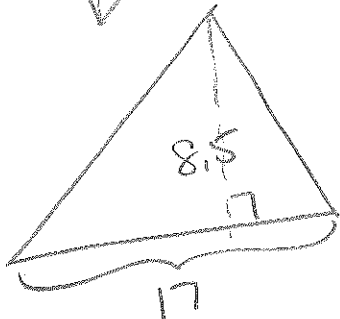
$$\text{Total Area} = 409.5 + 390 = 799.5$$

Example 2:

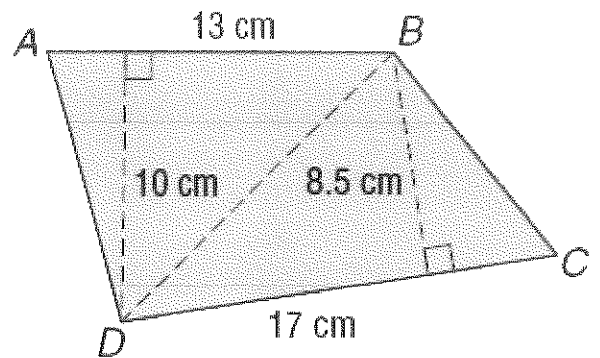
Find the area of quadrilateral ABCD.



$$A = \frac{bh}{2} = \frac{(13)(10)}{2} = 65 \text{ cm}$$



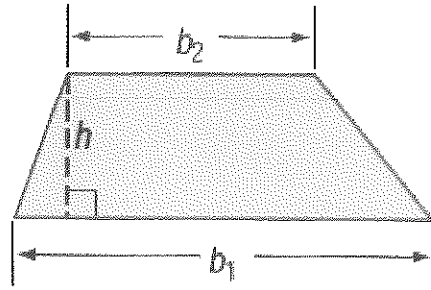
$$A = \frac{bh}{2} = \frac{(17)(8.5)}{2} = 72.25 \text{ cm}$$



$$\text{Total Area} = 65 + 72.25 = 137.25 \text{ cm}^2$$

Area of a Trapezoid:

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



\*\*\* The bases and the height are always perpendicular \*\*\*

Example 3:

Trapezoid PQRS, with bases PQ and RS, has an area of 250 in<sup>2</sup>. PQ = 20 in. RS = 30 in. Draw and label the trapezoid. Find the height of PQRS.

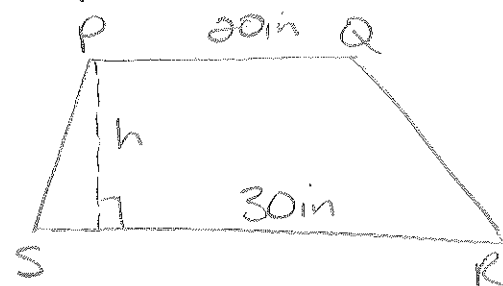
Height = 10 in

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

$$250 = \frac{(20 + 30)h}{2}$$

$$500 = 50h$$

$$\frac{500}{50} = h \quad \boxed{h = 10}$$



$A = 250 \text{ in}^2$

Example 4:

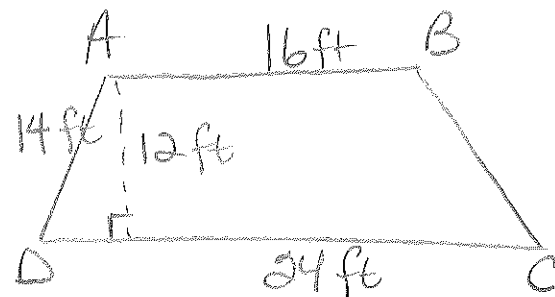
Trapezoid ABCD has bases AB and CD. AB = 16 ft. CD = 24 ft. AD = 14 ft. The height of the trapezoid is 12 ft. Draw and label the trapezoid. Find the Area of ABCD. Round to the nearest tenth if necessary.

Area = 240 ft<sup>2</sup>

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

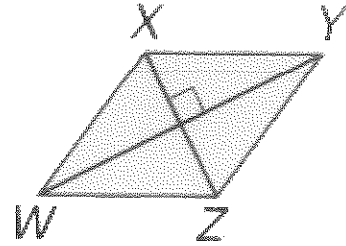
$$A = \frac{(16 + 24)(12)}{2}$$

$$A = \boxed{240 \text{ ft}^2}$$



Area of a Rhombus:

$$A = \frac{(d_1)(d_2)}{2} \quad \text{or} \quad A = \frac{(XZ)(WY)}{2}$$



\*\*\*  $d_1$  and  $d_2$  are the diagonals of the rhombus \*\*\*

Example 5:

Rhombus WXYZ has an area of 100 square meters. Draw and label the rhombus.  $XZ = 10$  meters. Find WY.

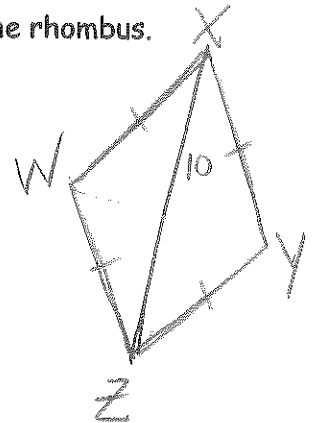
WY = 20m

$$A = \frac{(d_1)(d_2)}{2}$$

$$100 = \frac{(10)(d_2)}{2}$$

$$200 = 10d_2$$

$20 = d_2$



$A = 100m^2$

Example 6:

Rhombus MNPQ has a area of  $375 \text{ in}^2$ . MP is 25 inches. Draw and label the rhombus. Find NQ

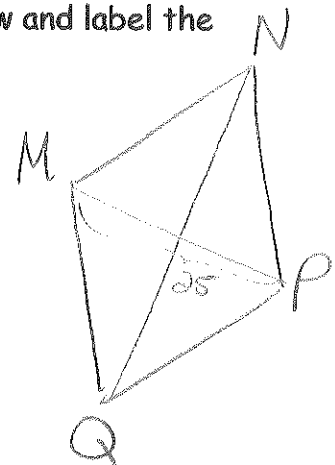
NQ = 30in

$$A = \frac{(d_1)(d_2)}{2}$$

$$375 = \frac{(25)(d_2)}{2}$$

$$750 = 25d_2$$

$30 = d_2$



$A = 375 \text{ in}^2$