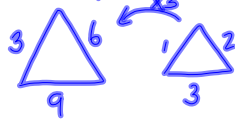


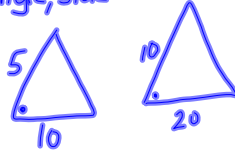
Trigonometry - Exam Review

Learning Goal #1 - Determine if 2 Δ 's are similar - same shape but different sizes

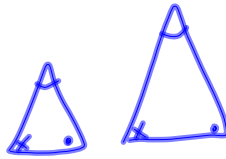
1) SSS - side, side, side



2) SAS - side, angle, side



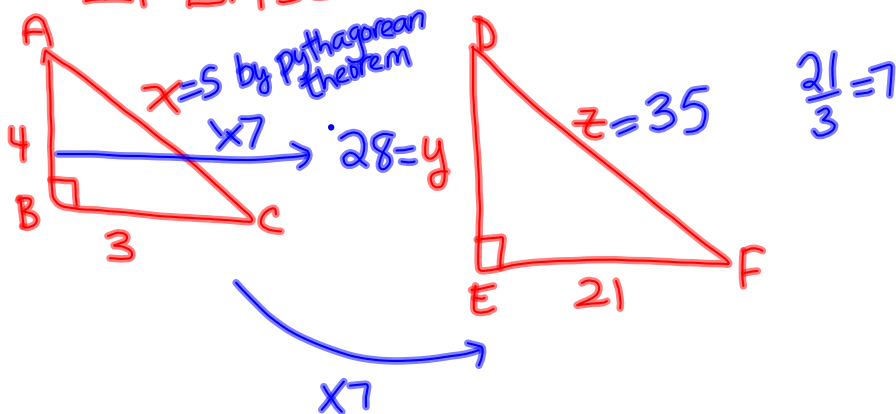
3) AAA - angle, angle, angle



15
)

Learning Goal #2 - Use similarity to find missing information.

If $\Delta ABC \sim \Delta DEF$ find all missing sides.

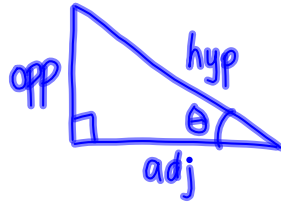


Learning Goal #3 - SOHCAHTOA

↳ right angle triangles

$$\sin \theta = \frac{\text{opp}}{\text{hyp}} \quad \cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$



Calculator

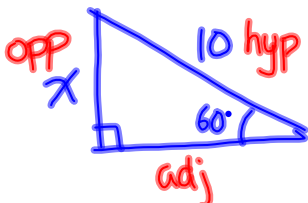
DEG or D

~~RAD or R~~

~~GRAD or G~~

$$\begin{aligned} \sin 65^\circ &= \text{ratio} \\ \sin^{-1}(0.5583) &= \text{angle} \end{aligned}$$

Missing Sides

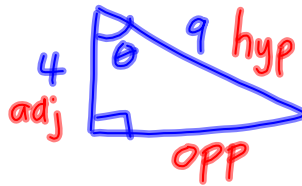


$$\frac{\sin 60^\circ}{1} = \frac{x}{10}$$

$$x = 10 \sin 60^\circ$$

$$x = 8.7$$

Missing Angles



$$\cos \theta = \frac{4}{9}$$

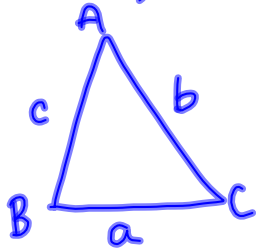
$$\cos \theta = 0.4444$$

$$\theta = \cos^{-1}(0.4444)$$

$$\begin{aligned} \theta &= 63.6^\circ \\ &= 64^\circ \end{aligned}$$

Learning Goal # 4 - SINE and COSINE LAWS

↳ For non-right angle Δ 's.



SINE LAW

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

* have a given side across from a given angle.

COSINE LAW

$$a^2 = b^2 + c^2 - 2bc \cos A$$

SINE LAW \rightarrow SIDE



$$\frac{\sin 30}{10} = \frac{\sin \theta}{x}$$

$$x = \frac{10 \sin 60}{\sin 30}$$

$$x = 17.3$$

COSINE LAW \rightarrow SIDE



$$\begin{aligned} a^2 &= b^2 + c^2 - 2bc \cos A \\ &= 5^2 + 10^2 - 2(5)(10) \cos 30 \\ a^2 &= 38.4 \\ a &= \sqrt{38.4} \\ a &= 6.2 \end{aligned}$$

SINE LAW \rightarrow ANGLE



$$\frac{\sin 40}{12} = \frac{\sin \theta}{6}$$

$$\sin \theta = \frac{6 \sin 40}{12}$$

$$\sin \theta = 0.3214$$

$$\theta = \sin^{-1}(0.3214)$$

$$\theta = 18.7^\circ$$

$$\theta = 19^\circ$$

COSINE LAW \rightarrow ANGLE



$$\begin{aligned} a^2 &= b^2 + c^2 - 2bc \cos A \\ 6.2^2 &= 10^2 + 5^2 - 2(10)(5) \cos A \end{aligned}$$

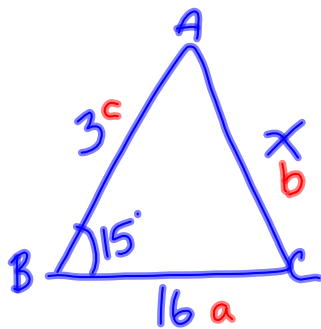
$$6.2^2 - 10^2 - 5^2 = -2(10)(5) \cos A$$

$$-86.56 = -100 \cos A$$

$$0.8656 = \cos A$$

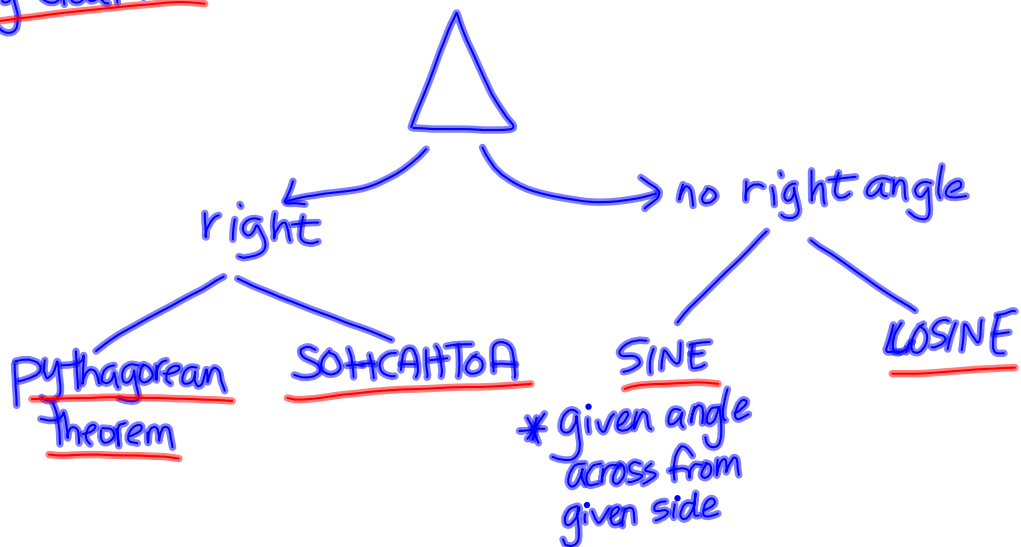
$$A = \cos^{-1}(0.8656)$$

$$A = 30^\circ$$

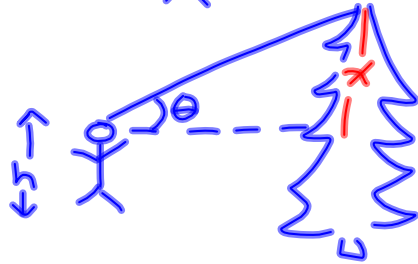
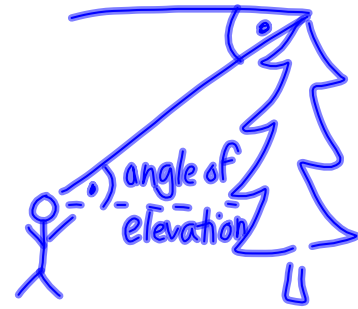
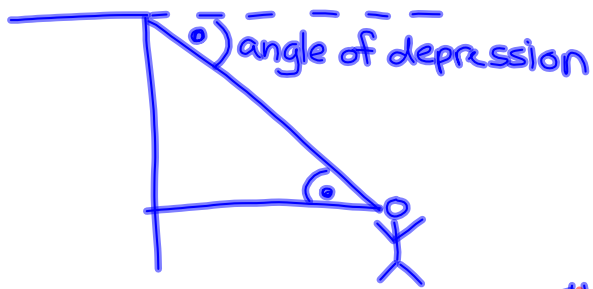


$$\begin{aligned}
 b^2 &= a^2 + c^2 - 2ac \cos B \\
 &= 16^2 + 3^2 - 2(16)(3) \cos 15^\circ \\
 b^2 &= 175 \\
 b &= 13.2
 \end{aligned}$$

Learning Goal #5



Learning Goal #6 - Applications



tree = $h + x$

clinometer