

Trig Worksheet

This worksheet is to help you develop your trig skills. For all problems be sure to include a diagram.

- 1.) The angle of elevation (from level ground to the top) of Mt. Skihill is 25° . If a lift carries the skiers and boarders 700 m along the slope what is the vertical and horizontal distances traveled?

2.) Ben Franklin's kite had a 30 m long string and was 15 m above his eyelevel when struck by lightning. What angle did it make with the ground?

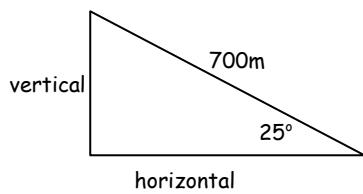
3.) A hawk dives to catch a mouse making an angle of 60° from the horizontal. If the hawk travels 35 m along the ground to get the mouse how far away was it while in the air?

4.) A tree is snapped by the wind and the top hits the ground 12 m from the broken portion of the base. If it makes an angle of 40° from the ground how tall was the tree before breaking?

5.) A wall is 40 m high, and a ladder is leaning against it making a 65° angle with the ground. How long is the ladder?

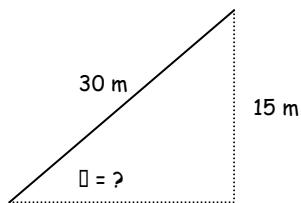
Answers -

1)



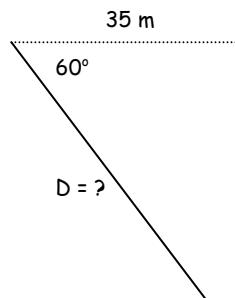
$$\begin{aligned} \text{Vert} &= \sin 25 \\ 700 \text{ m} & \\ \text{Vert} &= 700 \sin 25 = 296 \text{ m} \\ \text{Horiz} &= \cos 25 \\ 700 \text{ m} & \\ \text{Horiz} &= 700 \cos 25 = 634 \text{ m} \end{aligned}$$

2)



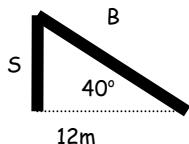
$$\begin{aligned} \text{Opp} &= \sin \theta \\ \text{Adj} & \\ \frac{15 \text{ m}}{30 \text{ m}} &= \sin \theta \\ \sin^{-1}(15 / 30) &= \theta = 30^\circ \end{aligned}$$

3)



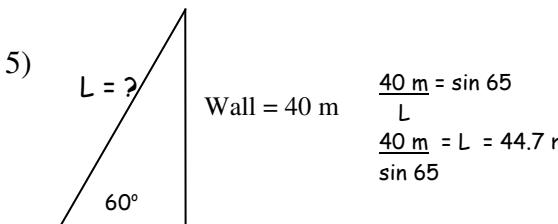
$$\begin{aligned} \frac{35 \text{ m}}{\text{D}} &= \cos 60 \\ \frac{35 \text{ m}}{\text{D} \cos 60} &= 1 \\ \frac{35 \text{ m}}{\cos 60} &= \text{D} = 70 \text{ m} \end{aligned}$$

4)



$$\begin{aligned} B &= \text{broken part}, S = \text{stump} \\ \frac{12 \text{ m}}{B} &= \cos 40 \quad \frac{S}{12 \text{ m}} = \tan 40 \\ \frac{12 \text{ m}}{\cos 40} &= B = 15.7 \text{ m} \quad S = 12 \tan 40 = 10.1 \text{ m} \\ \text{Total height} &= B + S = 15.7 + 10.1 = 25.8 \text{ m} \end{aligned}$$

5)



$$\begin{aligned} \frac{40 \text{ m}}{L} &= \sin 65 \\ \frac{40 \text{ m}}{\sin 65} &= L = 44.7 \text{ m} \end{aligned}$$