Pg 484 1-11 odd, 13-18 all, 21-27 all, 37, 38, 40, 43, 45

① $\frac{\sin 60^\circ}{a} = \frac{\sin 45^\circ}{3.7}$

$a \approx 4.53$

$\frac{\sin 45^\circ}{3.7} = \frac{\sin 75^\circ}{c}$

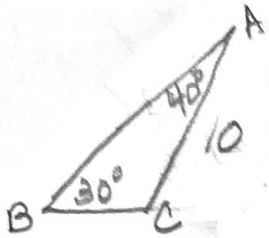
$\angle A = 60^\circ$ $a \approx 4.53$
$\angle B = 45^\circ$ $b = 3.7$
$\angle C = 75^\circ$ $c \approx 5.05$

③ $\angle A = 100^\circ$ $a = 22$
$\angle B = 45^\circ$ $b \approx 15.8$
$\angle C = 35^\circ$ $c \approx 12.81$

$\frac{\sin 100^\circ}{22} = \frac{\sin 45^\circ}{b} = \frac{\sin 35^\circ}{c}$

$b \approx 15.8$ $c \approx 12.81$

⑤

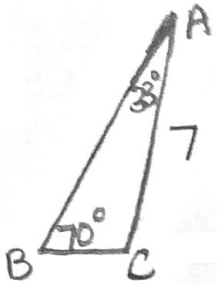


$\angle A = 40^\circ$ $a \approx 12.9$
$\angle B = 30^\circ$ $b = 10$
$\angle C = 110^\circ$ $c \approx 18.79$

$\frac{\sin 30^\circ}{10} = \frac{\sin 40^\circ}{a}$

$\frac{\sin 30^\circ}{10} = \frac{\sin 110^\circ}{c}$

⑦

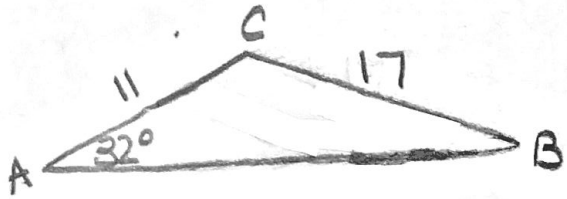


$\angle A = 33^\circ$ $a \approx 4.06$
$\angle B = 70^\circ$ $b = 7$
$\angle C = 87^\circ$ $c \approx 7.44$

$\frac{\sin 70^\circ}{7} = \frac{\sin 33^\circ}{a}$

$\frac{\sin 70^\circ}{7} = \frac{\sin 87^\circ}{c}$

⑨



$\frac{\sin 32^\circ}{17} = \frac{\sin B}{11}$

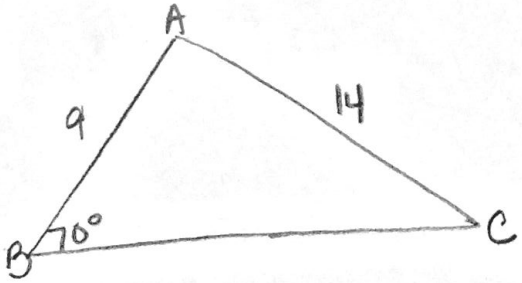
$\sin^{-1}\left(\frac{11 \sin 32^\circ}{17}\right) = B$

Ambiguous case not possible. $\angle B$ can not be obtuse.

$\angle A = 32^\circ$ $a = 17$
$\angle B \approx 20.05^\circ$ $b = 11$
$\angle C \approx 127.95^\circ$ $c \approx 25.3$

$\frac{\sin C}{c} = \frac{\sin 32^\circ}{17}$

⑪



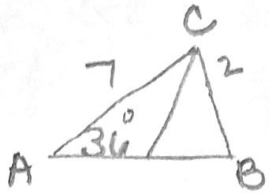
Ambiguous case not possible $\angle C$ can not be obtuse.

$\angle A \approx 72.83^\circ$ $a \approx 14.24$
$\angle B = 70^\circ$ $b = 14$
$\angle C \approx 37.16^\circ$ $c = 9$

$\frac{\sin 70^\circ}{14} = \frac{\sin C}{9}$

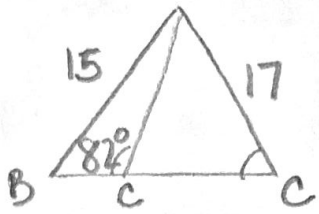
$\frac{\sin 70^\circ}{14} = \frac{\sin A}{a}$

(13)



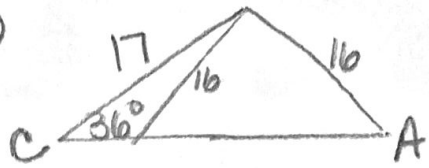
$\frac{\sin 36^\circ}{2} = \frac{\sin B}{7}$ not possible ; $\boxed{\text{zero}}$

(14)



$\boxed{\text{One}}$ $\angle C$ can not be obtuse

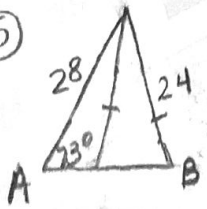
(15)



$\angle A$ can be obtuse &

$\frac{\sin 36^\circ}{16} = \frac{\sin A}{17}$ is possible so, $\boxed{\text{Two}}$

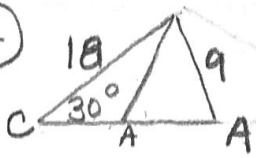
(16)



$\angle B$ can be obtuse

$\frac{\sin 73^\circ}{24} = \frac{\sin B}{28}$; not possible so, $\boxed{\text{Zero}}$

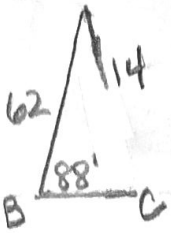
(17)



$\angle A$ can be obtuse

$\frac{\sin 30^\circ}{9} = \frac{\sin A}{18}$ is possible so, $\boxed{\text{Two}}$

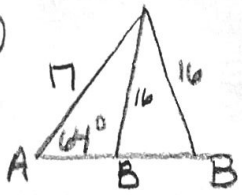
(18)



not possible

$\boxed{\text{Zero}}$

(21)

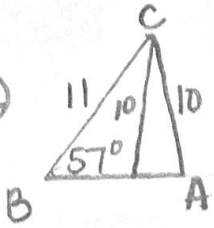


$\frac{\sin 64^\circ}{16} = \frac{\sin B}{17}$

$\frac{\sin 64^\circ}{16} = \frac{\sin C}{c}$

$\angle B$ is acute	$\angle B$ is obtuse
$\angle A = 64^\circ$ $a = 16$	$\angle A = 64^\circ$ $a = 16$
$\angle B \approx 72.7^\circ$ $b = 17$	$\angle B \approx 107.3^\circ$ $b = 17$
$\angle C \approx 43.3^\circ$ $c \approx 12.2$	$\angle C \approx 8.7^\circ$ $c \approx 2.7$

(22)

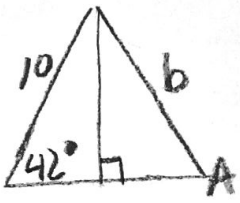


$\frac{\sin 57^\circ}{10} = \frac{\sin A}{11}$

$\frac{\sin 57^\circ}{10} = \frac{\sin C}{c}$

$\angle A$ is acute	$\angle A$ is obtuse
$\angle A = 67.3^\circ$ $a = 11$	$\angle A = 112.7^\circ$ $a = 11$
$\angle B = 57^\circ$ $b = 10$	$\angle B = 57^\circ$ $b = 10$
$\angle C = 55.7^\circ$ $c \approx 9.85$	$\angle C \approx 10.3^\circ$ $c \approx 2.13$

(23)



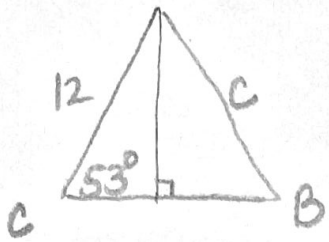
$\frac{\sin 42^\circ}{b} = \frac{\sin A}{10}$

a) two Δ's $6.69 < b < 10$

b) one Δ $b = 6.69$ & $b \geq 10$

c) zero Δ's $0 < b < 6.69$

(24)



(A) Two traiangles
$9.58 < c < 12$

(B) One triangle
$c \approx 9.58$ or $c \geq 12$

(c) zero triangles
$0 < c < 9.58$

$\sin 53° = \frac{c}{12}$

$c \approx 9.58$ if right Δ.

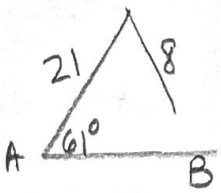
(25) (a) No, do not have side and opposite angle.

(b) No, not enough info to solve Δ period.

(26) (a) yes, have angle and opposite side

(c) No, do not have $\angle$ and opposite side.

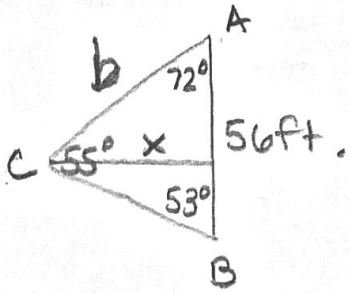
(27)



$\frac{\sin 61°}{8} = \frac{\sin B}{21}$ (b) No Δ is formed

not possible

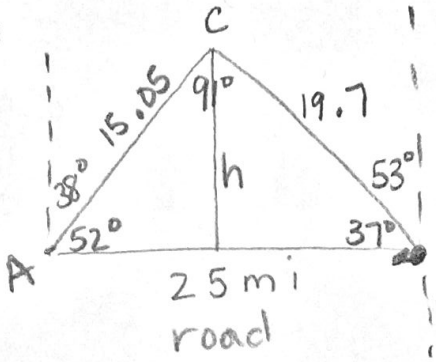
(37)



(a) $\frac{\sin 55°}{56} = \frac{\sin 53°}{b}$ $b \approx \boxed{54.6 \text{ ft.}}$

(b) $\sin 72° = \frac{x}{b}$ $x \approx \boxed{51.9 \text{ ft.}}$

(38)

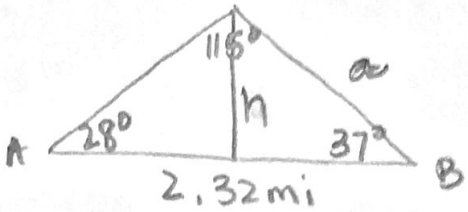


$\frac{\sin 91°}{25} = \frac{\sin 37°}{b}$ $b \approx \boxed{15.05 \text{ miles}}$ from metorologist A

$\frac{\sin 91°}{25} = \frac{\sin 52°}{a}$ $a \approx \boxed{19.7 \text{ miles}}$ from metorologist B

$\sin 37° = \frac{h}{a}$ $h \approx \boxed{11.9 \text{ miles from the road}}$

(40)

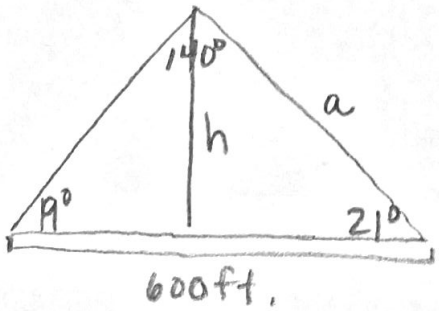


$$\frac{\sin 115^\circ}{2.32} = \frac{\sin 28^\circ}{a} \qquad a \approx 1.2$$

$$\sin 37^\circ = \frac{h}{a} \qquad h = \boxed{.72 \text{ miles}}$$

$$a \sin 37^\circ = h$$

(43)



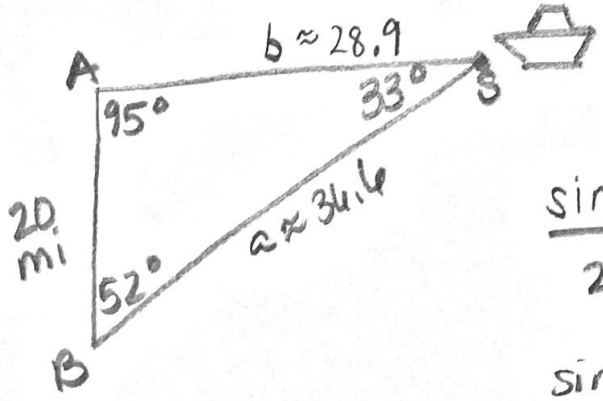
$$\frac{\sin 140^\circ}{600} = \frac{\sin 19^\circ}{a} \qquad a \approx 303.896$$

$$\sin 21^\circ = \frac{h}{a} \qquad h \approx$$

The flag pole is approx. 108.9 ft. tall.

$$a \sin 21^\circ = h$$

(45)



$$\frac{\sin 33^\circ}{20} = \frac{\sin 52^\circ}{b}$$

28.9 mi to lighthouse A.

$$\frac{\sin 33^\circ}{20} = \frac{\sin 95^\circ}{a}$$

36.6 mi. to lighthouse B