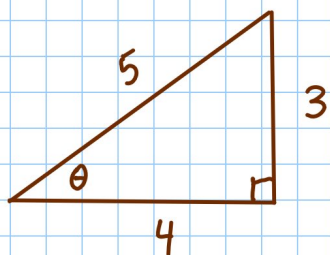


PRACTICE TEST SOLUTIONS

1)



$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{3}{5}$$

$$\csc \theta = \frac{\text{hyp}}{\text{opp}} = \frac{5}{3}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{4}{5}$$

$$\sec \theta = \frac{\text{hyp}}{\text{adj}} = \frac{5}{4}$$

$$c^2 = 3^2 + 4^2$$

$$c^2 = 9 + 16$$

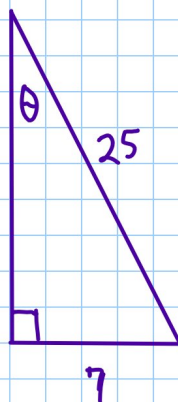
$$c^2 = 25$$

$$c = 5$$

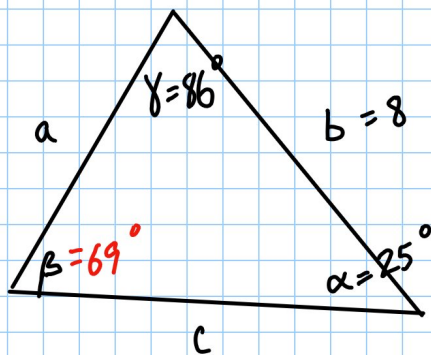
$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{3}{4}$$

$$\cot \theta = \frac{\text{adj}}{\text{opp}} = \frac{4}{3}$$

PPP



2) $b = 8$, $\alpha = 25^\circ$, $\gamma = 86^\circ$



$$a = \underline{3.6}$$

$$\text{Area} = \underline{14.4}$$

$$c = \underline{8.5}$$

$$\beta = \underline{69^\circ}$$

$$\beta = 180 - 86 - 25 = 69^\circ$$

$$\left\{ \frac{\sin 25^\circ}{a} = \frac{\sin 69^\circ}{8} \right.$$

$$\left\{ \frac{\sin 86^\circ}{c} = \frac{\sin 69^\circ}{8} \right.$$

$$a = \frac{8 \sin 25^\circ}{\sin 69^\circ} = 3.62$$

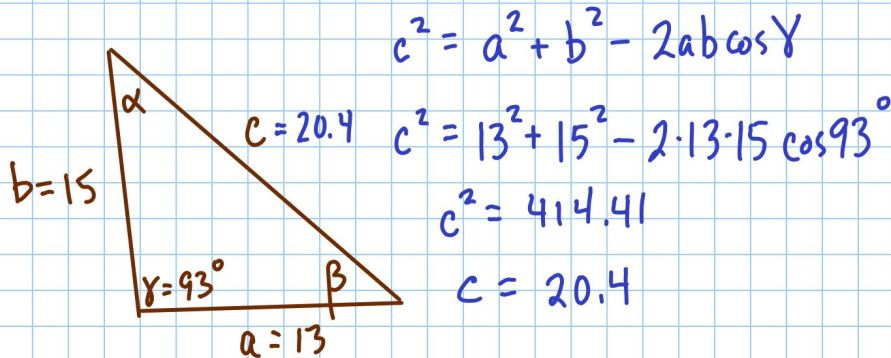
$$c = \frac{8 \sin 86^\circ}{\sin 69^\circ} = 8.5$$

$$A = \frac{1}{2} ab \sin \gamma$$

$$= \frac{1}{2} \cdot 3.6 \cdot 8 \cdot \sin 86^\circ = 14.4$$

PPP $c = 21, \alpha = 61^\circ, \beta = 58^\circ$

3) $a = 13, b = 15, \gamma = 93^\circ$



$$c^2 = a^2 + b^2 - 2ab \cos \gamma$$

$$c^2 = 13^2 + 15^2 - 2 \cdot 13 \cdot 15 \cos 93^\circ$$

$$c^2 = 414.41$$

$$c = 20.4$$

$$\alpha = \underline{39.5^\circ}$$

$$\beta = \underline{47.5^\circ}$$

$$c = \underline{20.4}$$

$$\text{Area} = \underline{97.4}$$

$$\frac{\sin \alpha}{13} = \frac{\sin 93^\circ}{20.4}$$

$$\beta = 180 - 93 - 39.5 = 47.5^\circ$$

$$\sin \alpha = \frac{13 \sin 93^\circ}{20.4} = .6364$$

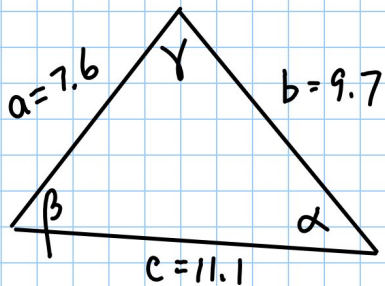
$$A = \frac{1}{2} ab \sin \gamma$$

$$A = \frac{1}{2} \cdot 13 \cdot 15 \cdot \sin 93^\circ$$

$$\alpha = \sin^{-1}(.6364) = 39.5^\circ$$

PPP
 $b = 8.3$
 $c = 9.5$
 $\alpha = 101^\circ$

4) $a = 7.6, b = 9.7, c = 11.1$



BIGGEST ANGLE FIRST

$$\cos \gamma = \frac{a^2 + b^2 - c^2}{2ab}$$

$$\alpha = \underline{42.2^\circ}$$

$$\cos \gamma = \frac{7.6^2 + 9.7^2 - 11.1^2}{2 \cdot 7.6 \cdot 9.7}$$

$$\beta = \underline{59.0^\circ}$$

$$\gamma = \underline{78.8^\circ}$$

$$\cos \gamma = \frac{28.64}{147.44}$$

$$\text{Area} = \underline{36.2}$$

$$\frac{1}{2} \cdot 7.6 \cdot 9.7 \sin 78.8^\circ$$

$$\frac{\sin \beta}{9.7} = \frac{\sin 78.8^\circ}{11.1}$$

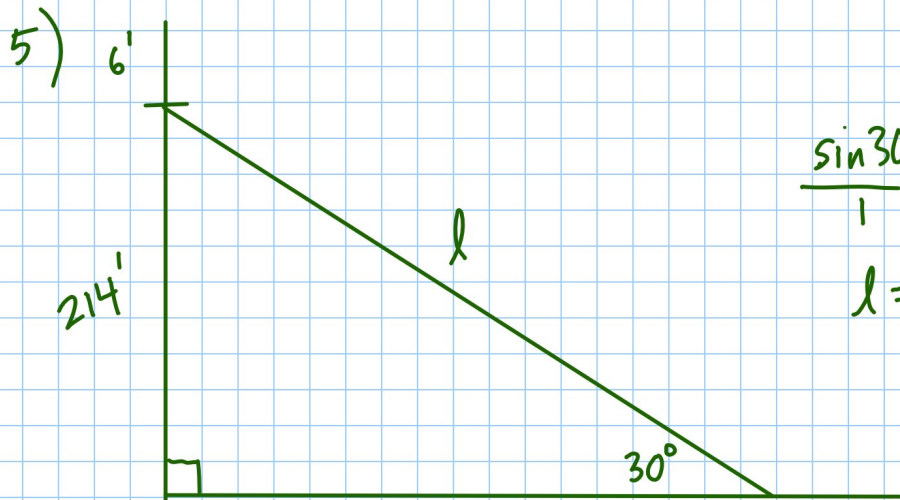
$$\gamma = \cos^{-1}\left(\frac{28.64}{147.44}\right) = 78.8^\circ$$

$$\sin \beta = \frac{9.7 \sin 78.8^\circ}{11.1} = .8572$$

$$\alpha = 180^\circ - 59^\circ - 78.8^\circ = 42.2^\circ$$

$$\beta = \sin^{-1}.8572 = 59.0^\circ$$

PPP $a = 15.1, b = 12.5, c = 13.3$

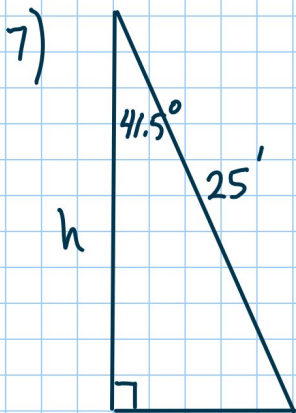


$$\frac{\sin 30^\circ}{1} = \frac{214}{l}$$

$$l = \frac{214}{\sin 30^\circ} = 428.0 \text{ ft}$$

PPP

513 ft, attach 15' from top
 71° angle with ground
 how long is wire?



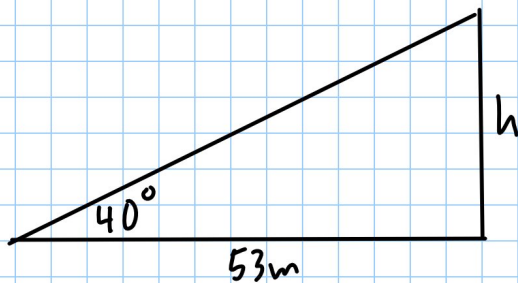
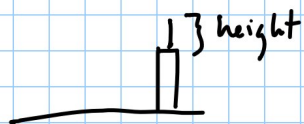
$$\cos 41.5^\circ = \frac{h}{25}$$

$$h = 25 \cos 41.5^\circ = 18.7'$$

PPP

ladder makes a 62.5° angle with ground and
 is 29' long. How tall is house?

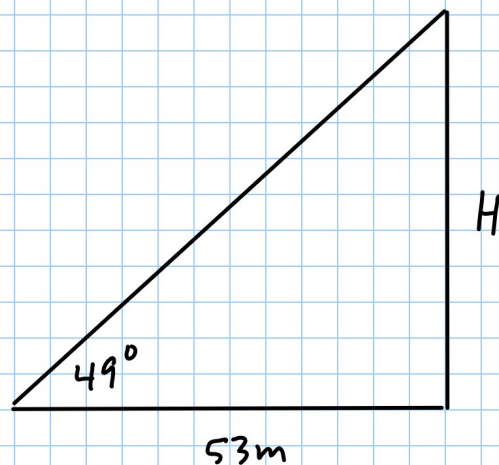
8)



$$\tan 40^\circ = \frac{h}{53}$$

$$h = 53 \tan 40^\circ$$

$$h = 44.5 \text{ m}$$



$$\tan 49^\circ = \frac{H}{53}$$

$$H = 53 \tan 49^\circ$$

$$H = 61.0 \text{ m}$$

$$\text{radio tower} = 61.0 - 44.5 = 16.5 \text{ m}$$

PPP $51^\circ, 65\text{m}$
 $59^\circ, 65\text{m}$ } radio tower

9) $12' \times 15' \times 17'$

$$s = \frac{1}{2}(12 + 15 + 17) = 22$$

$$A = \sqrt{22(22-12)(22-15)(22-17)} = 87.75 \text{ ft}^2 \cdot \frac{1 \text{ yd}^2}{9 \text{ ft}^2} = 9.75 \text{ yd}^2$$

$$9 \text{ ft}^2 = 1 \text{ yd}^2$$

PPP
 $21 \text{ ft} \times 23 \text{ ft} \times 30 \text{ ft}$
 $\$13 \text{ per yd}^2$

buy 10 yd^2
 $\times \$12$

$\$120$