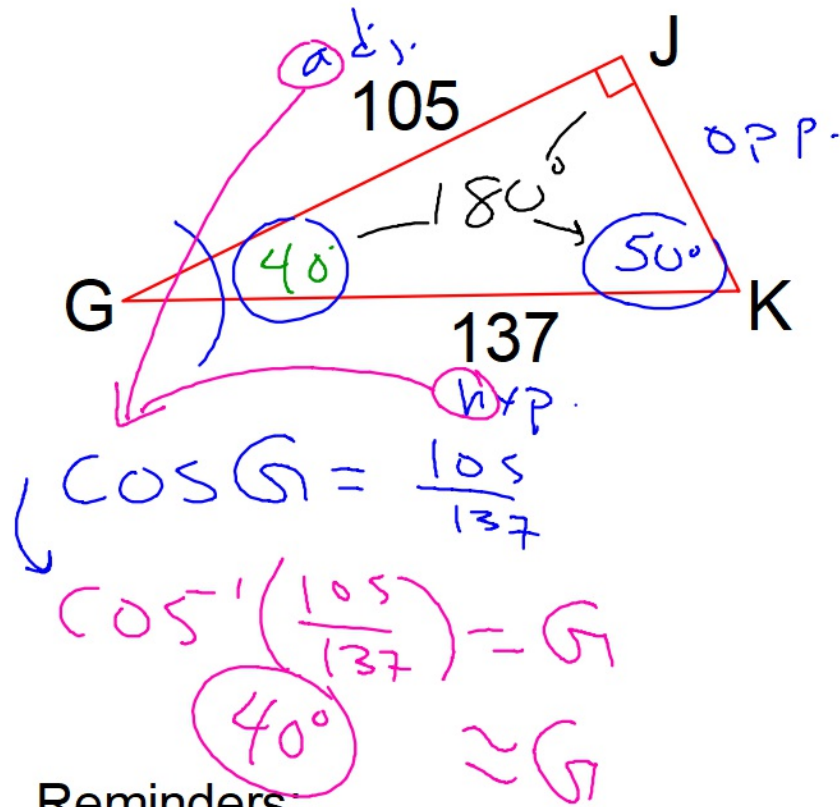


Good morning: warm up



Reminders.

retakes in DS today and tomorrow
next assessment: Thursday

Solve the triangle.

$$\angle G: 40^\circ \quad JK: \underline{88}$$
$$\angle K: 50^\circ$$

$$105^2 + JK^2 = 137^2$$

$$JK = \underline{88}$$



Visibly Random Grouping

HW

1. $AR = 33.370$, $A = 64^\circ$, $AP = 14.614$

3. $RP = 34$, $Q = 32.779^\circ$, $P = 57.221^\circ$

5. $MO = 59.371$, $H = 42.016^\circ$, $M = 47.984^\circ$

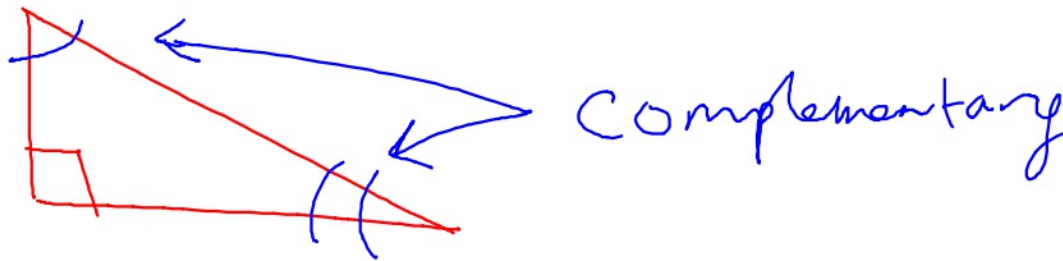
7. $ML = 9.080$, $W = 17.820^\circ$, $M = 63^\circ$

What have we learned so far?

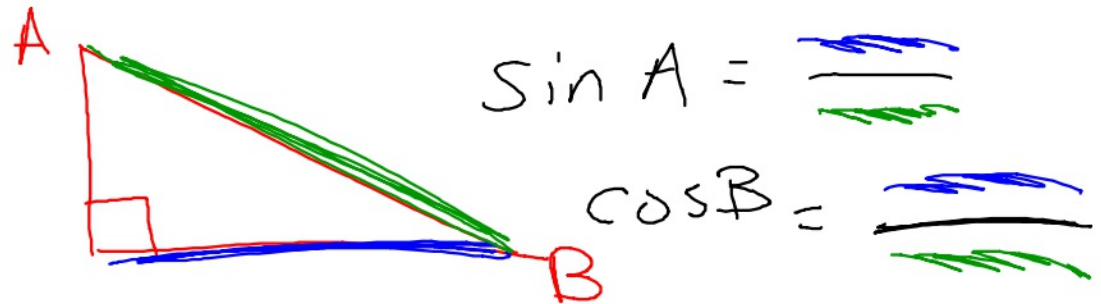
Trigonometric Identities

Complementary Angles

↳ two⁺ angles that make 90°



If $A+B = 90^\circ$, then $\sin A = \cos B$, and $\cos A = \sin B$.



Solve for θ

$$\sin(2\theta+4) = \cos(\theta+5)$$

$$\cancel{2\theta+4 = \theta+5}$$

$$2\theta+4 + \theta+5 = 90$$

$$3\theta+9 = 90$$

$$3\theta = 81$$

$$\theta = 81/3 = 27$$

Find the value of β if
 $\cos(\beta - 14) = \sin(3\beta - 8)$

$$\beta - 14 + 3\beta - 8 = 90$$

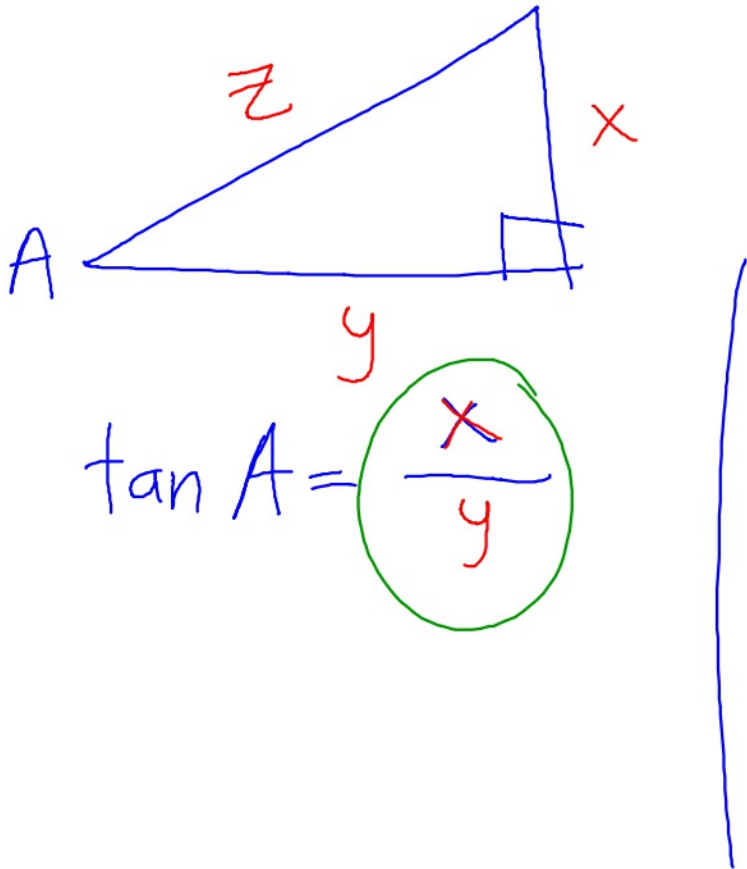
$$4\beta - 22 = 90$$

$$4\beta = 112$$

$$\beta = 28$$

α Alpha	β Beta	γ Gamma	δ Delta	ϵ Epsilon	ζ Zeta
η Eta	θ Theta	ι Iota	κ Kappa	λ Lambda	μ Mu
ν Nu	ξ Xi	\omicron Omicron	π Pi	ρ Rho	σ Sigma
τ Tau	υ Upsilon	ϕ Phi	χ Chi	ψ Psi	ω Omega

Prove: $\tan A = \frac{\sin A}{\cos A}$



$$\begin{aligned} \frac{\sin A}{\cos A} &= \frac{\frac{x}{z}}{\frac{y}{z}} \quad \text{KFC} \\ &= \frac{x}{z} \cdot \frac{z}{y} \\ &= \frac{\cancel{x \cdot z}}{\cancel{z} \cdot y} \quad \left(\frac{x}{y} \right) \end{aligned}$$

Test Prep

In the diagram, $\triangle ABC \sim \triangle DEF$.

Which expressions are equivalent to $\cos B$? Select all that apply.

$\sin B$

$\sin C$

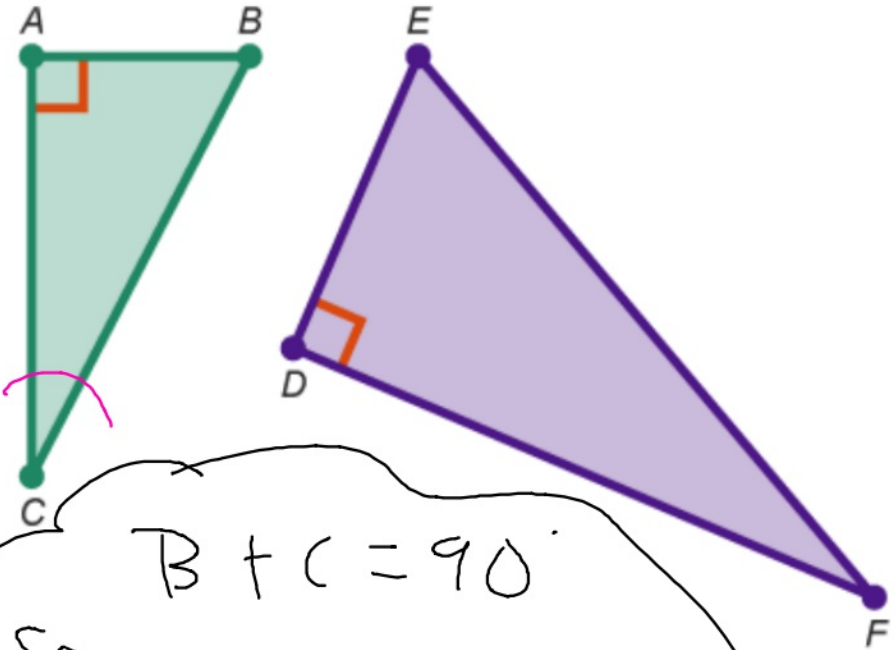
$\cos C$

$\sin E$

$\cos E$

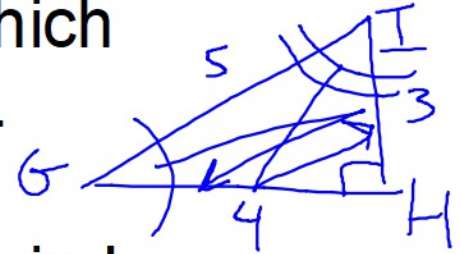
$\sin F$

$\cos F$



$B + C = 90^\circ$
So
 $\sin B = \cos C$
 $\cos B = \sin C$

^{3 diff sides}
In right scalene $\triangle GHI$ where H is a right angle, which of the following must be true? Select all that apply.



~~$\sin G = \sin I$~~

~~$\sin G$ is the reciprocal of $\sin I$~~

~~$\cos G = \cos I$~~

~~$\tan G = \tan I$~~

~~$\cos G$ is the reciprocal of $\cos I$~~

$\sin G = \cos I$

$\tan G$ is the reciprocal of $\tan I$

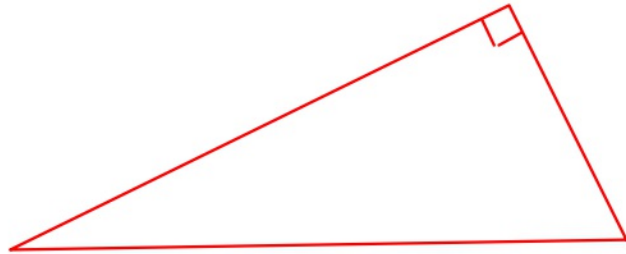
~~$\sin G = \tan I$~~

Share with your face partner something
you've learned so far today

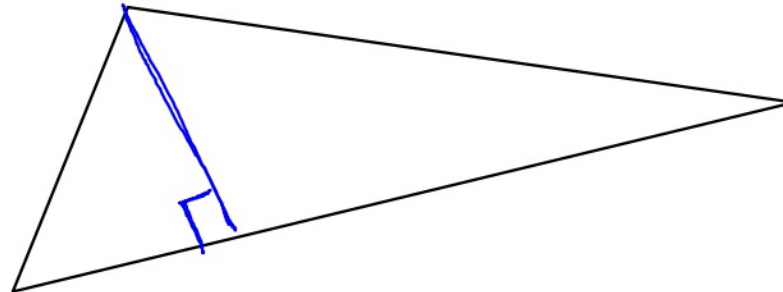
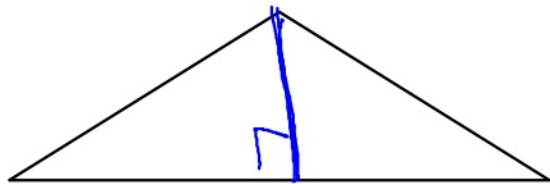
So far we have only done trigonometry with right triangles

Which makes sense!

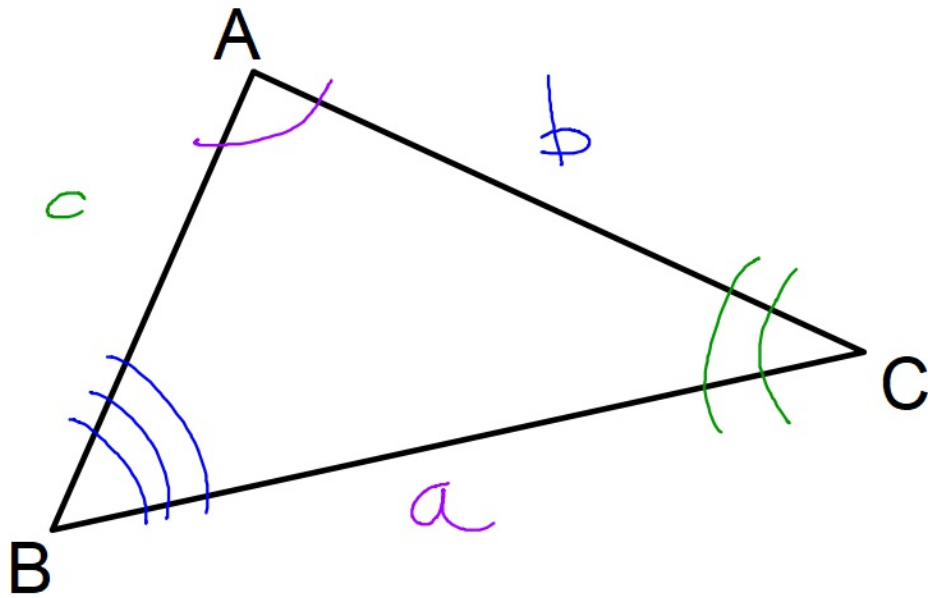
SohCahToa...only right triangles have hypotenuses



But if trig is so useful/important, what about all the other triangles??



The Law of Sines (very important!!)

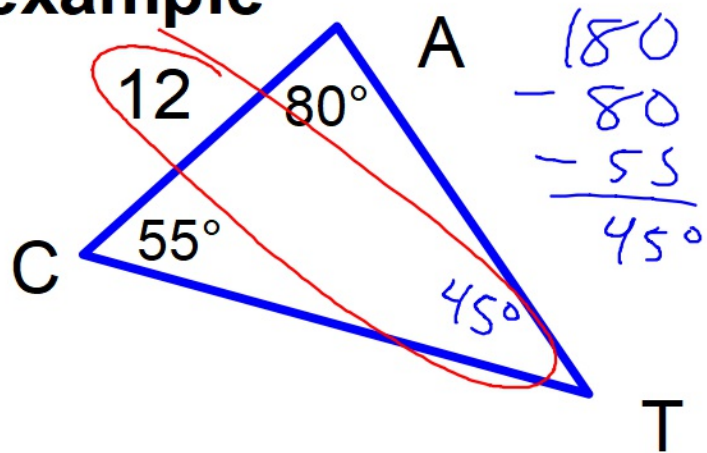


$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

When to use it:

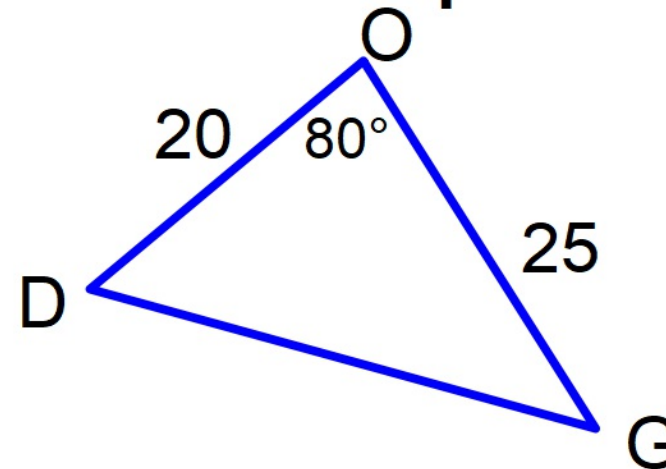
- looking for sides/angles of non-right triangle
- * must have a 'complete pair' of angle and opposite side known to use

example



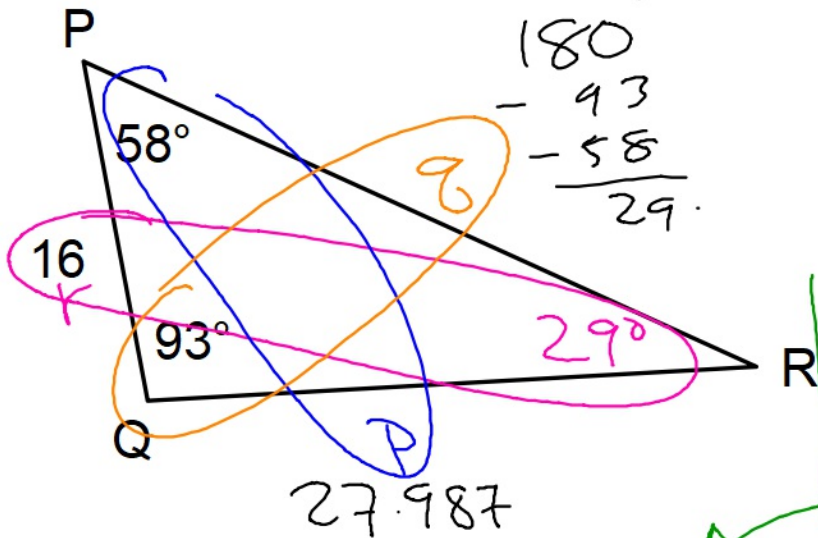
Use the law of sines

non example



Cannot use law of sines
(must use law of cosines)

Find all missing sides and angles to the nearest hundredth.



$$\frac{\sin 93}{8} = \frac{\sin 29}{16} = \frac{\sin 58}{p}$$

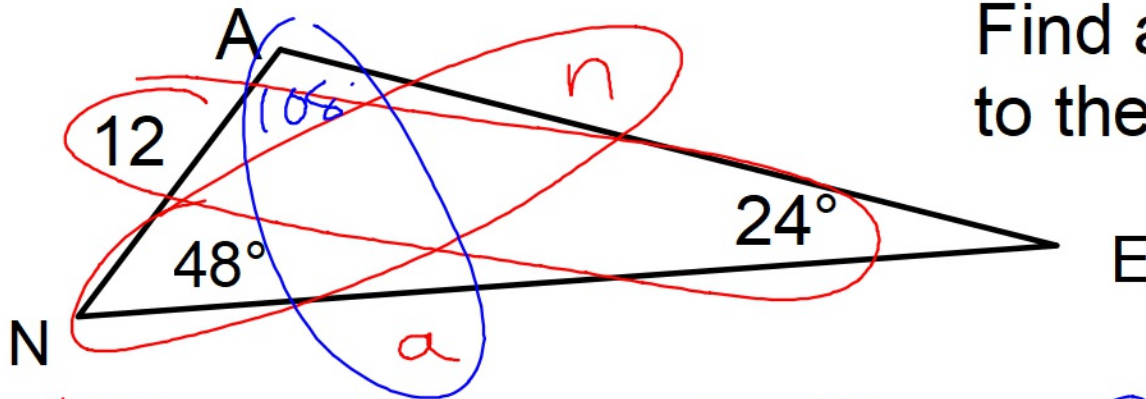
$$\frac{16 \cdot \sin 93}{\sin 29} = \frac{8 \cdot \sin 29}{\cancel{\sin 29}}$$

$$32.957 = 8$$

$$16 \cdot \sin 58 = p \cdot \sin 29$$

$$\frac{16 \sin 58}{\sin 29} = p$$

$$27.987 = p$$



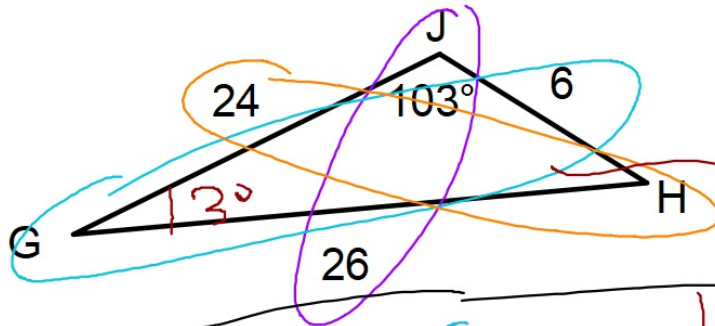
Find all missing sides and angles to the nearest hundredth.

$$\begin{array}{r}
 180 \\
 -48 \\
 -24 \\
 \hline
 108
 \end{array}$$

$$\frac{\sin 48}{n} = \frac{\sin 24}{12} = \frac{\sin 108}{a}$$

$$n = 21.93$$

$$a = 28.06$$



Find all missing sides and angles to the nearest hundredth.

$$\frac{\sin G}{6} \neq \frac{\sin 103}{26} = \frac{\sin H}{24}$$

$$6 \cdot \sin 103 = 26 \cdot \sin G$$

$$\frac{6 \sin 103}{26} = \sin G$$

Invert \rightarrow $0.2248 = \sin G$

$$G = \sin^{-1} 0.2248$$

$$G = 13^\circ$$

HW

- #1-4 on the handout for Law of Sines
- get as far as you can on the Trig Stack :)

Calc: tests due @ 230p

Geo Retakes
have hw ready