

HOMEWORK...

Worksheet - Ambiguous Case.pdf

Do questions #1, 2, 4a, 5a, 6, 7

MEMORIZE!!!

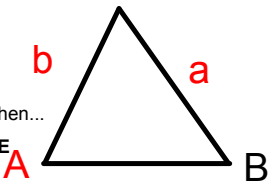
Criteria for the Ambiguous Case...

- Must be given SSA
- Given angle is acute
- $a < b$

*** If ALL 3 criteria are met, then...

CALCULATE THE ALTITUDE

$alt = b \sin A$



CASE 1: $a < alt$; there is NO SOLUTION

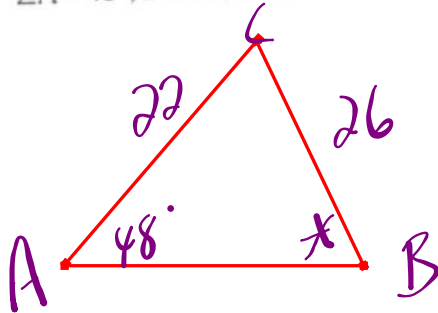
CASE 2: $a = alt$; there is ONE SOLUTION [Right Triangle]

CASE 3: $a > alt$; this is the 'AMBIGUOUS CASE'...TWO SOLUTIONS

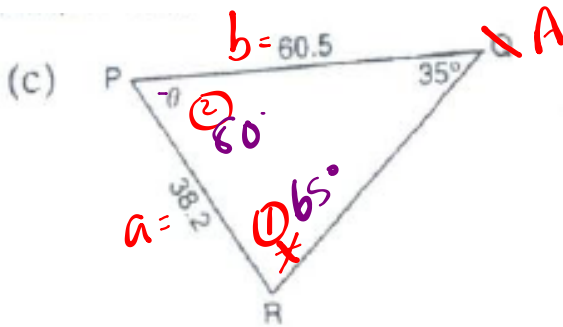
- 1) Acute Triangle (angle, θ , is found with Law of Sines)
- 2) Obtuse Triangle (angle is $180^\circ - \theta$)

QUESTIONS?

(b) $\angle A = 48^\circ, a = 26, b = 22$



✓ ~~X~~ SSA
 ✓ acute angle
~~X~~ $a < b$
 ↳ one solution



* SSA
 ✓ acute angle
 ✓ $a < b$
 $\boxed{\text{alt} = b \sin A}$
 $\text{alt} = 60.5 \sin 35^\circ$
 $\text{alt} = 34.70$

$$\frac{60.5 \sin R}{60.5} = \frac{60.5 \sin 35^\circ}{38.2}$$

$$\sin R = \frac{60.5 \sin(35) / 38.2}{60.5}$$

$R = \sin^{-1}(\text{Ans}) = 65.28694508$

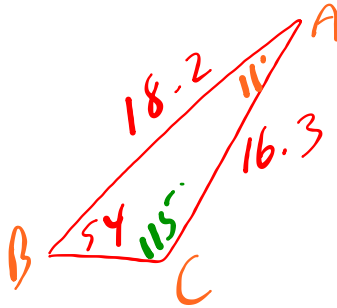
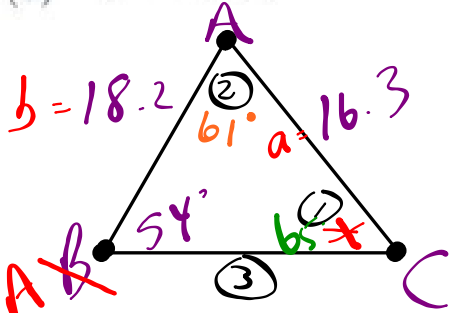
* $\angle R = 65^\circ$ OR
 $\boxed{\angle P = 80^\circ}$

a vs alt
 $38.2 > 34.70$
 * ambiguous case
 (2 solutions)

$\angle R = 180 - 65^\circ$
 $\angle R = 115^\circ$
 $\angle P = 180 - 35 - 115$
 $\boxed{\angle P = 30^\circ}$

S Solve

(c) $b = 16.3, c = 18.2, \angle B = 54^\circ$



✓ ~~SSA~~
 ✓ acute
 ✓ $a < b$
 $alt = 18.2 \sin 54$
 $alt = 14.7$
 a vs alt
 $16.3 > 14.7$
~~ambiguous~~

$$\frac{18.2 \sin C}{18.2} = \frac{\sin 54}{16.3}$$

$$\sin C = \frac{18.2 \sin(54)}{16.3}$$

9033195888
 $\sin^{-1}(Ans)$
 64.59790238

LC = 65°
~~LC = 65°~~
 $\angle A = 61^\circ$

$$18.2^2 + 16.3^2 - 2 * 18.2 * 16.3 * \cos(61)$$

309.2827561
 $\sqrt{(Ans)}$
 17.58643671

$a = 17.59$

OR

LC = $180 - 65$
 $LC = 115^\circ$
 $LA = 11^\circ$

$$\frac{a \sin 11}{\sin 11} = \frac{16.3 \sin 11}{\sin 54}$$

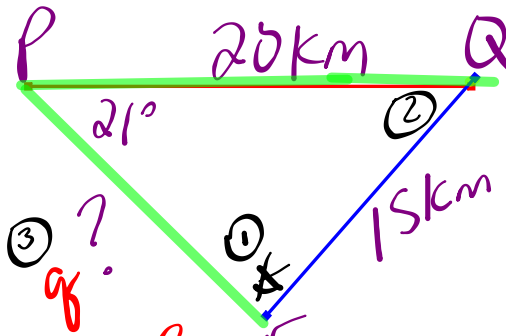
$a = 3.84$

6 Two forest fire stations, P and Q, are 20.0 km apart. A ranger at station Q sees a fire 15.0 km away. If the angle between the line PQ and the line from P to the fire is 21°, find how far station P is from the fire.

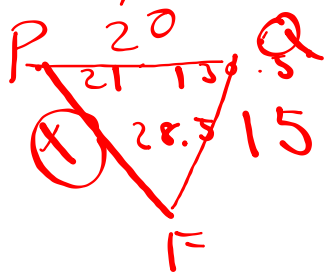
$$\frac{\sin F}{20} = \frac{\sin 21}{15}$$

Calculator input: $\sin^{-1}(\frac{20 \sin(21)}{15})$
 Answer: 28.54337582

~~LF = 29°~~

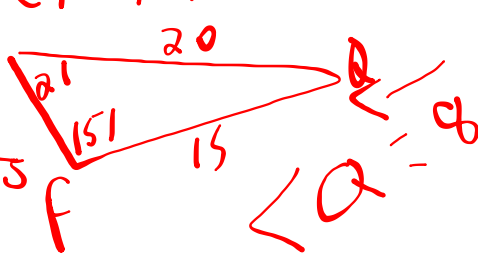


*SSA
 ✓acute
 ✓a < b
 alt = 20 sin 21
 alt = 7.2
 a vs alt
 15 > 7.2
 *ambiguous



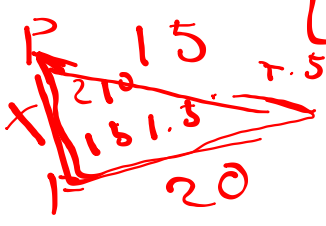
$\angle Q = 180 - (21 + 28.5)$
 $\angle Q = 130.5$
 $x = \frac{20 \cdot \sin 130.5}{\sin 28.5}$

$x = 31.9 \text{ km}$



$\frac{x}{\sin 7.5} = \frac{20}{\sin 28.5}$
 $x = \frac{20 \cdot \sin 7.5}{\sin 28.5}$

$x = 5.5 \text{ km}$



Review for Test - Lots of Practice from the Textbook!!!

**Chapter Review...
(Frequently Asked Questions)**

**Page 128
Page 153
Page 174
Page 199**

} *Chp. 3*
} *Chp. 4*

Thurs Test!!

Practice Questions...

** Ambiguous case → 4.3*

Bearing #11, 12 →
Bearing #8 →

**Page 129 #1 - 9
Page 154 #1 - 12
Page 175 #1 - 9
Page 200 #1 - 8**

} *Chp. 3*
} *Chp. 4*

Practice Tests...

**Page 152 #1 - 8
Page 198 #1 - 7**

Chp. 3
Chp. 4

Attachments

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