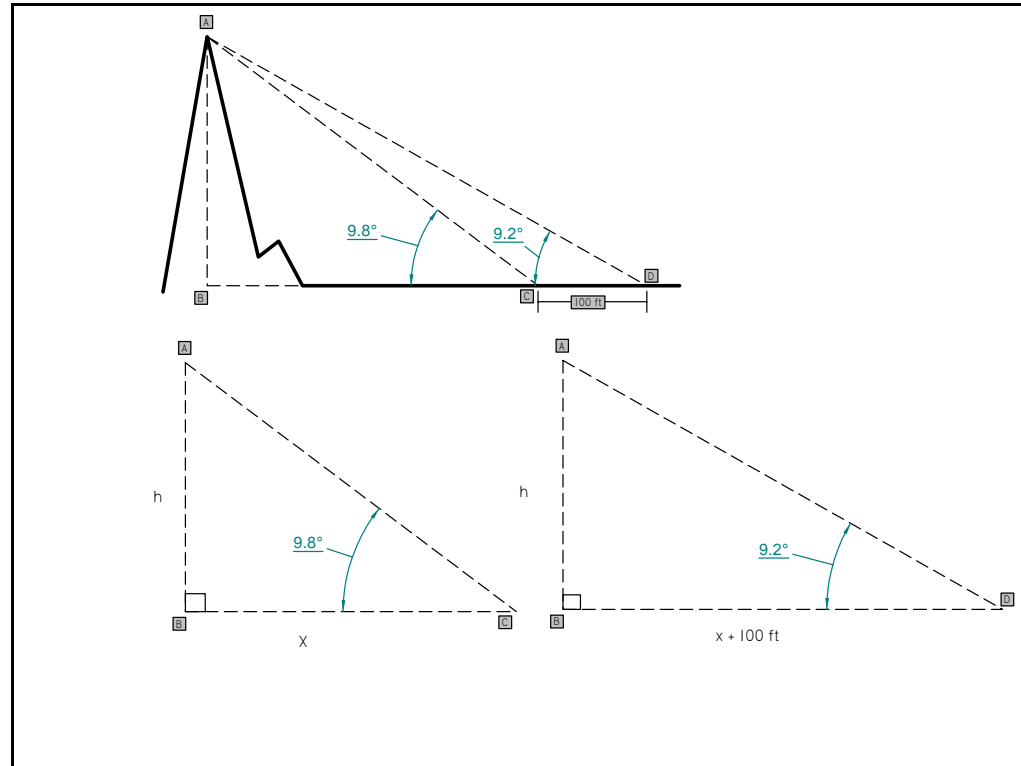


Find the height of Fremont Peak from the CCHS football field. A schematic of Fremont Peak and Canon City is shown to the right. If segment CD is known (200 ft), the height of the peak can easily be calculated as shown below by using the two right triangles.



From $\triangle ABC$ we know: From $\triangle ABD$ we know:

$$\tan(9.8 \cdot \text{deg}) = \frac{h}{x} \qquad \tan(9.2 \cdot \text{deg}) = \frac{h}{x + 100}$$

So we have 2 equations in two variables. :)

$$\tan(9.8 \cdot \text{deg}) = \frac{h}{x} \qquad \tan(9.2 \cdot \text{deg}) = \frac{h}{x + 100}$$

$$0.1727 = \frac{h}{x} \qquad 0.16196 = \frac{h}{x + 100}$$

$$x = 5.79 \cdot h \qquad h = 0.16196 \cdot x + 16.196 \qquad h = 0.16196 \cdot (5.79 \cdot h) + 16.196 \qquad \text{solving for h: } h := 260.17$$

or an computer solution using Mathcad's find function:

$$x := 5.79 \cdot h \qquad x = 1506.4$$

$$x := 100 \qquad h := 100 \qquad \text{Given} \qquad 0.1727 = \frac{h}{x} \qquad 0.16196 = \frac{h}{x + 100}$$

$$\text{Find}(h, x) = \begin{pmatrix} 260.433 \\ 1508.007 \end{pmatrix}$$