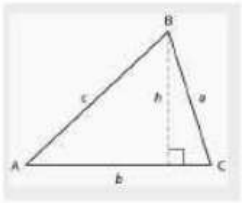
What you will learn about:
Solving Geometric Applications:
Triangles, Rectangles, Pythagorean Theorem

Triangle Property



Angle Measure:

$\angle A + \angle B + \angle C = 180$

Perimeter:

$P = a + b + c$

Area:

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

$= \frac{bh}{2}$

Right Tringle

Δ that has a Right $\angle$.

Right $\angle = 90^\circ$

$\angle 1 = 90^\circ$

$\angle 2 = x = 35^\circ$

$\angle 3 = x + 20 = 55^\circ$

Measure of two angles of a triangle are 55 and 82 degrees. Find the measure of the third angle.

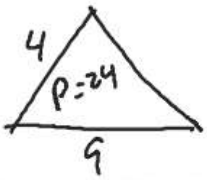
$55 + 82 + x = 180$

$137 + x = 180$

$-137 \quad -137$

$x = 43$

The perimeter of a triangular garden is 24 feet. The lengths of two sides are four feet and nine feet. How long is the third side?



$4 + 9 + c = 24$

$13 + c = 24$

$c = 11$

The area of a trianglar church window is 90 square meters. The base of the window is 15 meters. What is the new window's height?

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

$90 = \frac{1}{2}(15)(h)$

$180 = 15h$

$h = 12$ meters

One angle of a right triangle is 28°. What is the measure of the third angle?

$90 + 28 + x = 180$

$118 + x = 180$

$-118 \quad -118$

$x = 62$

The measure of one anlge of a right triangle is 20 degrees more than the measure of the smallest angle. Find the meassure of all three angles.

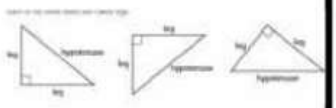
$90 + x + x + 20 = 180$

$2x + 110 = 180$

$2x = 70$

$x = 35$

Pythagorean Theorem



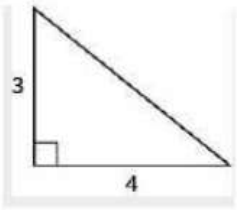
Has to be Right Δ.

Hypotenuse Longest side Opposite Right angle)

$a^2+b^2=c^2$

$\sqrt{50}=\sqrt{25}\cdot\sqrt{2}$

Use the Pythagorean Theorem to find the length of the hypotenuse shown below.



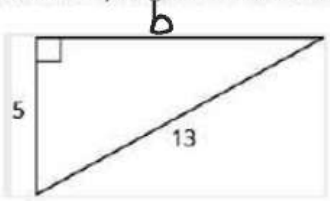
$3^2+4^2=c^2$

$9+16=c^2$

$\sqrt{25}=\sqrt{c^2}$

$c=5$

Use the Pythagorean Theorem to find the length of the leg shown below.



$5^2+b^2=13^2$

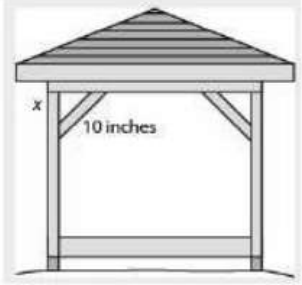
$25+b^2=169$

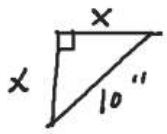
$-25 \quad -25$

$b^2=144$

$b=12$

Kelvin is building a gazeboo and wants to brace each conrner by placing 10" piece of wood diagonally as shown above. If he fastens the bood so that the ends of the brace are the same distance from the corner, what is the length of the legs of the right triangle formed? Approximate th the nearest tenth of an inch.





$x^2+x^2=10^2$

$\frac{2x^2}{2}=\frac{100}{2}$

$\sqrt{x^2}=\sqrt{50}$

$x=5\sqrt{2}$

John puts the base of a 13-foot ladder five feet from the wall of his house as shown below. How far up the wall does the ladder reach?

$5^2+h^2=13^2$

$25+h^2=169$

$h^2=144$

$h=12$ feet

Randy want to attach a 17 foot string of lights to the top of the 15 foot mast of his sailboat, as shown below. How far from the base of the mast should he attach the end of the string?

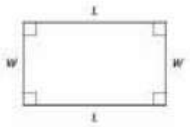
$X^2+15^2=17^2$

$X^2+225=289$

$X^2=64$

$X=8$ ft

Rectangles



Properties

4 Rt Angles

Both pairs of opposite sides same length

Perimeter

$P=l+w+l+w=2l+2w$

Area $A=lw$

The length of a rectangle is 32 meters and the width is 20 meters. What is the perimeter.

$2(32)+2(20)=P$ $\quad P=104$ m

$64+40=P$

The area of a rectangluar room is 168 square feet. The length is 14 feet. What is the width?

$A=lw$ $\quad w=12$ ft

$168=14w$

Find the length of a rectangle with perimeter if 50 inches and width 10 inches.

$P=2l+2w$ $\quad l=15$ in

$50=2l+2(10)$

$30=2l$

The width of a rectangle is two feet less than the length. The perimeter is 52 feet. Find the length and width.

$P=52$

$l=l$

$w=l-2$

$2l+2(l-2)=52$ $\quad l=14$ ft

$w=12$ ft

$2l+2l-4=52$

$4l=56$

The width of a rectangle is seven meters less than the length. The perimeter is 58 meters. Find the length and width.

$P=58$

$w=l-7$

$l=l$

$2l+2(l-7)=58$ $\quad l=18$

$2l+2l-14=58$ $\quad w=11$

$4l=72$

The perimeter of a rectangluar swimimg pool is 200 feet. The length is 40 feet more than the width. Find the length and width.

$P=200$

$l=w+40$

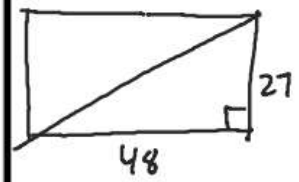
$w=w$

$200=2w+2(w+40)$ $\quad w=30$

$200=2w+2w+80$ $\quad l=70$

$120=4w$

The perimeter of the TV screen is 150 inches. The length is six less than 2 times the width. Find the length and width. What is the size of the TV. (TV's are measured by the length of the diagonal of the screen.



$P=150$

$w=w$

$l=2w-6$

$2(w)+2(2w-6)=150$

$2w+4w-12=150$

$6w=162$

$w=27$

$l=2(27)-6$

$=48$

$27^2+48^2=c^2$

$729+2304=c^2$

$3033=c^2$

$c=55$"