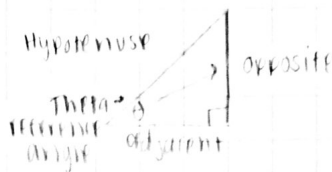


7.1 Intro to Trig Ratios

Pythagorean Triples →

- 3, 4, 5
- 5, 12, 13
- 7, 24, 25
- 8, 15, 17
- 9, 40, 41

Any scale factor of these
ex: 4, 3, 12



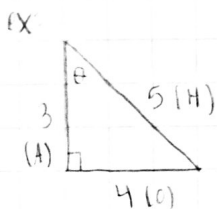
ratio of two side lengths of a right triangle.

Sine: $\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$

Cosine: $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$

Tangent: $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$

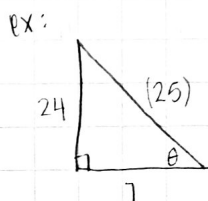
[SOH CAH TOA]



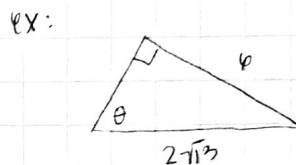
$$\sin \theta = \frac{4}{5}$$

$$\cos \theta = \frac{3}{5}$$

$$\tan \theta = \frac{4}{3}$$



$$\cos \theta = \frac{7}{25}$$



$$a^2 + b^2 = (2\sqrt{13})^2$$

$$a^2 + 3b = 4 \cdot 13$$

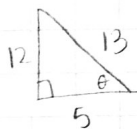
$$a^2 + 3b = 52$$

$$a^2 = 16$$

$$a = 4$$

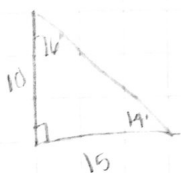
$$\cos \theta = \frac{4}{2\sqrt{13}} = \frac{2}{\sqrt{13}}$$

EX: Find $\sin \theta$ if $\tan \theta = \frac{12}{5}$

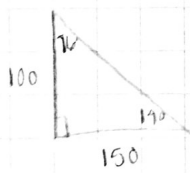


$$\sin \theta = \frac{12}{13}$$

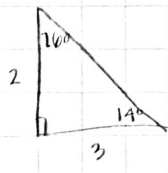
"Identify the value of the trig function" means to identify $\sin \theta$, $\cos \theta$, or $\tan \theta$ (fraction answer)



$$\tan 14 = \frac{10}{15} = \frac{2}{3}$$

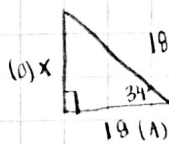


$$\tan 14 = \frac{100}{150} = \frac{2}{3}$$



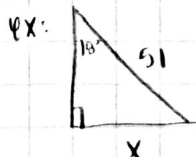
$$\tan 14 = \frac{2}{3}$$

EX: Find the missing side.



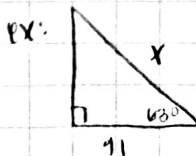
$$18 \cdot \tan 34 = \frac{x}{18} \cdot 18$$

$$x = 18 \tan 34 \approx 12.14$$



$$18 \cdot \sin 18 = \frac{x}{51} \cdot 51$$

$$x = 51 \sin 18 \approx 15.76$$



$$\cos 63 = \frac{91}{x}$$

$$\text{or } \frac{1}{\cos 63} = \frac{x}{91}$$

$$x = \frac{91}{\cos 63} \approx 200.44$$