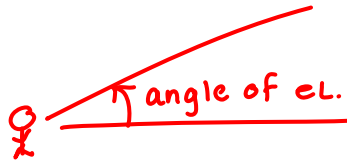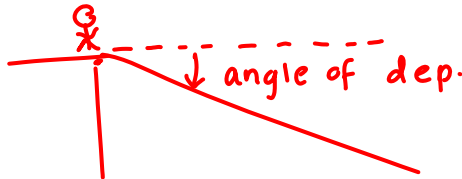# Day 3 Trigonometry

II. Angle of Elevation vs. Angle of Depression

- <u>Angle of Elevation:</u> If an observer at Point P was looking **upward** towards an object at A.
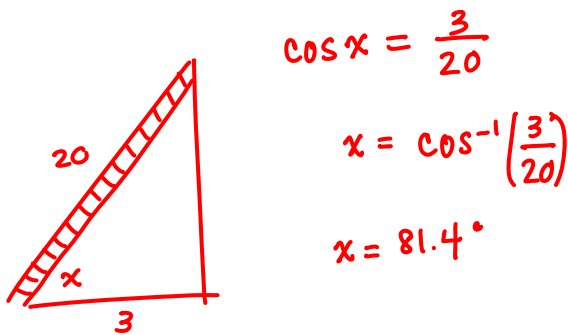
angle of eL.

- <u>Angle of Depression.</u> If an observer at Point P was looking **downward** towards an object at B.
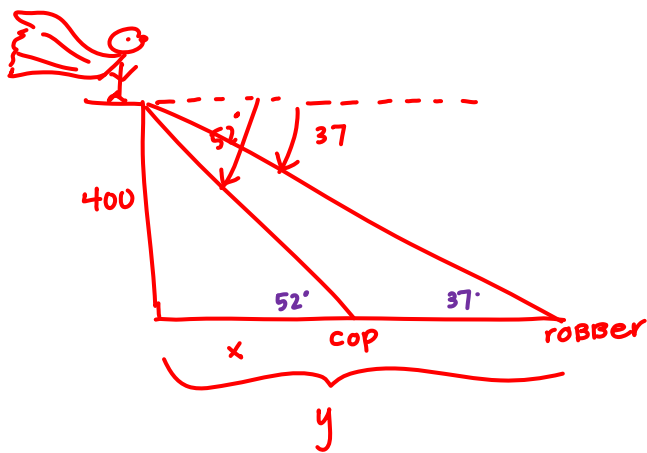
angle of dep.

*An angle of elevation and depression is always made with the *horizontal* – not the vertical!

1) A 20 ft ladder is leaning against a wall. The base of the ladder is 3 feet from the wall. What angle does the ladder make with the ground?

$$\cos x = \frac{3}{20}$$

$$x = \cos^{-1}\left(\frac{3}{20}\right)$$

$$x = 81.4°$$

20

x

3

2) Superman is standing on a roof top 400 meters above the street when he sees some criminals escaping in a high speed car chase. The angles of depression of the police car and the robbers' car are 52° and 37° respectively. Find, to the nearest meter, the distance between the two cars.

400

52   37

52°   37°

x   cop   robber

y

$$\tan 37 = \frac{400}{y}$$

$$y \tan 37 = 400$$

$$y = \frac{400}{\tan 37}$$

$$y \approx$$

$$\tan 52 = \frac{400}{x}$$

$$x \tan 52 = 400$$

$$x = \frac{400}{\tan 52}$$

$$y \approx$$

$$\text{distance between} = \frac{400}{\tan 37} - \frac{400}{\tan 52}.$$

$$\approx \boxed{218.3 \text{ m}}$$