



Solving Right Triangles  
To SOLVE a triangle means to find the lengths of the  
THREE SIDES and the measure of THREE ANGLES

Ways To Find Stuff

TRIGONOMETRY / TRIG RATIOS: sine cosine and tangent SOH CAH TOA (last quiz)

- Only works for RIGHT TRIANGLES
- Lets you find missing sides AND missing angles
  - inverse/"second" trig for angles

45-45-90 AND 30-60-90 SHORTCUTS

- Only works for RIGHT TRIANGLES IF the triangles have these specific angles
- 45-45-90
  - This triangle is always an ISOSCELES RIGHT TRIANGLE
  - The two legs are the same
  - The hypotenuse = leg multiplied by the square root of 2 (because of the Pythagorean theorem this is always true).
    - So leg = hypotenuse divided by Square root of 2
- 30-60-90
  - This triangle is half of an equilateral triangle
  - The 30-60-90 triangle has a 30, 60 and 90 degree angles.
    - The SHORT LEG is opposite the 30 degree angle
    - The LONG LEG is opposite the 60 degree angle
    - The hypotenuse (of any right triangle) IS ALWAYS THE LONGEST SIDE
  - The SHORT LEG is like your "home base" because the other sides are in terms of the short leg:
  - The hypotenuse is TWICE as long as the short leg.
    - So the short leg is HALF as long as the hypotenuse.
  - LL = Square Root of 3 (about 1.7) times SL
    - So SL = LL divided by Square Root of 3

PYTHAGOREAN TRIPLES - SHORTCUTS

- The only thing cool about these numbers are that they are WHOLE NUMBERS and that they fit the Pythagorean Theorem, i.e. they are right triangles.
- 3-4-5 are the LENGTHS of a right triangle. If you have any 2, you know what the 3<sup>rd</sup> has to be. Any MULTIPLE of this also works.
  - Example: 6-8-10, 30-40-50, 60-80-100
  - Another common one is 5-12-13 because 5squared + 12squared = 13squared

