MUST

MEMORIZE

THESE

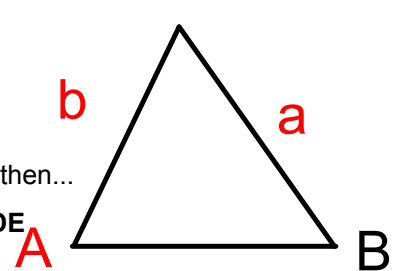**NOTES**

IN ORDER

TO KNOW

AMBIGUOUS

CASE

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

b   a

A   B

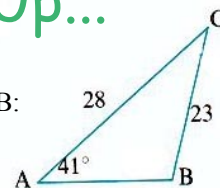**CASE 1**: a < altitude; there is <u>NO SOLUTION</u>

CASE 2: a = altitude; there is <u>ONE SOLUTION</u> [Right Triangle]

CASE 3: a >altitude; this is the '<u>AMBIGUOUS CASE'...TWO SOLUTIONS</u>

       1) Acute Triangle (angle, θ, is found with Law of Sines)

       2) Obtuse Triangle (angle is $180^{\circ} - \theta$)
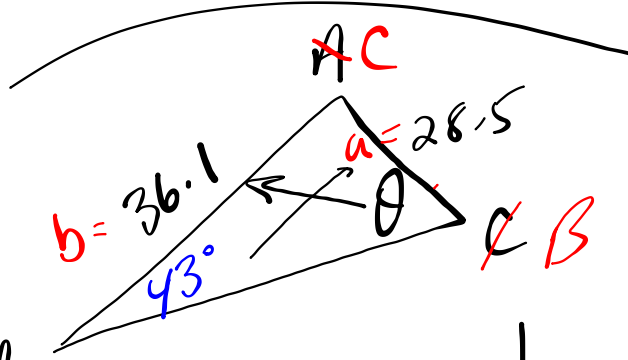
Back to the Warm-Up...

Determine the measure of the obtuse angle B:

C

28   23

A 41°   B

Homework Questions

4a)

AC

$b = 36.1$

$a = 28.5$

θ

43°

C B

✓ *SSA

✓ – angle acute

✓ – $a < b$

$h = b \sin A$

$h = 36.1 \sin 43°$

$h = 24.6$

36.1 A B

$$\frac{\sin C}{36.1} = \frac{\sin 43°}{28.5}$$

$\sin^{-1} \sin C = (0.8639)$

$\cancel{\angle C = 60°}$ or $\angle C = 120°$

$180 - 60$

a **vs** h

$28.5 > 24.6$

✗ Ambiguous
(2 solutions)

4c)

$b = 60.5$ Q A

$35°$

②0   P

$65°$ ①

$a = 38.2$

R B
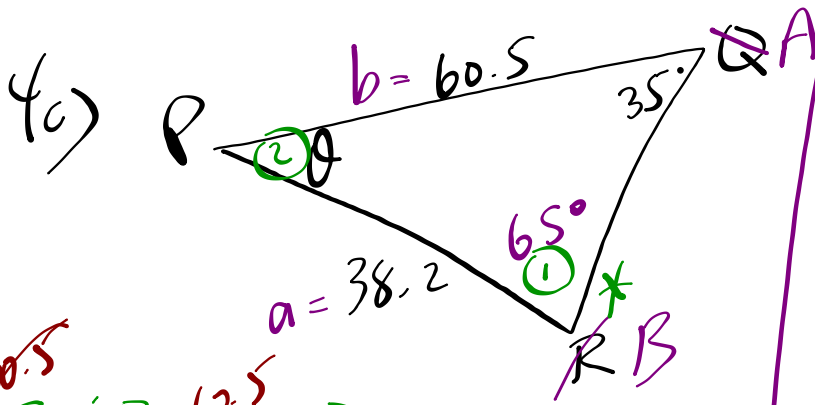
$*$ SSA

$\checkmark$ acute

$\checkmark$ a < b

alt = $60.5 \sin 35$

alt = 34.7

a   vs   alt

$38.2 > 34.7$

$\dagger$ Ambiguous

b) 2 solutions

① $\dfrac{\sin R}{60.5} = \dfrac{\sin 35}{38.2}$ $^{60.5}_{60.5}$ $^{60.5}$

$\sin^{-1} \sin R = (0.9084)$

$\cancel{\times}(\angle R = 65°)$ OR $\angle R = 115°$

60.5 Q

35

P ②$80°$

R

38.2

60.5 35 Q

P ②$30°$ 115 R

38.2
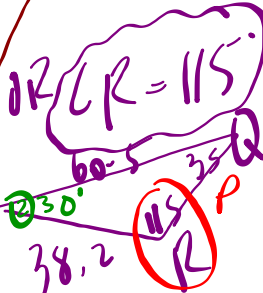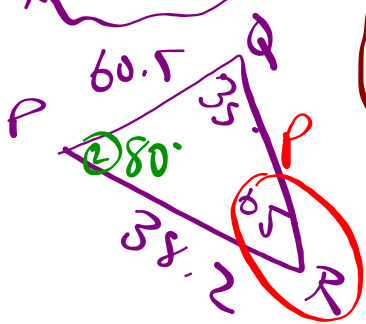
$\angle P = 180$
$\quad\quad -65$
$\quad\quad -35$
$(\angle P = 80°)$

$\angle P = 180$
$\quad -115$
$\quad -35$
$(\angle P = 30°)$

$\dfrac{P \sin 80°}{\sin 80°} = \dfrac{38.2 \sin 80°}{\sin 35°}$ OR

$(P = 65.6)$

$\dfrac{P \sin 30°}{\sin 30°} = \dfrac{38.2 \sin 30°}{\sin 35°}$

$(P = 33.3)$

The Ambiguous Case of the Law of Sines

Ambiguous Case Slide Show.ppt

am·big·u·ous 🔊 [am-**big**-yoo-*uh* s] ❓ Show IPA
adjective
1.   open to or having several possible meanings or interpretations; equivocal: *an ambiguous answer.*
2.   *Linguistics* . (of an expression) exhibiting constructional homonymity; having two or more structural descriptions, as the sequence *Flying planes can be dangerous.*
3.   of doubtful or uncertain nature; difficult to comprehend, distinguish, or classify: *a rock of ambiguous character.*
4.   lacking clearness or definiteness; obscure; indistinct: *an ambiguous shape; an ambiguous future.*

AMBIGUOUS PRONOUNS

AMBIGUOUS PRONOUNS EVERYWHERE

HOMEWORK...

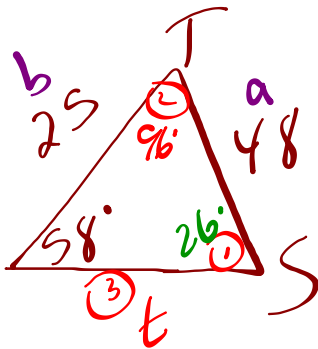**Worksheet - Ambiguous Case.pdf**

#5
Page 184: #1, #5, #8

Warm Up

Given $\triangle RST$ has angle R = 58° , r = 48 and s = 25.
Solve the triangle, if there is more than one possible, solve both!!

✓ SSA
✓ given acute
✗ a < b

① $\dfrac{\sin S}{25} = \dfrac{\sin 58}{48}$

$\sin^{-1} \sin S = \sin^{-1}(0.4417)$

$\boxed{\angle S = 26^\circ}$

② $\angle T = 180$
$\quad - 26$
$\quad - 58$
$\boxed{\angle T = 96^\circ}$

③ $\dfrac{t \sin 96}{\sin 96} = \dfrac{48 \sin 96}{\sin 58}$

$\boxed{t = 56.3}$

Attachments

Ambiguous Case Slide Show.ppt

Worksheet - Ambiguous Case.pdf