Chapter 2 Final Review

Deg
D

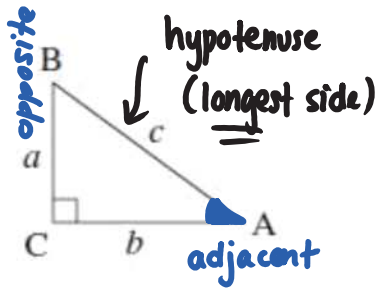
****REMEMBER TO PUT YOUR CALCULATOR IN DEGREE MODE****

Trigonometric Ratios

$$\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{O}{H}$$

$$\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{A}{H}$$

$$\tan\theta = \frac{\text{opposite}}{\text{adjacent}} = \frac{O}{A}$$



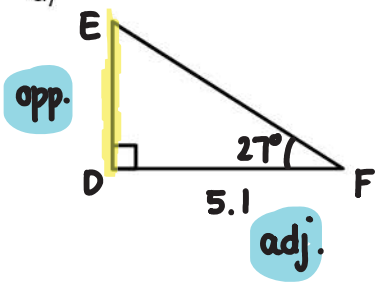
Pythagorean Theorem

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

Determine the length of a side

Example: Find the length of the indicated side.

a) side DE



$$\tan\theta = \frac{O}{A}$$

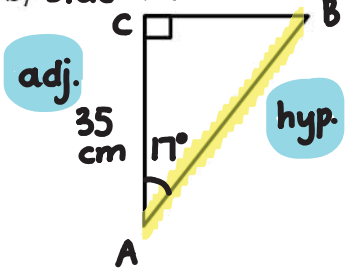
$$\tan 27^\circ = \frac{DE}{5.1}$$

$$5.1(0.5095) = \frac{DE}{\cancel{5.1}}\cancel{(5.1)}$$

$$2.599 = DE$$

$$2.6 = DE$$

b) side AB



$$\cos\theta = \frac{A}{H}$$

$$\cos 17^\circ = \frac{35}{AB}$$

$$0.9563 = \frac{35}{AB}$$

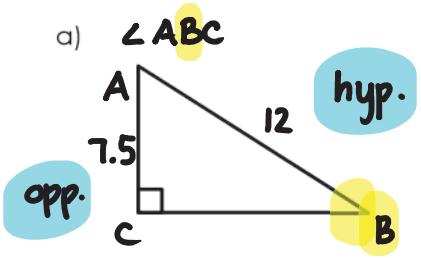
$$AB = \frac{35}{0.9563} = 36.599$$

$$AB = 36.6\text{ cm}$$

Determine the measure of an angle

Example: Find the measure of the indicated angle. round final answer to nearest degree

a) $\angle ABC$



$\sin\theta = \frac{O}{H}$

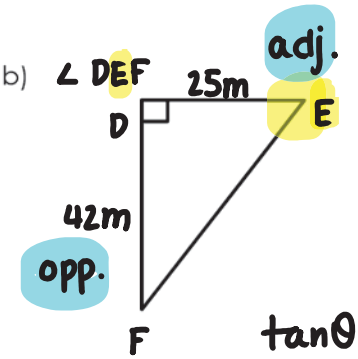
$\sin B = \frac{7.5}{12}$

$\sin B = 0.625$

$\angle B = \sin^{-1}(0.625) = 38.68^\circ$

$\angle B = 39^\circ$

b) $\angle DEF$



$\tan\theta = \frac{O}{A}$

$\tan E = \frac{42}{25}$

$\tan E = 1.68$

$\angle E = \tan^{-1}(1.68) = 59.24^\circ$

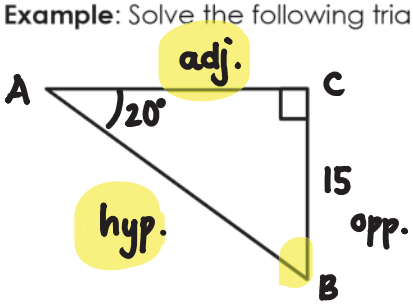
$\angle E = 59^\circ$

Solve a triangle

- Find all missing sides lengths
- Find all missing angles

- may use the Pythagorean theorem (not always)
- all angles in a triangle add up to 180°.

Example: Solve the following triangle



$\angle B = 180^\circ - 20^\circ - 90^\circ$

$\angle B = 70^\circ$

$\tan 20^\circ = \frac{15}{AC}$ ← opp. ← adj.

$0.3640 = \frac{15}{AC}$

$AC = \frac{15}{0.3640}$

$AC = 41.2$

To find AB, use another trig ratio, or use Pythagorean theorem.

$\sin 20^\circ = \frac{15}{AB}$ ← opp ← hyp

$0.3420 = \frac{15}{AB}$

$AB = \frac{15}{0.3420}$

$AB = 43.9$