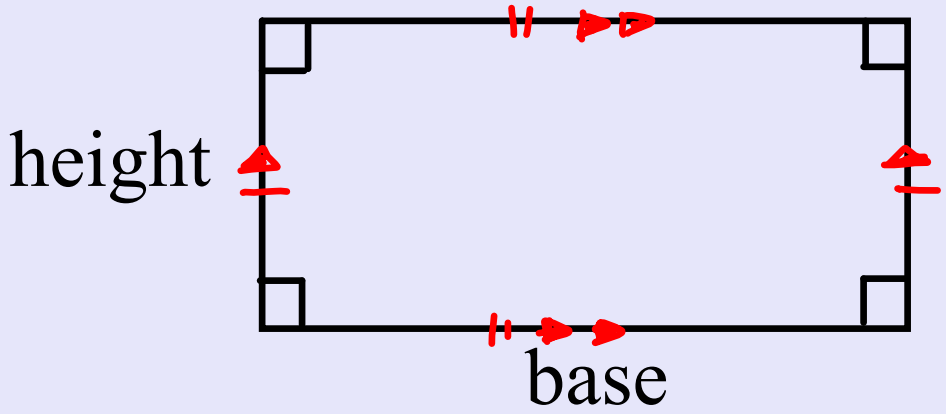
Geometry

Ch. 10 Handout 10.1

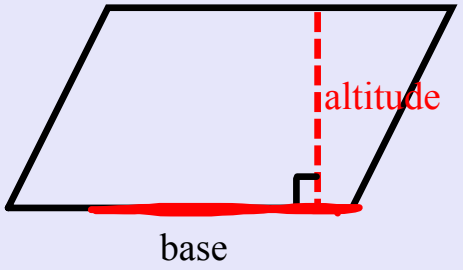
Areas of Parallelograms and Triangles

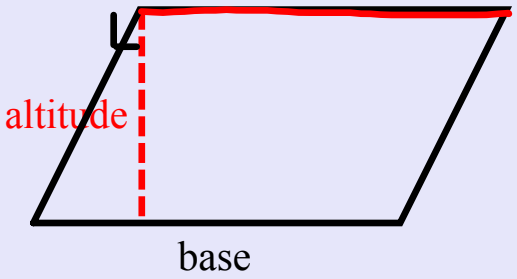

height
base

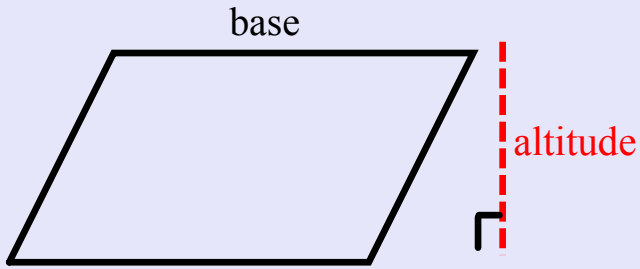
The **base of a parallelogram** is any of its sides.

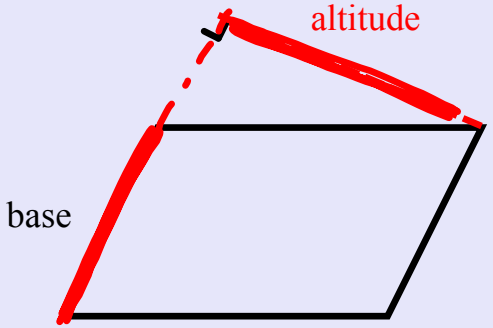
The corresponding **altitude** is a segment perpendicular to the line containing that base, drawn from the side opposite the base.

The **height** is the length of any altitude





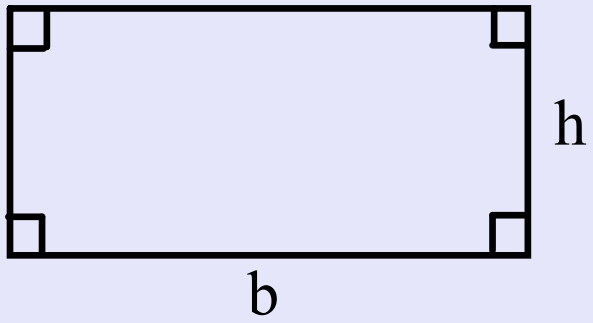




Area of Rectangle

The area of a rectangle is the product of its base and height.

$$A = b \cdot h$$

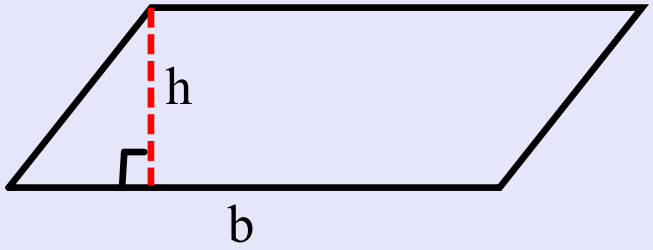


https://www.desmos.com/calculator/x1cxv5q5de

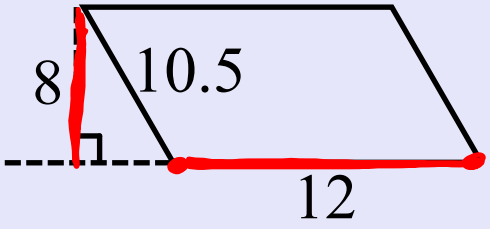
Area of a Parallelogram

The area of a parallelogram is the product of its base and the corresponding height.

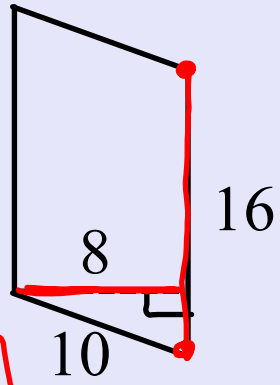
$$A = b \bullet h$$



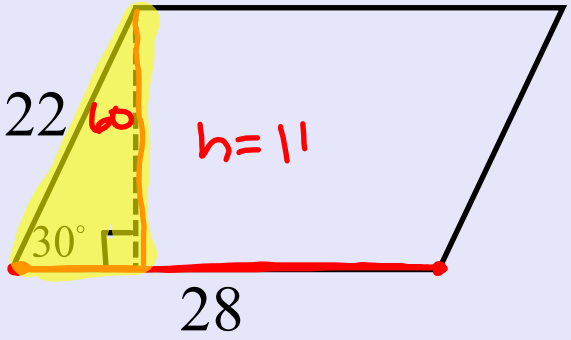
Find the area of each parallelgram



$A = bh$
$A = 12(8)$
$A = 96\ un^2$



$A = bh$
$A = 8(16)$
$A = 128\ un^2$

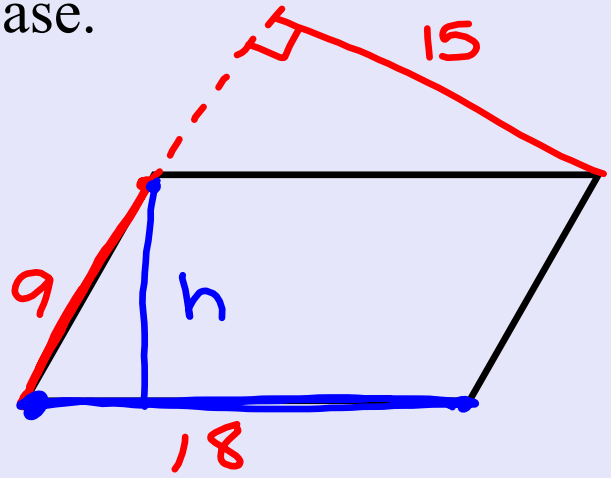


$A = bh$
$A = 28(11)$
$A = 308\ un^2$

$$\begin{array}{r} 28 \\ \times\ 11 \\ \hline 28 \\ 28 \\ \hline 308 \end{array}$$

$hyp = sl \cdot 2$
$22 = h \cdot 2$
$h = 11$

A parallelogram has 9-in and 18-in sides. The height corresponding to the 9-in base is 15-in. Find the height corresponding to the 18-in base.

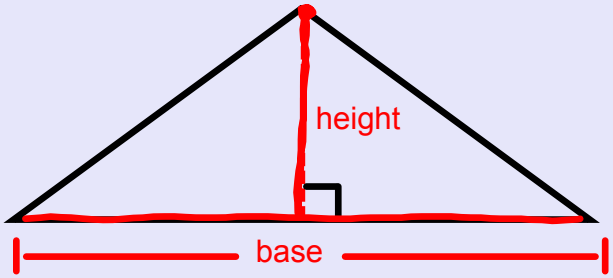


$9(15) = 18h$

$\frac{135}{18} = \frac{18h}{18}$

$h = 7.5$

A **base of a triangle** is any of its side. The corresponding **height** is the length of the altitude to the line containing that base.

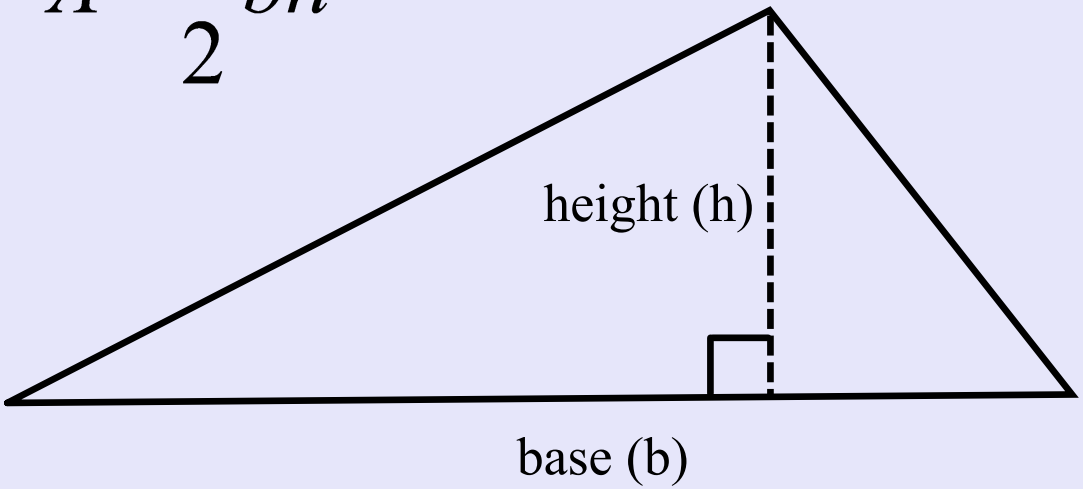


https://www.desmos.com/calculator/oorpenhig1

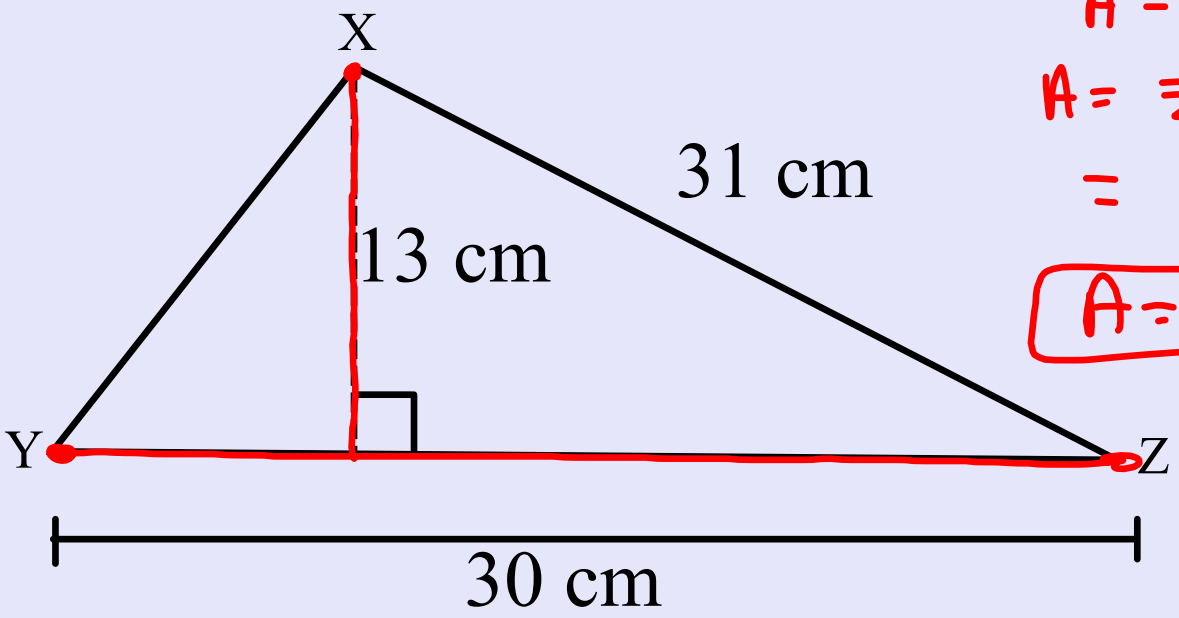
Area of a triangle

The area of a triangle is half the product of a base and the corresponding height.

$$A = \frac{1}{2}bh$$



Find the area of ΔXYZ.



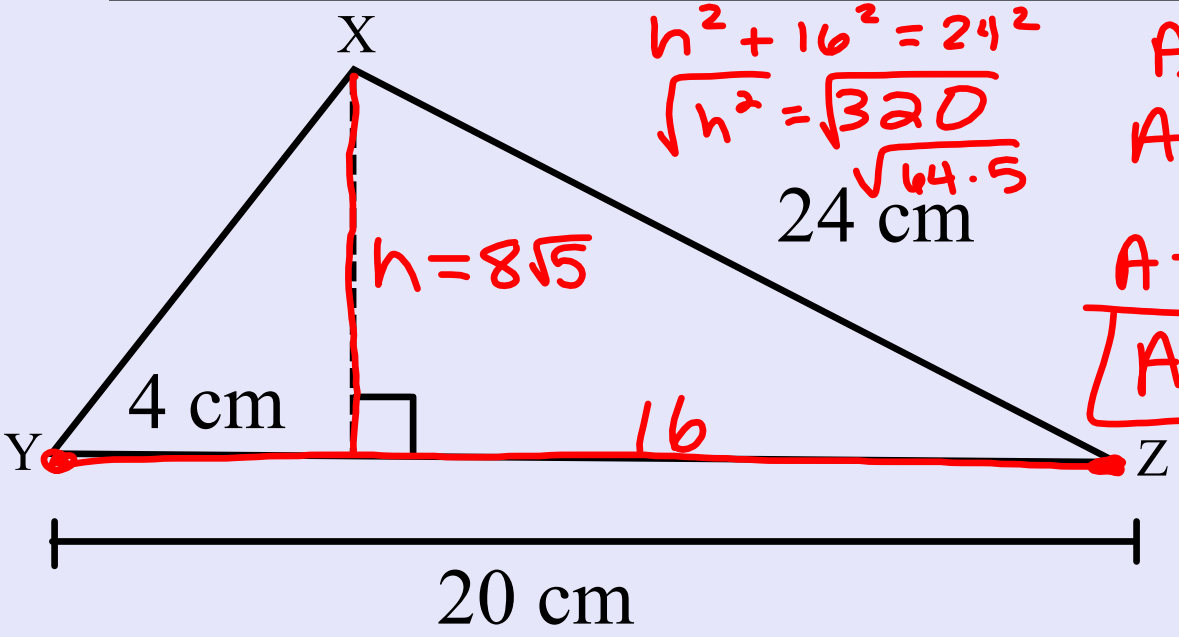
$A = \frac{1}{2}bh$

$A = \frac{1}{2}(30)(13)$

$= 15(13)$

$A = 195 \text{ cm}^2$

Find the area of ΔXYZ.



$h^2 + 16^2 = 24^2$

$\sqrt{h^2} = \sqrt{320}$

$\sqrt{64 \cdot 5}$

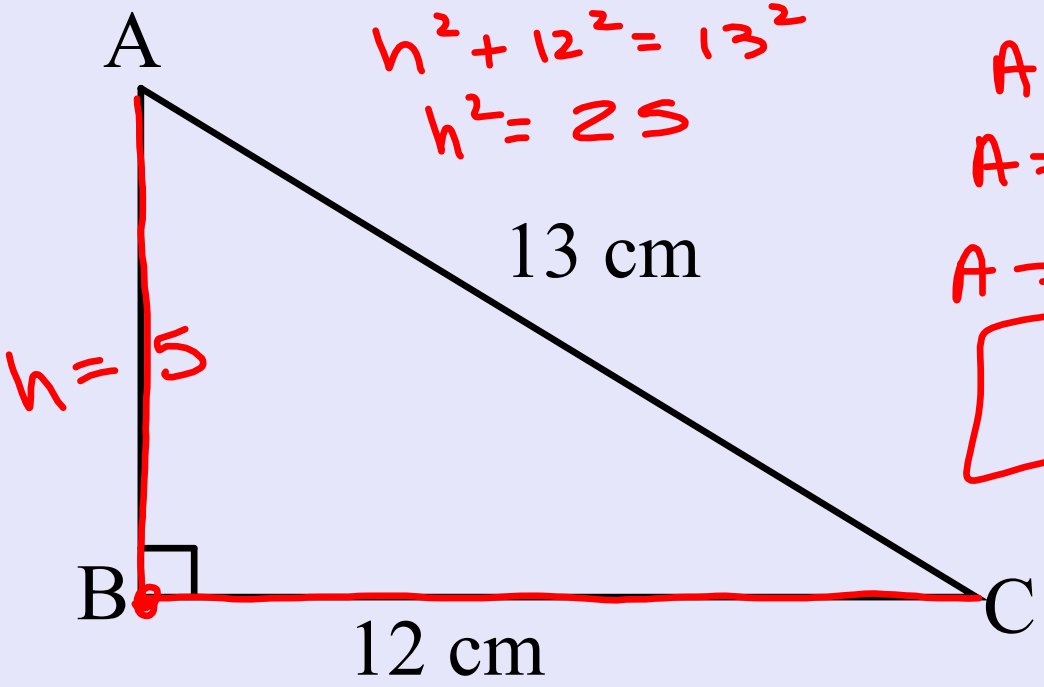
$A = \frac{1}{2}bh$

$A = \frac{1}{2}(20)(8\sqrt{5})$

$A = 10(8\sqrt{5})$

$A = 80\sqrt{5}\ cm^2$

Find the area of ΔABC.



$h^2 + 12^2 = 13^2$

$h^2 = 25$

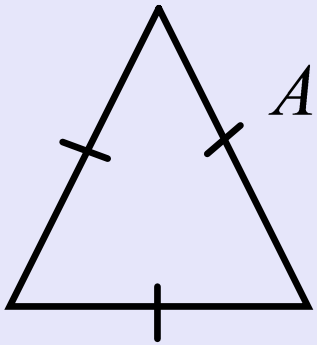
$A = \frac{1}{2}bh$

$A = \frac{1}{2}(12)(5)$

$A = 6(5)$

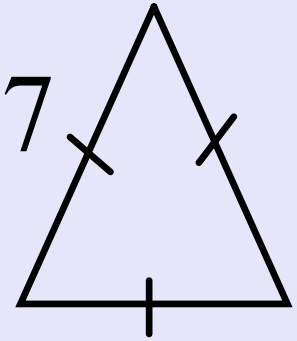
$A = 30\ cm^2$

Find the area of Equilateral Triangle



$$A = \frac{s^2\sqrt{3}}{4}$$

6. Find the area of the equilateral triangle:



$A = \frac{s^2\sqrt{3}}{4}$

$A = \frac{(7)^2\sqrt{3}}{4}$

$A = \frac{49\sqrt{3}}{4}$ un^2

The front of a garage is a square 15 ft on each side with a triangular roof above the square. The height of the triangular roof is 10.6 ft. To the nearest hundred, how much force is exerted by an 80 mi/h wind blowing directly against the front of the garage? Use the formula $F = .004Av^2$, where F is the force in pounds, A is the area of the surface in square feet, and v is the velocity of wind in miles per hour.