

Special Triangles vs. Trigonometry

I. Similarities:
 A. You have to have a right triangle, one other angle, and one side in order to find the length of a side.

II. Differences:
 A. Special Triangles works only for 30-60-90 or 45-45-90, while Trig works for all right triangles
 B. Special Triangles is about knowing a relationship and transforming sides to match it, while Trig is about knowing a fraction relationship (sort of like scale factor) and setting it equal to a side relationship.

III. Trig Ratios:
 Sine, Cosine, Tangent
 $\sin(\text{angle}) = \frac{\text{opp}}{\text{hyp}}$ $\cos(\text{angle}) = \frac{\text{adj}}{\text{hyp}}$ $\tan(\text{angle}) = \frac{\text{opp}}{\text{adj}}$

IV. Trig Ratios for Special Triangles:

$\sin(30) = \frac{1}{2}$ $\sin(60) = \frac{\sqrt{3}}{2}$
 $\cos(30) = \frac{\sqrt{3}}{2}$ $\cos(60) = \frac{1}{2}$
 $\tan(30) = \frac{1}{\sqrt{3}} \rightarrow \frac{\sqrt{3}}{3}$ $\tan(60) = \frac{\sqrt{3}}{1}$

$\sin(45) = \frac{1}{\sqrt{2}} \text{ or } \frac{\sqrt{2}}{2}$ $\cos(45) = \frac{1}{\sqrt{2}} \text{ or } \frac{\sqrt{2}}{2}$
 $\tan(45) = 1$

V. How to solve Trig

1. Choose the Trig ratio using what you know & what you want.
2. Set up the problem:
 Trig(focus angle) = Fraction
3. Plug in what you know.
4. Solve for what you don't know.
Be careful.
You cannot separate the trig from the focus angle.
That number is stuck. You can't change it!

Examples:
 $2 \sin 30 = x$ $\sin 60 = x$
 $2 \left(\frac{1}{2} \right) = x$
 $1 = x$