GSE Geometry | 3 – Similarity & Right Triangles | 3.3 – Notes

Name: _____ Date: _____

Finding Missing Sides in Right Triangles

When we are trying to find a **side** we use Sine, Cosine, and tangent.

SOH-CAH-TOA

Remember:

$$\sin\theta = \frac{O}{H} \qquad \cos\theta = \frac{A}{H} \qquad \tan\theta = \frac{O}{A}$$

Trig buttons:

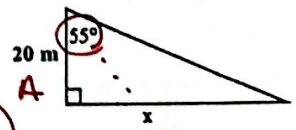
- Appear as "SIN", "COS", and "TAN" on your calculator.
- **ALWAYS: Check that your calculator is in _____ MODE!!!**

1. Sin 20 ≈ .3420
2. Tan 30 ≈ .5774
3. Cos 5 ≈ .9962
4. Sin 85 ≈ .9962
5. Tan 69 ≈ 2.6051

cos 5 & sin 85 are complements (add to 90°)

Step 1	Decide which ratio to use (SOH CAH TOA)
Step 2	Solve to get x by itself
Step 3	Use trig button to find the angle

Ex. 6 Figure out which ratio to use, then find x. *Round to the nearest tenth.*



O & A.... SOH CAH TOA

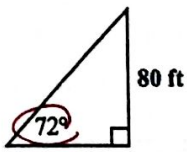
$\tan 55 = \frac{x}{20}$

x "up high" → multiply

$20 * \tan 55 = 28.6$

"up high means numerator!"

Ex. 7 Find the missing side. Round to the nearest tenth.



O & A..... SOH CAH TOA

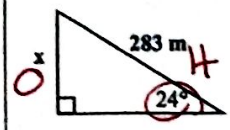
$\tan 72 = \frac{80}{x}$

x "down low" → divide

$\frac{80}{\tan 72} = 26$

"down low means denominator"

Ex. 8 Find the missing side. Round to the nearest tenth.



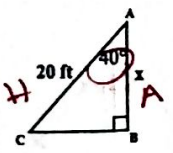
O & H... SOH CAH TOA

$\sin 24 = \frac{x}{283}$

"up high" → multiply

$283 \sin 24 = 115.1$

Ex. 9 Find θ. Round to the nearest degree.



A & H.... SOH CAH TOA

$\cos 40 = \frac{x}{20}$

multiply

$20 \cos 40 = 15.3$