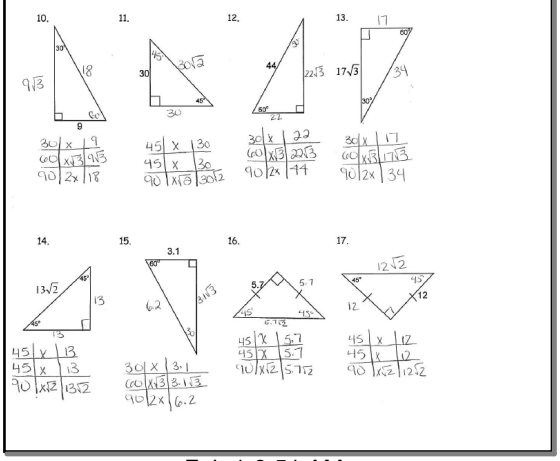
Geometry CC – Unit 8
Lesson 5: Trig Ratios
M2 L25 & 26

Homework: HW 8.5

HW Answers 8.4



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Main Ideas/Questions	Notes		
What is TRIGONOMETRY?	We are going to evaluate the missing sides and angles of triangles.		
TRIGONOMETRIC RATIOS	Each acute angle of a right triangle has the following trigonometric ratios:		
	SINE	The ratio of the leg **opposite** the angle to the **hypotenuse**.	• Sin A = $\frac{a}{c}$ • Sin B = $\frac{b}{c}$
	COSINE	The ratio of the leg **adjacent** to the angle to the **hypotenuse**.	• Cos A = $\frac{b}{c}$ • Cos B = $\frac{a}{c}$
	TANGENT	The ratio of the leg **opposite** the angle to the leg **adjacent** to the angle.	• Tan A = $\frac{a}{b}$ • Tan B = $\frac{b}{a}$
* REMEMBER!! *	Soh Cah Toa Sin = $\frac{O}{h}$ Cos = $\frac{a}{h}$ Tan = $\frac{O}{a}$		

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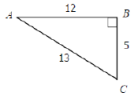
Practice! Give each trigonometric ratio as a fraction in simplest form.

1.



So/h Ca/h To/a

Sin A = $\frac{5}{13}$ Sin C = $\frac{12}{13}$

Cos A = $\frac{12}{13}$ Cos C = $\frac{5}{13}$

Tan A = $\frac{5}{12}$ Tan C = $\frac{12}{5}$

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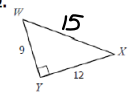
So/h Ca/h To/a

2.



- Sin W = $\frac{12}{15} \rightarrow \frac{4}{5}$
- Cos W = $\frac{9}{15} \rightarrow \frac{3}{5}$
- Tan W = $\frac{12}{9} \rightarrow \frac{4}{3}$
- Sin X = $\frac{9}{15} \rightarrow \frac{3}{5}$
- Cos X = $\frac{12}{15} \rightarrow \frac{4}{5}$
- Tan X = $\frac{9}{12} \rightarrow \frac{3}{4}$

$9^2+12^2=c^2$
$81+144=c^2$
$\sqrt{225}=\sqrt{c^2}$
$15=c$

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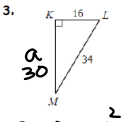
3.



$16^2+a^2=34^2$
$256+a^2=1,156$
$\sqrt{a^2}=\sqrt{900}$
$a=30$

- Sin L = $\frac{30}{34} \rightarrow \frac{15}{17}$
- Cos L = $\frac{16}{34} \rightarrow \frac{8}{17}$
- Tan L = $\frac{30}{16} \rightarrow \frac{15}{8}$
- Sin M = $\frac{16}{34} \rightarrow \frac{8}{17}$
- Cos M = $\frac{30}{34} \rightarrow \frac{15}{17}$
- Tan M = $\frac{16}{30} \rightarrow \frac{8}{15}$

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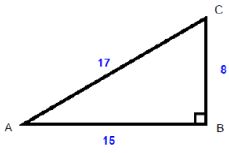
4. **Find sine, cosine and tangent of each acute angle. ~~Round to four decimal places.~~**



sin A = $\frac{8}{17}$

cos A = $\frac{15}{17}$

tan A = $\frac{8}{15}$

How are the acute angles related (Angles A and C)?
Sin A = Cos C
Cos A = Sin C
Do you see any patterns with the sine and cosine of those angles?
Tan A = $\frac{1}{\text{Tan C}}$

sin C = $\frac{15}{17}$

cos C = $\frac{8}{17}$

tan C = $\frac{15}{8}$

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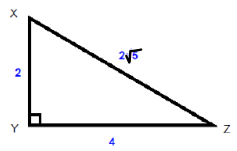
5. **Find sine, cosine and tangent of each acute angle. Round to four decimal places.**



$\sin X = \frac{4}{2\sqrt{5}} \Rightarrow \frac{2}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} \rightarrow \frac{2\sqrt{5}}{5}$

$\cos X = \frac{2}{2\sqrt{5}} \rightarrow \frac{1}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} \rightarrow \frac{\sqrt{5}}{5}$

$\tan X = \frac{4}{2} \rightarrow 2$

How are the acute angles related (Angles A and C)?

Do you see any patterns with the sine and cosine of these angles?

$\sin Z =$

$\cos Z =$

$\tan Z =$

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6. **Calculator Precision:**

Degree Mode

Find sine, cosine, and tangent given the reference angle. Round to four decimal places.

$\cos 24^\circ \approx .9135$ $\tan 42^\circ \approx .9004$

$\sin 9^\circ \approx .1564$ $\tan 79^\circ \approx 5.145$

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