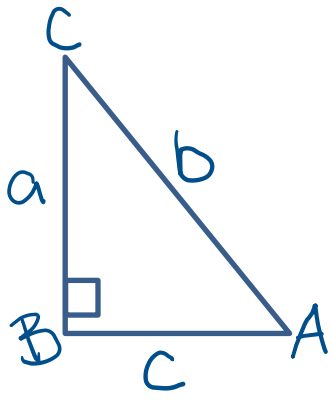
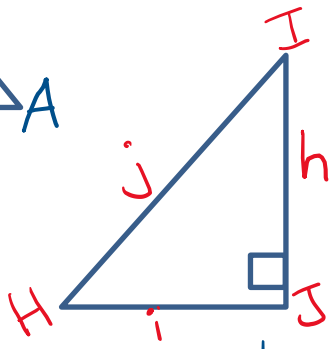
Math 10 – Notes Name: _____

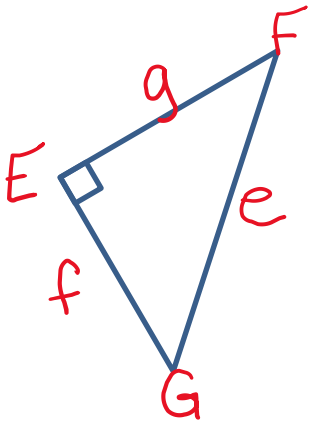
The Pythagorean Theorem

Guided Notes- Labeling Right Triangles

Sides lengths of triangles are always labeled using small letters. Corresponding angles of triangles are always labeled using capital letters.







*As well, the longest side is always called the hypotenuse.

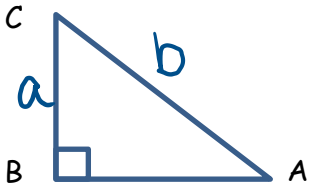
The two shorter sides are called legs.

Opposite and Adjacent

Opposite and adjacent are relational terms in trigonometry.

Opposite refers to the side across

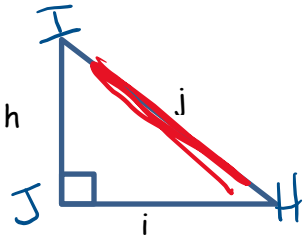
Adjacent refers to the side beside the angle



Opposite of A – a

Adjacent of C – a

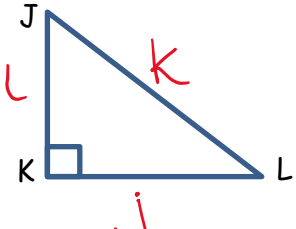
Hypotenuse – b



Opposite of I – i

Adjacent of I – h

Hypotenuse – j



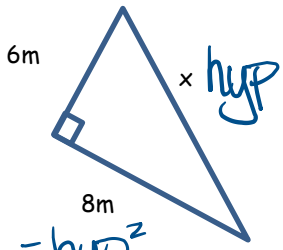
Opposite of L – l

Adjacent of L – j

Hypotenuse – k

$leg^2 + leg^2 = hyp^2$

$hyp^2 - leg^2 = leg^2$



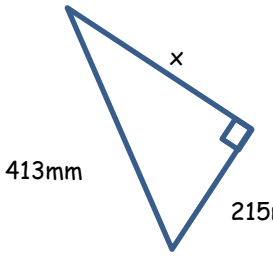
$leg^2 + leg^2 = hyp^2$

$6^2 + 8^2 = x^2$

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

$10 = x$

10m

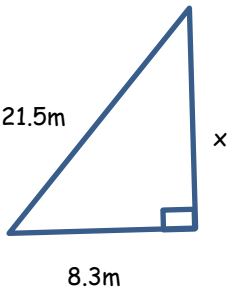


$hyp^2 - leg^2 = leg^2$

$413^2 - 215^2 = x^2$

$\sqrt{124\,344} = \sqrt{x^2}$

$x = 352.62\text{mm}$

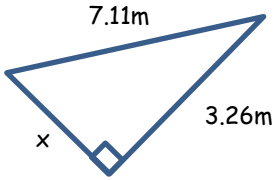


$hyp^2 - leg^2 = leg^2$

$21.5^2 - 8.3^2 = x^2$

$\sqrt{393.36} = \sqrt{x^2}$

$x = 19.83\text{m}$

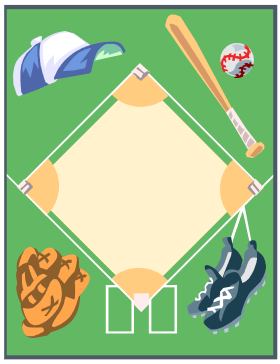


$hyp^2 - leg^2 = leg^2$

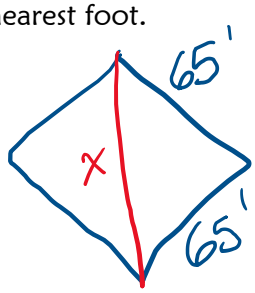
$7.11^2 - 3.26^2 = x^2$

$\sqrt{39.92} = \sqrt{x^2}$

$x = 6.32\text{m}$



In softball, the bases are often set 65 feet apart in the shape of a square. The catcher throws the ball from home plate to second base. How far is the catcher's throw? Round your answer to the nearest foot.



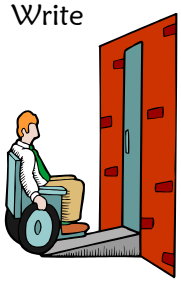
$leg^2 + leg^2 = hyp^2$

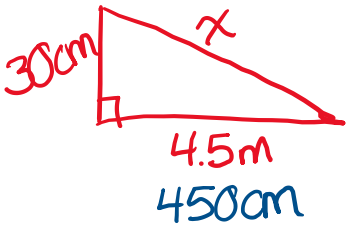
$65^2 + 65^2 = x^2$

$8450 = x^2$

$x = 91.92\text{ft}$

A ramp from a walkway to a doorway has a height of 30 cm. The length along the ground is 4.5 m. Calculate the distance a wheelchair travels along the ramp. Write your answer to the nearest hundredth of a metre.





$leg^2 + leg^2 = hyp^2$

$30^2 + 450^2 = x^2$

$\sqrt{203400} = x^2$

$x = 451\text{ cm}$

The size of a TV is determined by the length of its diagonal. For example, a 60-in TV measures 60 in along the diagonal of the rectangular screen. A 60 in TV measures 52 inches along the top of the screen. What is the height of the screen to the nearest inch?

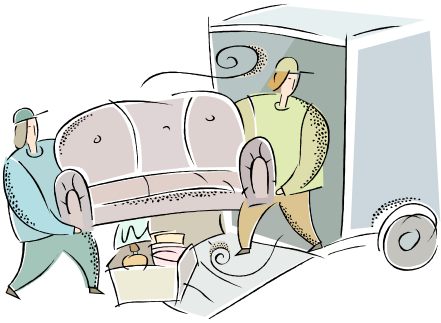
$hyp^2 - leg^2 = leg^2$

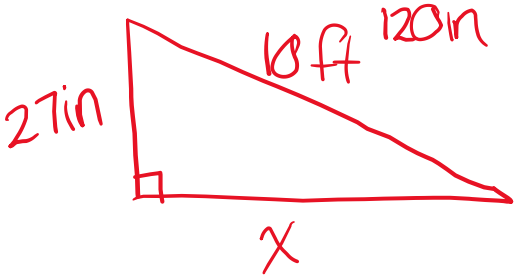
$60^2 - 52^2 = x^2$

$\sqrt{896} = x^2$

$x = 29.93\text{ in}$

The loading ramp of a moving van is 10 feet long. The floor of the storage compartment of the van is 27 inches off the ground. What is the distance along the ground from the back of the van to the point where the ramp touches the ground? Write answer to the nearest inch.





$hyp^2 - leg^2 = leg^2$

$120^2 - 27^2 = x^2$

$\sqrt{13671} = x^2$

$x = 116.92\text{ in}$

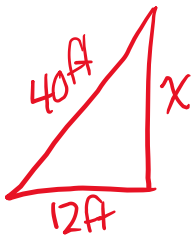
Marc is going to paint the exterior of his house. He has a 40-foot ladder and knows that for safety reasons the base of the ladder must be between 9 and 12 feet from the base of the wall. What are the maximum and the minimum heights the ladder will reach up the wall?

$hyp^2 - leg^2 = leg^2$

$40^2 - 9^2 = x^2$

$\sqrt{1519} = x^2$

$x = 38.97\text{ ft}$



$hyp^2 - leg^2 = leg^2$

$40^2 - 12^2 = x^2$

$\sqrt{1456} = x^2$

$x = 38.16\text{ ft}$