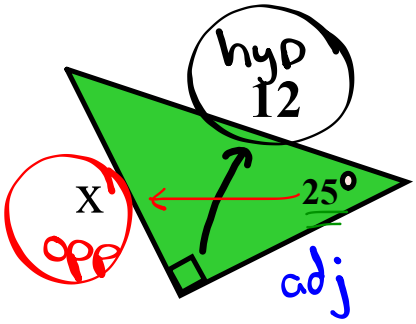
Warm Up Questions

1.



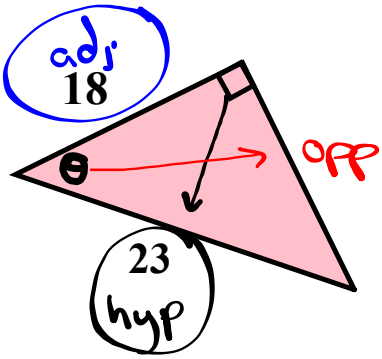
$\sin\theta = \frac{opp}{hyp}$

$\sin 25° = \frac{x}{12}$

$12 \cdot 0.4226 = \frac{x}{12} \cdot 12$

$5.1 = x$

2.



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

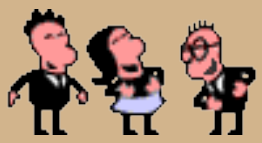
$\cos\theta = \frac{18}{23}$

$\cos\theta = 0.7826$

$\theta = \cos^{-1}(0.7826)$

$\theta = 39°$

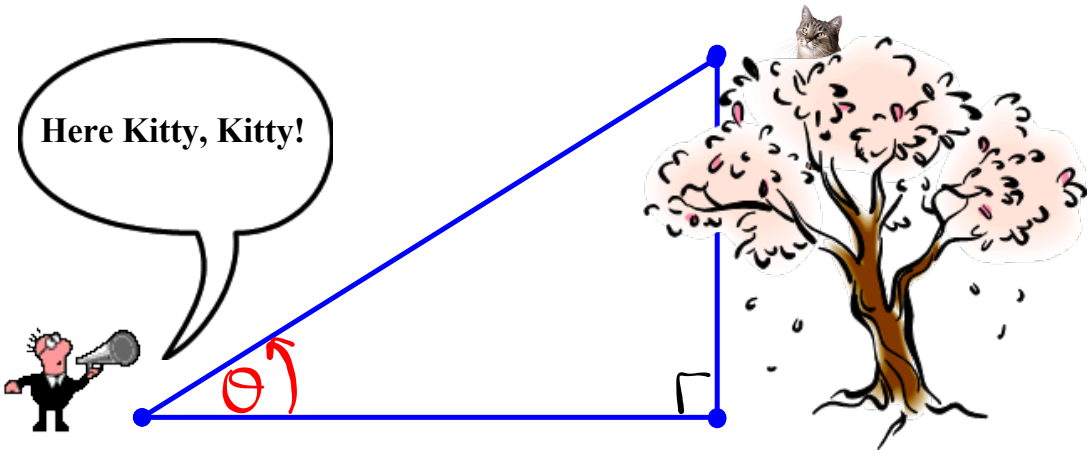
Angles of... Elevation



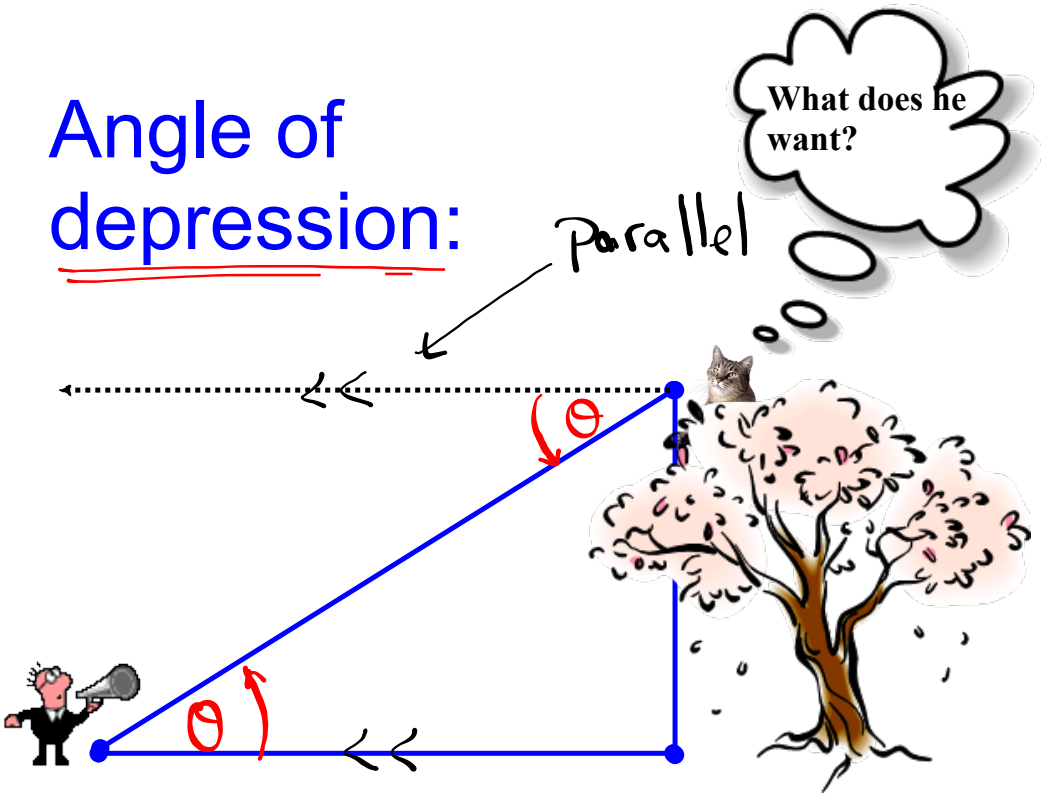
and

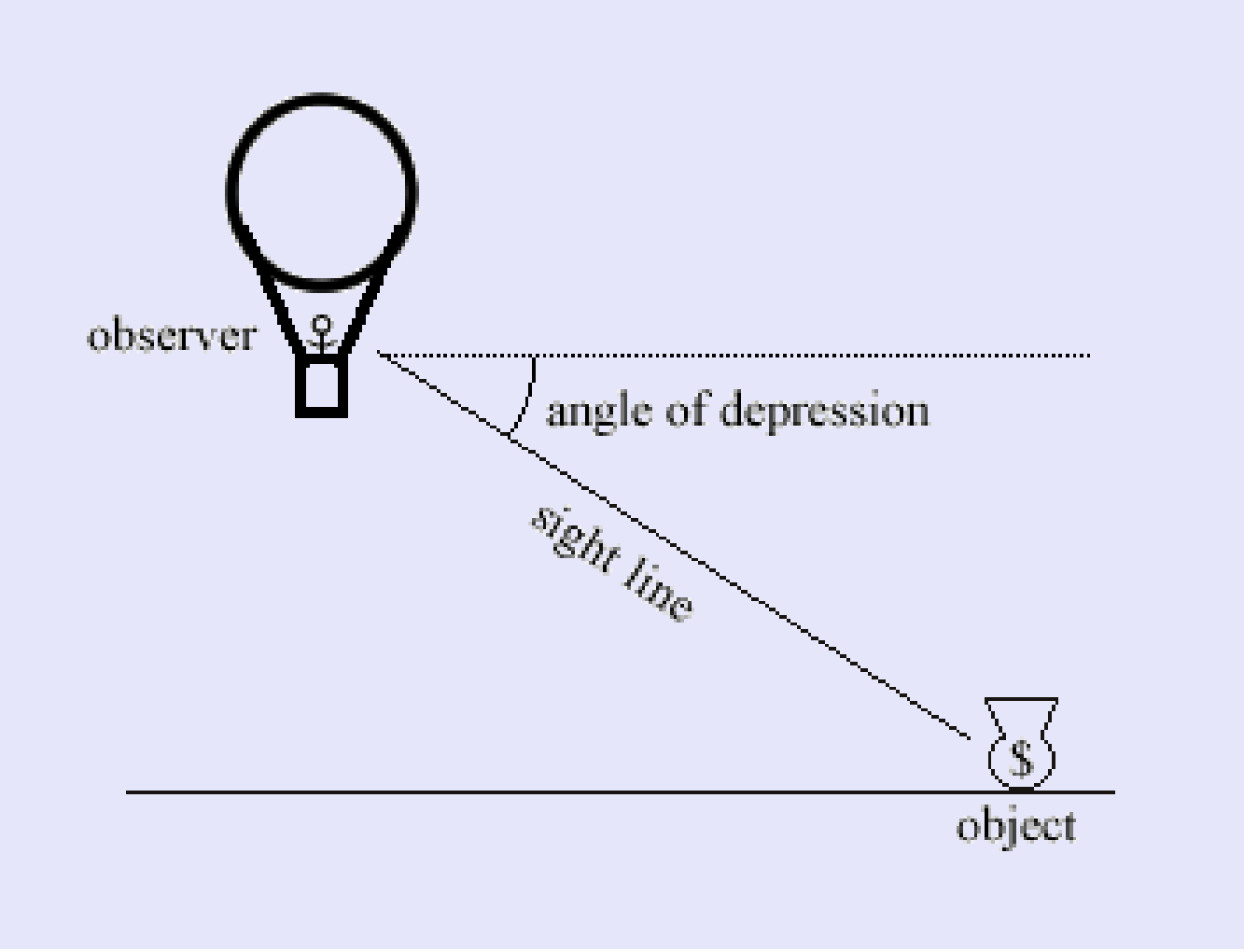
Depression!

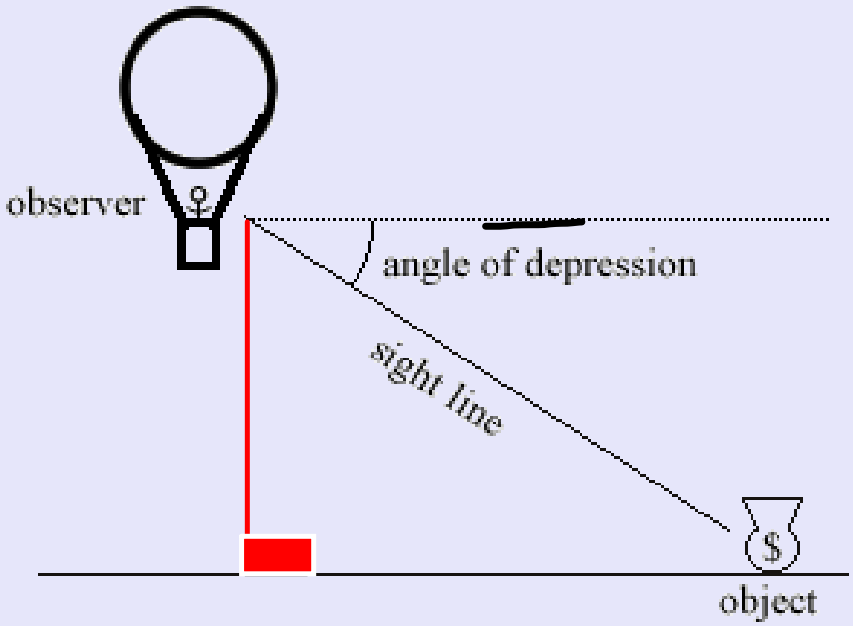
Angle of elevation:



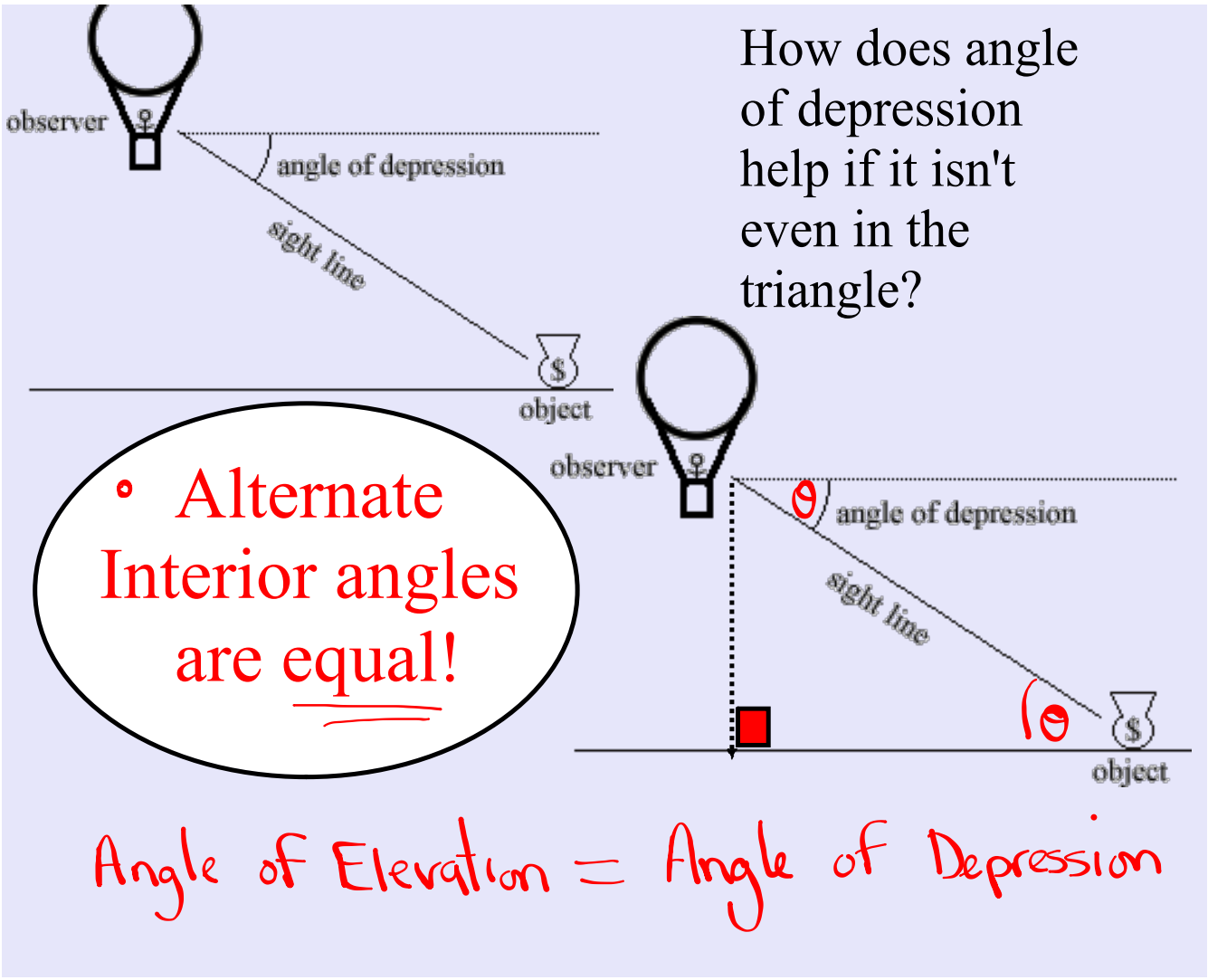
Angle of depression:



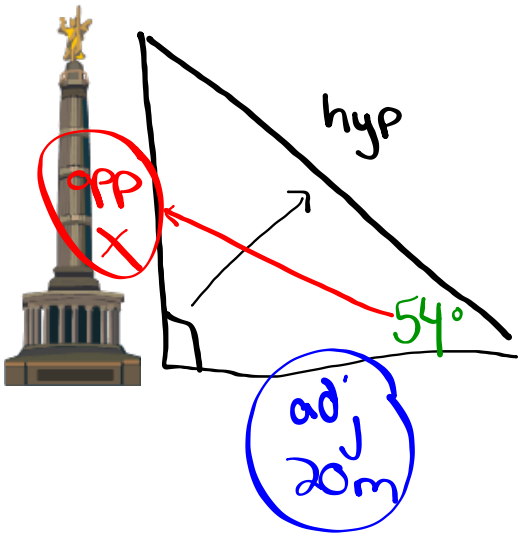

observer
angle of depression
sight line
$
object



How does the angle of depression help if it isn't in the triangle?


observer
angle of depression
sight line
object
How does angle of depression help if it isn't even in the triangle?
observer
θ
angle of depression
sight line
θ
object
• Alternate Interior angles are equal!
Angle of Elevation = Angle of Depression

The angle of elevation to the top of a tower is 54° degrees. If the person is 20m away from the tower, how tall is the tower?



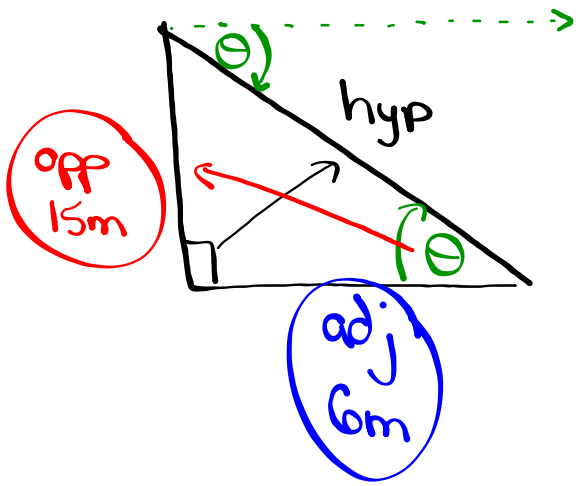
$\tan\theta = \frac{opp}{adj}$

$\tan 54° = \frac{x}{20}$

$20 \cdot 1.3764 = \frac{x}{20} \cdot 20$

$27.5m = x$

Calculate the angle of ~~depression~~ elevation from the top of a building to a puppy on the ground, if the building is 15m tall and the puppy is 6m from the building.



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

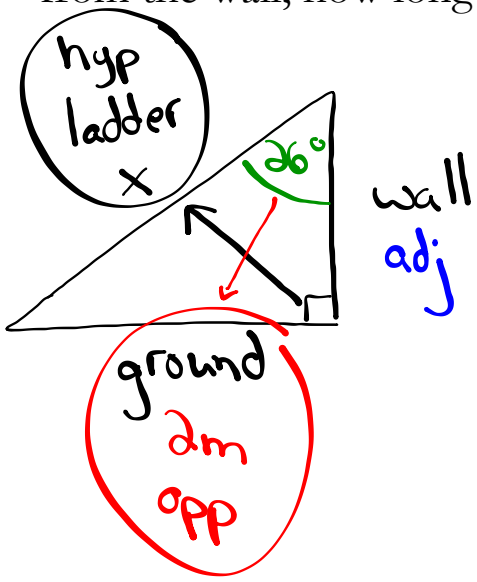
$\tan\theta = \frac{15}{6}$

$\tan\theta = 2.5$

$\theta = \tan^{-1}(2.5)$

$\theta = 68°$

A ladder leans against a building and makes an angle of 26 ° degrees with the wall. If the base of the ladder is 2 m from the wall, how long is the ladder?



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

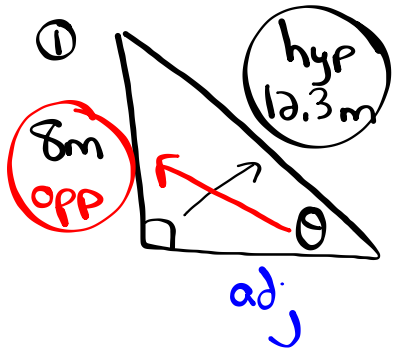
$\sin 26° = \frac{2}{x}$

$x \cdot 0.4384 = \frac{2}{x} \cdot x$

$\frac{0.4384x}{0.4384} = \frac{2}{0.4384}$

$x = 4.6m$

Do # 1,3,5,7,9

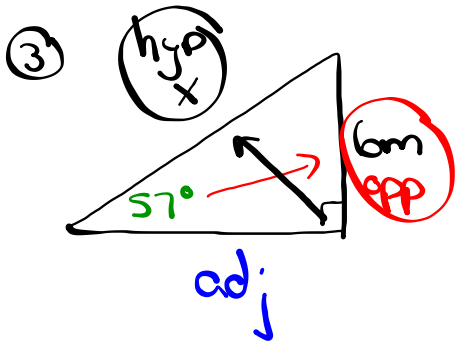
① 

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

$\sin\theta = \frac{8}{12.3}$

$\sin\theta = 0.6504$

$\theta = 41°$

③ 

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

$\sin 57° = \frac{6}{x}$

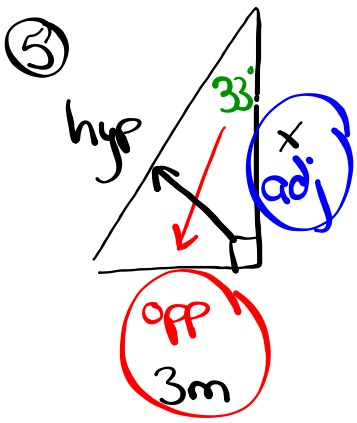
$x \cdot 0.8387 = \frac{6}{x} \cdot x$

$0.8387x = 6$

$\frac{0.8387x}{0.8387} = \frac{6}{0.8387}$

$x = 7.2m$

⑤



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

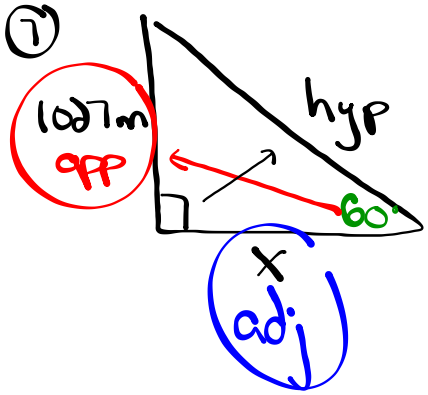
$\tan 33° = \frac{3}{x}$

$x \cdot 0.6494 = \frac{3}{x} \cdot x$

$\frac{0.6494x}{0.6494} = \frac{3}{0.6494}$

$x = 4.6m$

⑦



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

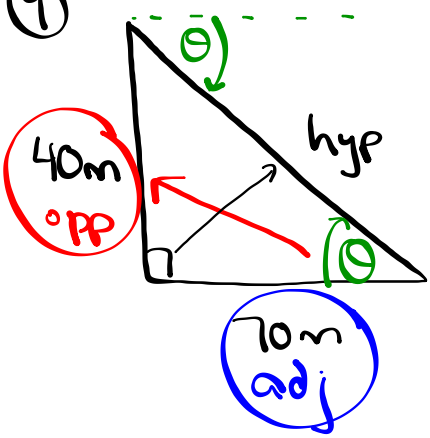
$\tan 60° = \frac{1037}{x}$

$x \cdot 1.7321 = \frac{1037}{x} \cdot x$

$\frac{1.7321x}{1.7321} = \frac{1037}{1.7321}$

$x = 592.9m$

9



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

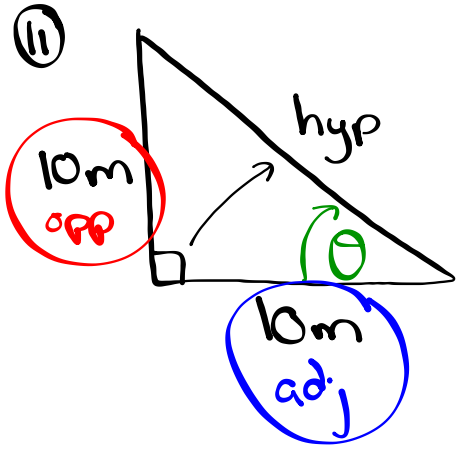
$\tan\theta = \frac{40}{70}$

$\tan\theta = 0.5714$

$\theta = \tan^{-1}(0.5714)$

$\theta = 30^\circ$

11



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

$\tan\theta = \frac{10}{10}$

$\tan\theta = 1$

$\theta = \tan^{-1}(1)$

$\theta = 45^\circ$