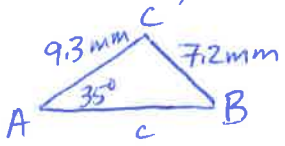
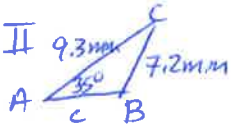
U5/L9 p318 #5

5. a) $a = 7.2\text{mm}, b = 9.3\text{mm}, \angle A = 35°$ ∵ $b\sin A = 5.3$ and $b\sin A < a < b$

∴ 2 triangles

I 

II 

I (i) $\frac{\sin B}{b} = \frac{\sin A}{a}$

$\frac{\sin B}{9.3} = \frac{\sin 35}{7.2}$

$\boxed{\angle B \doteq 48°}$

(ii) $\boxed{\angle C \doteq 97°}$ (AST)

(iii) $\frac{c}{\sin C} = \frac{a}{\sin A}$

$\frac{c}{\sin 97°} = \frac{7.2}{\sin 35°}$

$\boxed{c \doteq 12.5\text{ mm}}$

II (i) $\angle B = 180° - 48°$

$\boxed{\angle B = 132°}$

(ii) $\boxed{\angle C = 13°}$ (AST)

(iii) $\frac{c}{\sin C} = \frac{a}{\sin A}$

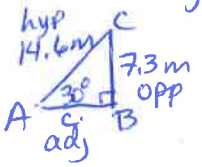
$\frac{c}{\sin 13°} = \frac{7.2}{\sin 35}$

$\boxed{c \doteq 2.8\text{mm}}$

5. b) $a = 7.3\text{m}, b = 14.6\text{m}, \angle A = 30°$

∵ $b\sin A = 7.3\text{m}$ and $b\sin A = a$

∴ 1 right Δ



(i) $\boxed{\angle C = 60°}$ (AST), $\angle B = 90°$

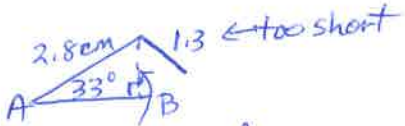
(ii) $\cos 30° = \frac{c}{14.6}$

$\boxed{c \doteq 12.6\text{m}}$

5. c) $a = 1.3\text{cm}, b = 2.8\text{cm}, \angle A = 33°$

∵ $b\sin A = 1.5\text{ cm}$ and $a < b\sin A$

∴ no triangle/sol^n

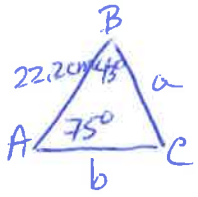


$h = b\sin A$

$= 1.5\text{cm}$

→

5.d) $c = 22.2\text{cm}$, $\angle A = 75^\circ$, $\angle B = 43^\circ$ ← 2 angles + 1 side, no ambiguity



(i) $\angle C = 62^\circ$ (AST)

(ii) $\frac{a}{\sin A} = \frac{c}{\sin C}$

$\frac{a}{\sin 75^\circ} = \frac{22.2}{\sin 62^\circ}$

$a \doteq 24.3$ cm

(iii) $\frac{b}{\sin B} = \frac{c}{\sin C}$

$\frac{b}{\sin 43^\circ} = \frac{22.2}{\sin 62^\circ}$

$b \doteq 17.1$ cm