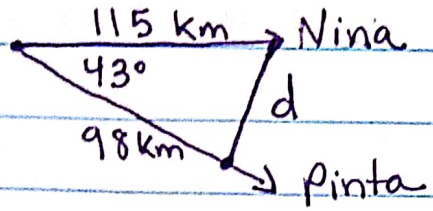
Unit 6 Study Guide Applications

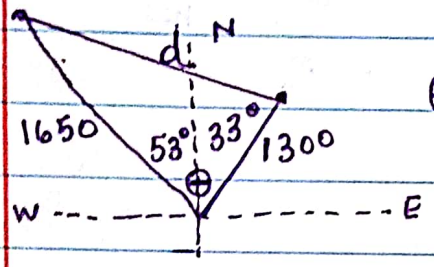
11.



$d^2 = 98^2 + 115^2 - 2(98)(115)\cos 43°$

$d = \boxed{79.7 \text{ km}}$

12.

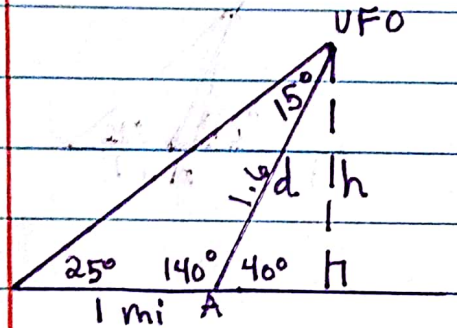


$\theta = 53° + 33° = 86°$

$d^2 = 1300^2 + 1650^2 - 2(1300)(1650)\cos 86°$

$\boxed{d = 2028.1 \text{ or } 2028 \text{ miles}}$

13.



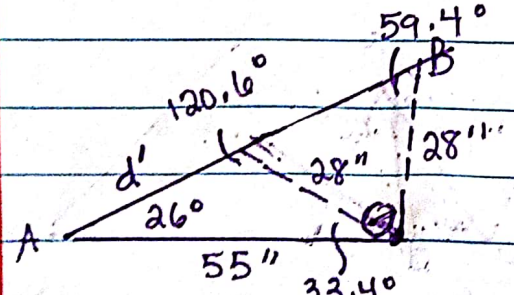
$\frac{1}{\sin 15°} = \frac{d}{\sin 25°}$

$d = \frac{\sin 25°}{\sin 15°} = 1.6 \text{ mi}$

$\frac{h}{\sin 40°} = \frac{1.6}{\sin 90°}$ $\quad \boxed{h = 1.0 \text{ mi}}$

Distance from point A to UFO is 1.6 mi; height of UFO is 1 mi.

14.



$\frac{d'}{\sin 33.4°} = \frac{28"}{\sin 26"}$

$d' = \frac{28 \sin 33.4°}{\sin 26°}$

$d' = \boxed{35.2"}$

$\frac{28}{\sin 26°} = \frac{55}{\sin B}$

$\sin B = \frac{55 \sin 26°}{28}$

$B = 59.4° \quad \theta = 94.6°$

$\frac{d}{\sin 94.6°} = \frac{28}{\sin 26°}$

$d = \frac{28 \sin 94.6°}{\sin 26°} = \boxed{63.7"}$