Mathematics 10D

7.4 – Right Angled Trigonometry

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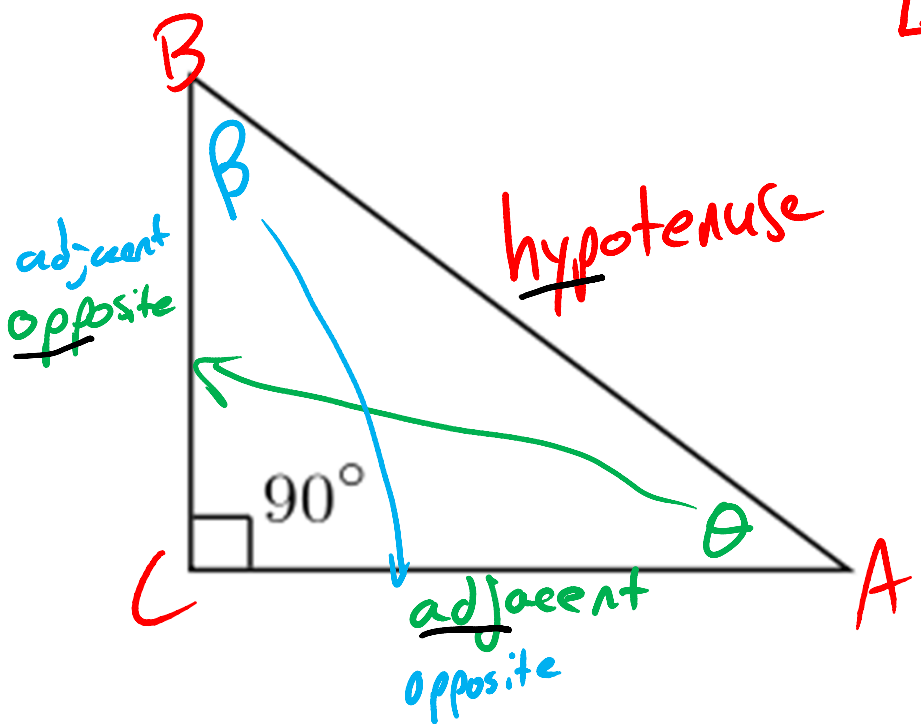
Have you ever wondered what "sin", "cos" and "tan" were?

↳ sine ↳ cosine ↳ tangent

θ = "theta"

β = "beta"



$\sin\theta = \frac{opp}{hyp}$

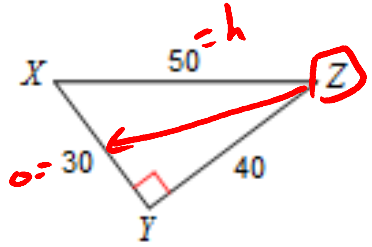
$\cos\theta = \frac{adj}{hyp}$

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

sohcahtoa

State the ratio for the given angle.

1) sin Z

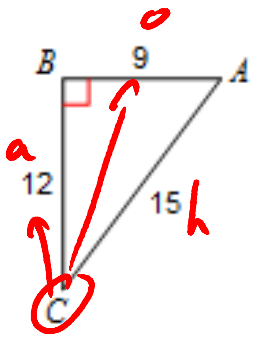


$\sin Z = \frac{opp}{hyp}$

$\sin Z = \frac{30}{50}$

$\sin Z = \frac{3}{5}$

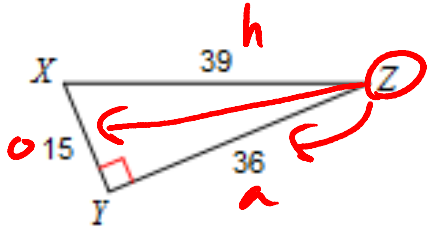
2) tan C



$\tan C = \frac{opp}{adj}$

$\tan C = \frac{9}{12} = \frac{3}{4}$

3) cos Z

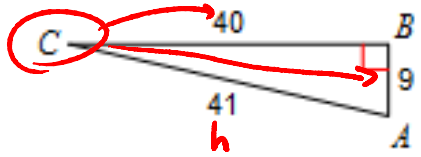


$\cos Z = \frac{adj}{hyp}$

$\cos Z = \frac{36}{39}$

$\cos Z = \frac{12}{13}$

4) tan C



$\tan C = \frac{o}{a}$

$\tan C = \frac{9}{40}$

5) tan 54° = 1.3764

6) sin 26° = 0.4384

Given the ratio, calculate the angle.

7) $\sin C = 0.9848$

$C = \sin^{-1}(0.9848)$

$C = 80°$

8) $\tan X = 6.3138$

$X = \tan^{-1}(6.3138)$

$X = 81°$

9) $\cos U = 0.7431$

$U = \cos^{-1}(0.7431)$

$U = 42°$

10) $\sin V = 0.8480$

$V = \sin^{-1}(0.8480)$

$V = 58°$

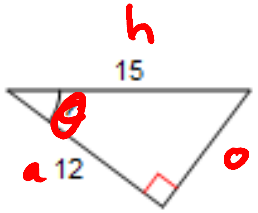
$\sin(\text{Angle}) = \text{Ratio}$

$\sin^{-1}(\sin(\text{Angle})) = \sin^{-1}(\text{Ratio})$

Given the ratio, calculate the angle.

$\sin\theta = \frac{o}{h}$ $\cos\theta = \frac{a}{h}$ $\tan\theta = \frac{o}{a}$

11)

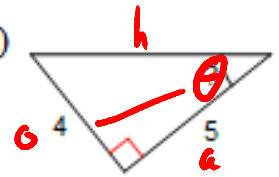


$\cos\theta = \frac{12}{15}$

$\theta = \cos^{-1}\left(\frac{12}{15}\right)$

$\theta = 37°$

12)

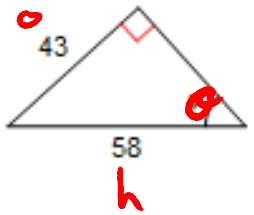


$\tan\theta = \frac{4}{5}$

$\theta = \tan^{-1}\left(\frac{4}{5}\right)$

$\theta = 39°$

13)

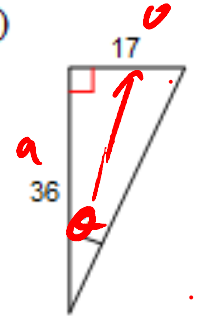


$\sin\theta = \frac{43}{58}$

$\theta = \sin^{-1}\left(\frac{43}{58}\right)$

$\theta = 48°$

14)



$\tan\theta = \frac{17}{36}$

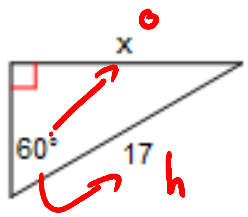
$\theta = \tan^{-1}\left(\frac{17}{36}\right)$

$\theta = 25°$

Solve for x by setting up the appropriate trig ratio.

$\sin\theta = \frac{o}{h}$ $\cos\theta = \frac{a}{h}$ $\tan\theta = \frac{o}{a}$

15)

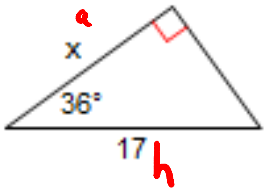


$(17)\sin 60 = \frac{x}{17}(17)$

$17\sin 60 = x$

$14.7 = x$

16)

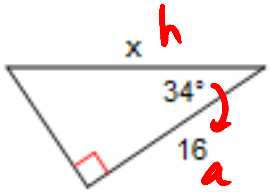


$(17)\cos 36 = \frac{x}{17}(17)$

$17\cos 36 = x$

$13.8 = x$

17)



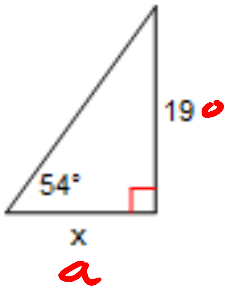
$(x)\cos 34 = \frac{16}{x}(x)$

$\frac{x\cos 34}{\cos 34} = \frac{16}{\cos 34}$

$x = \frac{16}{\cos 34}$

$x = 19.3$

18)



$\tan 54 = \frac{19}{x}$

$x = \frac{19}{\tan 54}$

$x = 13.8$