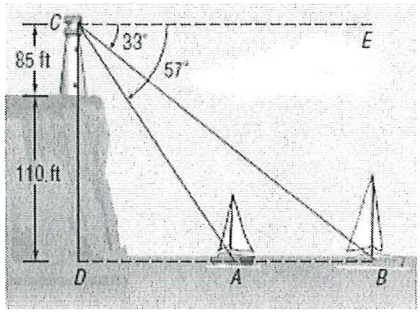
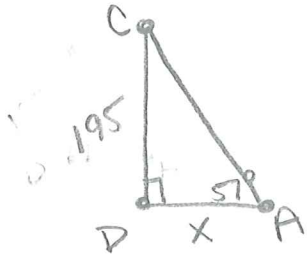
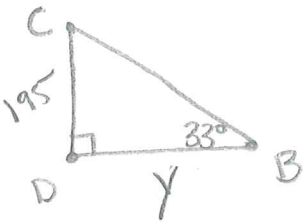
Day 2 Practice- Notes Angle of Elevation and Depression

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

1. Olivia works in a lighthouse on a cliff. She observes two sailboats due east of the lighthouse. The angles of depression to the two boats are 33° and 57°. Find the distance between the two sailboats to the nearest foot.







$\tan 57 = \frac{195}{x}$ $\quad \tan 33 = \frac{195}{y}$

$x\tan 57 = 195$ $\quad y\tan 33 = 195$

$x = 126.63$ $\quad y = 300.27$

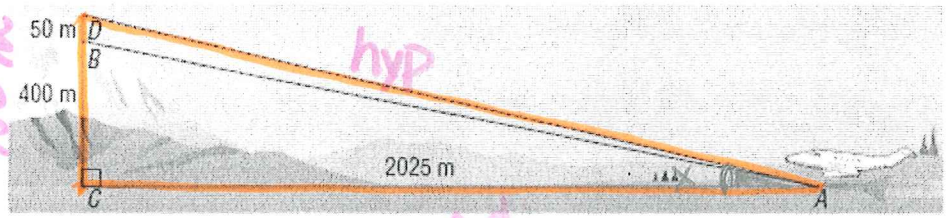
$x = 127\text{ ft}$ $\quad y = 300\text{ ft}$

$y - x$

$300 - 127 = \boxed{173\text{ ft}}$

2. AVIATION The peak of Goose Bay Mountain is 400 meters higher than the end of a local airstrip. The peak rises above a point 2025 meters from the end of the airstrip. A plane takes off from the end of the runway in the direction of the mountain at an angle that is kept constant until the peak has been cleared. If the pilot wants to clear the mountain by 50 meters, what should the angle of elevation be for the takeoff to the nearest tenth of a degree?

Make a drawing.



opp 450 m

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

$\tan x = \frac{450}{2025}$

$x = \tan^{-1}\left(\frac{450}{2025}\right)$

$x = 12.528°$

$\boxed{x = 13°}$