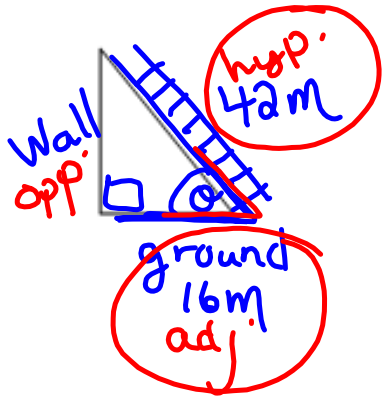
1. A 42m ladder leans against a wall. The bottom of the ladder is 16m from the base of the wall. What angle does the ladder make with the ground?



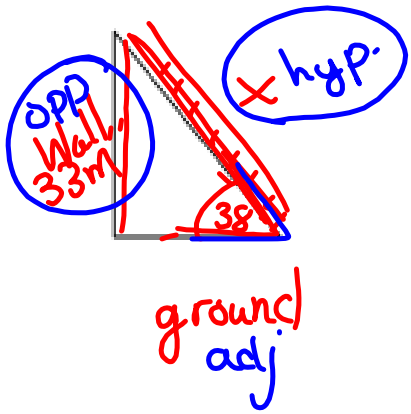
$\cos\theta = \frac{a}{h}$

$\cos\theta = \frac{16}{42}$

$\cos\theta = 0.3810$

$\theta = 68°$

2. A ladder is leaned against the wall and makes a 38° angle with the ground. If the ladder reaches 33m up the wall, how long is the ladder?



$$\sin\theta = \frac{O}{h}$$

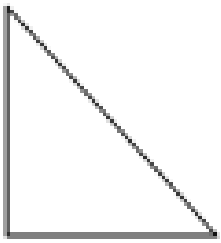
$$\frac{\sin 38}{1} = \frac{33}{x}$$

$$\frac{0.6157}{1} = \frac{33}{x}$$

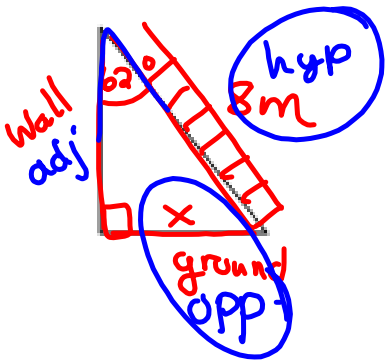
$$\frac{0.6157x}{0.6157} = \frac{33}{0.6157}$$

$$x = 53.6\text{m}$$

3. Find the height of the tower.



4. An 8m ladder makes an angle of 62° with the ~~ground~~ wall. How far is the bottom of the ladder from the base of the building?



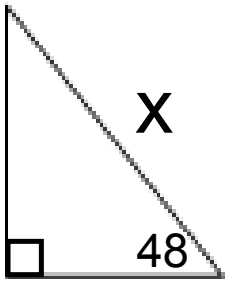
$$\frac{\sin\theta}{1} = \frac{O}{h}$$

$$\frac{\sin 62^\circ}{1} = \frac{x}{8}$$

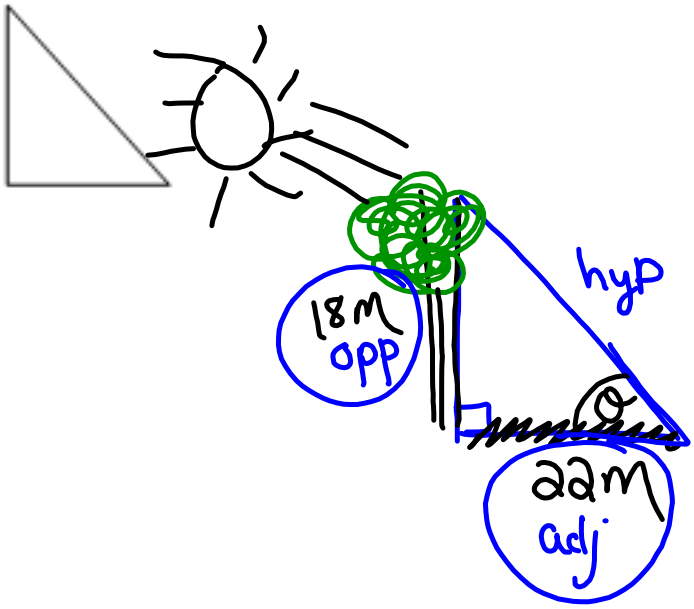
$$\frac{0.8829}{1} = \frac{x}{8}$$

$$x = 7.1\text{ m}$$

5. Find the value of x.



6. A tree, 18m high casts a shadow 22m long. Calculate the angle the sun makes to the ground at this time of day.



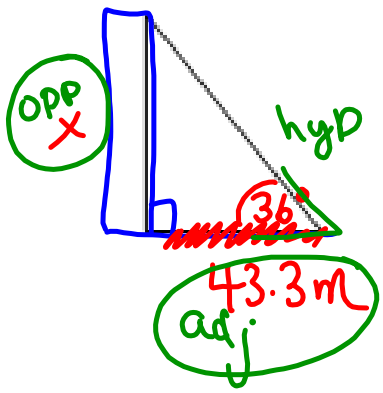
$\tan\theta = \frac{o}{a}$

$\tan\theta = \frac{18}{22}$

$\tan\theta = 0.8182$

$\theta = 39°$

7. A statue casts a shadow that is 43.3m long. The rays of the sun strike the ground at an angle of 36°. Calculate the height of the statue.



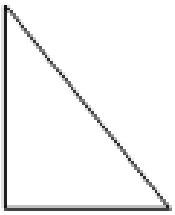
$\tan\theta = \frac{o}{a}$

$\frac{\tan 36^\circ}{1} = \frac{x}{43.3}$

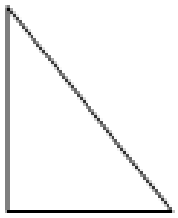
$\frac{0.7265}{1} = \frac{x}{43.3}$

$x = 31.5m$

8. A tower is supported by a guy wire 18.5m in length and meets the ground at an angle of 59°. At what height on the tower is the guy wire attached?



9. A 10.5m ladder is leaned against a wall, with the foot of the ladder 1.6m from the base of the wall. Find the angle between the ladder and the ground.



12. A 16m ladder is leaned against a wall. If the ladder reaches 10m up the wall, what is the angle the ladder makes with the ground?