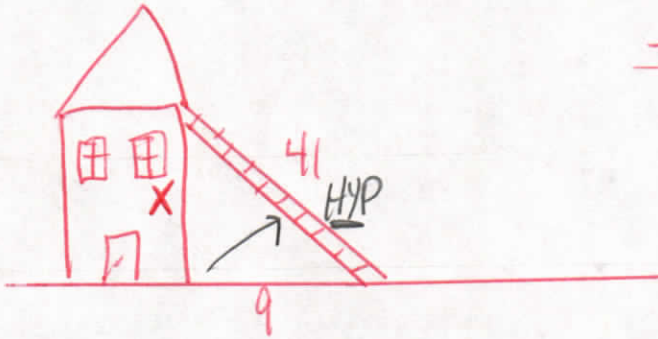


- 1) A 41 foot ladder is leaning against a house. The base of the ladder is 9 feet from the base of the house. How high on the wall of the house does the ladder reach?



$$a^2 + b^2 = c^2$$

$$(9)^2 + (x)^2 = (41)^2$$

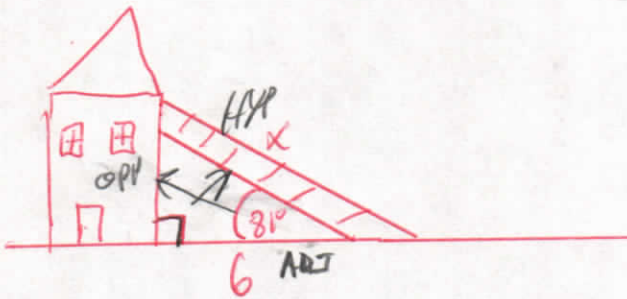
$$81 + x^2 = 1,681$$

$$\begin{array}{r} -81 \\ \hline \end{array}$$

$$\sqrt{x^2} = \sqrt{1,600}$$

$$x = 40 \text{ ft}$$

- 2) A ladder is leaning against a house. It is 6 feet from the base of the house. If the angle of elevation is  $81^\circ$ , how long is the ladder?



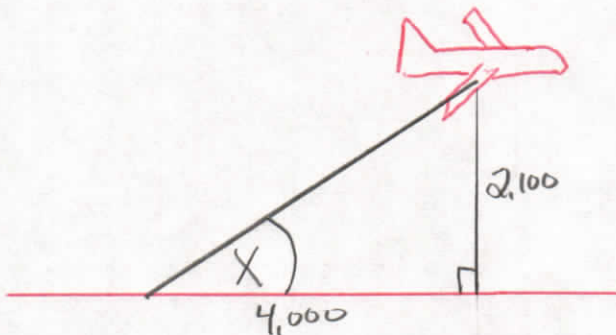
$$\cos = \frac{\text{ADJ}}{\text{HYP}}$$

$$\cos 81^\circ = \frac{6}{X}$$

$$\frac{6}{(\cos 81^\circ)} = \frac{X (\cos 81^\circ)}{(\cos 81^\circ)}$$

$$38.35 \text{ ft} \approx X$$

- 3) A plane takes off at an angle. The plane is 2,100 feet in the air and the ground distance traveled is 4,000 feet. What is the angle of depression?



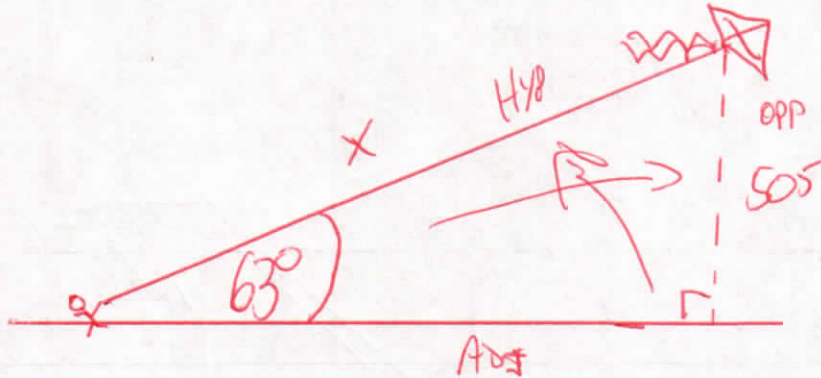
$$\tan = \frac{\text{OPP}}{\text{ADJ}}$$

$$\tan X = \frac{2,100}{4,000}$$

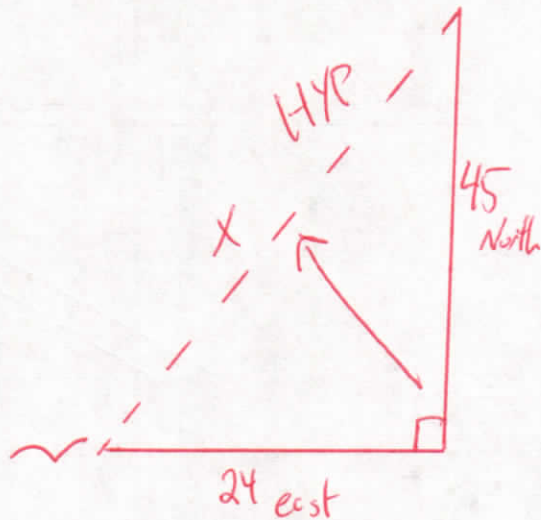
$$\tan^{-1}(2,100/4,000) = X$$

$$27.70^\circ \approx X$$

- 4) A child is sitting on the floor flying a kite. The kite is 505 feet off the ground. The angle of elevation is  $63^\circ$ . How long is the kite's string?



- 5) A bird flies 24 km east and then flies 45 km north. How far away from its starting point is the bird?



$$a^2 + b^2 = c^2$$

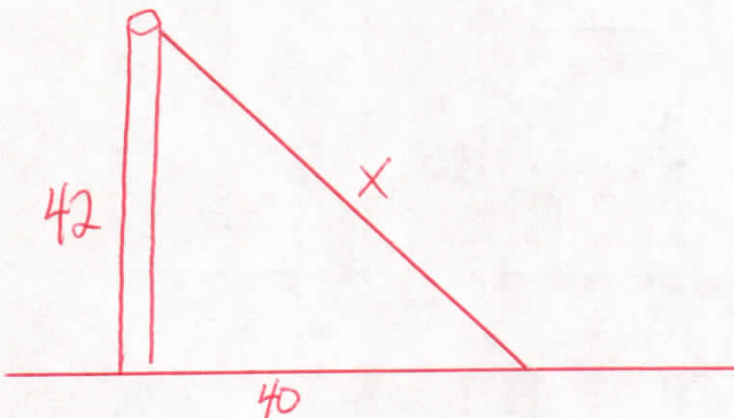
$$(24)^2 + (45)^2 = (x)^2$$

$$576 + 2,025 = x^2$$

$$\sqrt{2,601} = \sqrt{x^2}$$

$$51 \text{ km} = x$$

- 6) There is a support cable connected to the top of a 42-foot telephone pole extends to a point on the ground that is 40 feet from the base of the telephone pole. How long is the cable?



$$a^2 + b^2 = c^2$$

$$(40)^2 + (42)^2 = (x)^2$$

$$1,600 + 1,764 = x^2$$

$$\sqrt{3,364} = \sqrt{x^2}$$

$$58 \text{ feet} = x$$

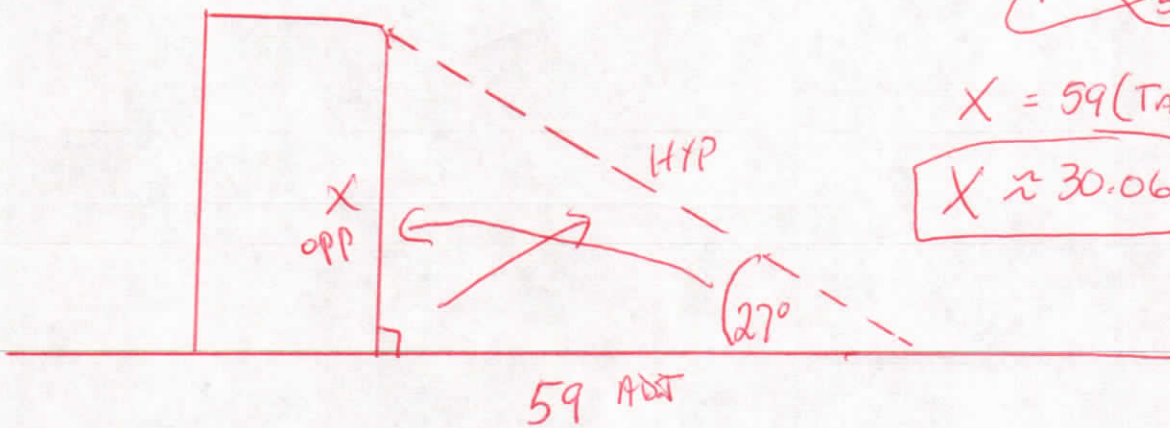
7) A building casts a 59-foot shadow. If the angle of elevation is  $27^\circ$ , find the height of the building.

$$\text{TAN} = \frac{\text{OPP}}{\text{ADJ}}$$

~~$$\frac{\text{TAN } 27^\circ}{1} = \frac{X}{59}$$~~

$$X = 59(\text{TAN } 27^\circ)$$

$$X \approx 30.06 \text{ Feet}$$



8) A child is sitting on the ground flying a kite. The kite is 315 feet in the air and the string is 425 feet long. What is the angle of depression?

$$\text{SIN} = \frac{\text{OPP}}{\text{HYP}}$$

$$\text{SIN } X = \frac{315}{425}$$

$$\text{SIN}^{-1}\left(\frac{315}{425}\right) = X$$

$$47.83^\circ \approx X$$

