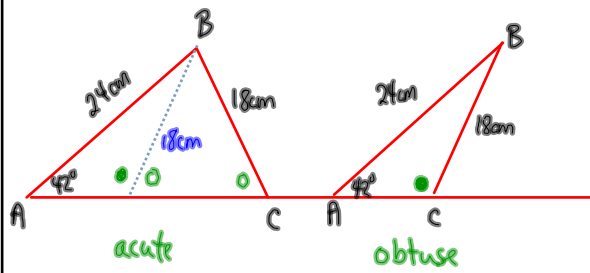
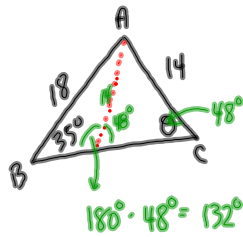


Ambiguous Case of Law of Sines (SSA)



There are two possible angles for C \odot or \ominus
add to 180°

Example



Two possible solutions:
 48° and 132°

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{14}{\sin 35^\circ} = \frac{18}{\sin \theta}$$

$$18 \sin 35^\circ = 14 \sin \theta$$

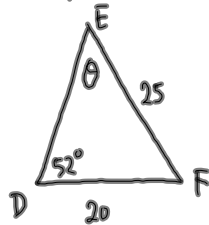
$$\sin \theta = \frac{18 \sin 35^\circ}{14}$$

$$\sin \theta = 0.7375$$

$$\theta = \sin^{-1}(0.7375)$$

$$\theta = 48^\circ$$

Example



$$\frac{d}{\sin D} = \frac{e}{\sin E}$$

$$\frac{25}{\sin 52^\circ} = \frac{20}{\sin \theta}$$

$$25 \sin \theta = 20 \sin 52^\circ$$

$$\sin \theta = \frac{20 \sin 52^\circ}{25}$$

$$\sin \theta = 0.6304$$

$$\theta = \sin^{-1}(0.6304)$$

$$\theta = 39^\circ \leftarrow \text{This is the only solution}$$

The other angle might be:

$$180 - 39^\circ = 141^\circ$$

If angle E is 141° and angle D is 52° } impossible

* Use caution when solving for an angle using the law of Sines. There may be more than one solution. (SSA)

From HW

On board:

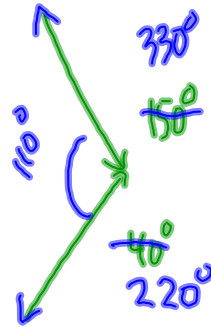
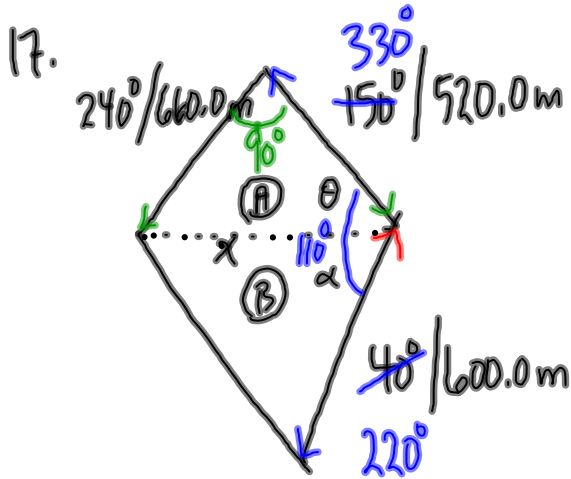
a) 8.3

b) 13.9

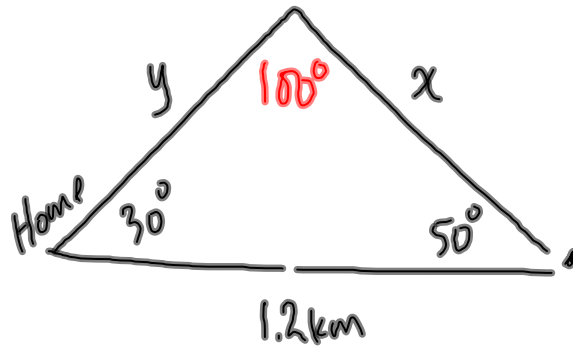
c) 28.5

p 254 / (17) 385 400 m²

p 257 / 3-5 3a) 76° 4a) 14 5. 1.5km



5.



$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

$$\frac{1.2}{\sin 100} = \frac{x}{\sin 30}$$

$$x \sin 100 = 1.2 \sin 30$$

$$x = \frac{1.2 \sin 30}{\sin 100}$$

$$x = 0.61 \text{ km}$$

$$\frac{a}{\sin A} = \frac{c}{\sin C}$$

$$\frac{1.2}{\sin 100} = \frac{y}{\sin 50}$$

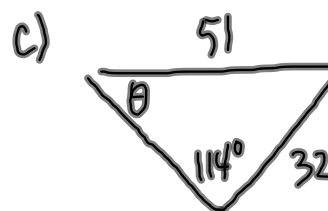
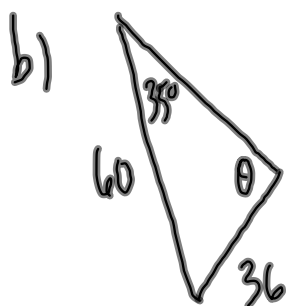
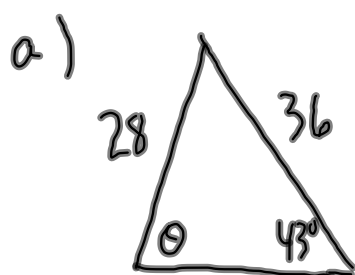
$$y \sin 100 = 1.2 \sin 50$$

$$y = \frac{1.2 \sin 50}{\sin 100}$$

$$y = 0.93 \text{ km}$$

$$\text{TOTAL: } 0.61 \text{ km} + 0.93 \text{ km} \\ \approx 1.5 \text{ km}$$

Try These



- Go back to #17 and try again
- Study for your C.C.