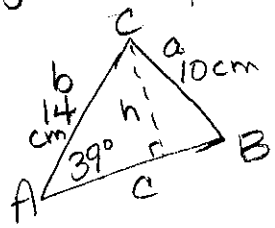
Pre-Calculus Math 11

page 108 part 2 #6, 7, 10-14

6. a)



This is SSA so the ambiguous case applies. $\angle A$ is acute

$h = b \sin A$

$h = 14 \sin 39°$

$h = 14(0.62932)$

$h = 8.8$

$8.8 < 10 < 14$

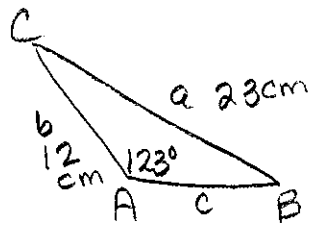
$h < a < b$

OR $b \sin A < a < b$

so two solutions

Look at the key ideas on p. 107

b)



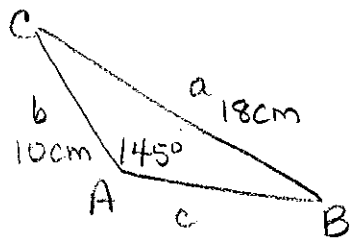
SSA. $\angle A$ is obtuse

$23 > 12$

so $a > b$

one solution

c)



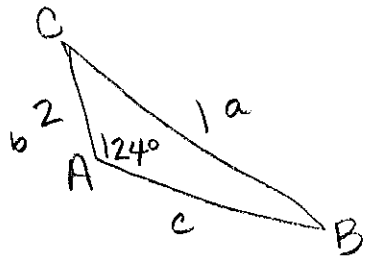
SSA $\angle A$ is obtuse

$18 > 10$

so $a > b$

one solution

d)



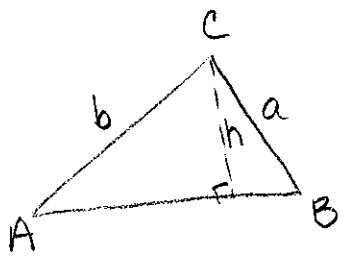
SSA $\angle A$ is obtuse

$1 < 2$

so $a \leq b$

no solution

7. a)

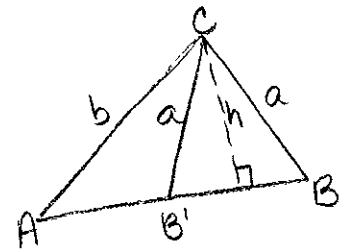


$a > h$

$b > h$

$a > b \sin A$

b)



$a > h$

$b > h$

$a < b$

$a > b \sin A$

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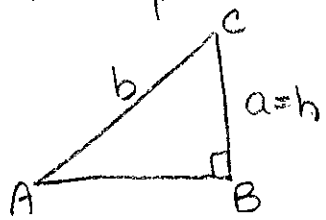
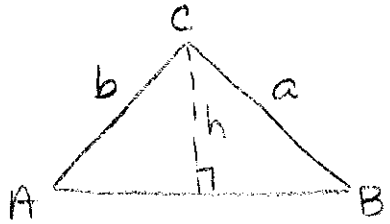
7. c)



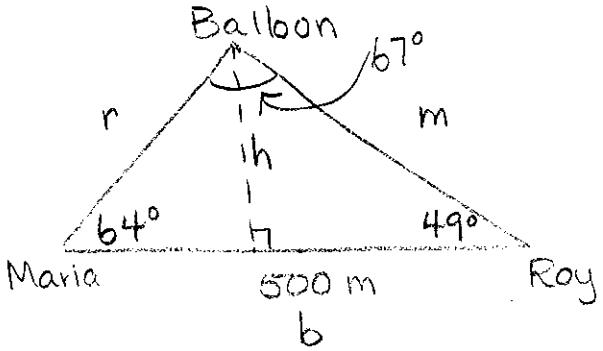
$a = h$
$a < b$
$a = b \sin A$

d)



$a > h$
$b > h$
$a \geq b$
$a > b \sin A$

10. a)



$B = 180° - 49° - 64°$
$B = 67°$

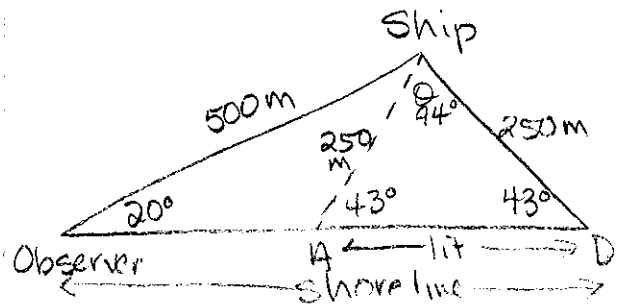
b) distance from maria to balloon is r so

$$\frac{\sin 49°}{r} = \frac{\sin 67°}{500}$$

$$\frac{0.754711}{r} = \frac{0.92050}{500}$$

$377.35479 = 0.92050\,r$
$409.9 = r$
409.9 m

11.



The lit shoreline is from A to D

① find $\angle D$:

$$\frac{\sin D}{500} = \frac{\sin 20°}{250}$$

$$\sin D = \frac{500 \sin 20°}{250}$$

$\sin D = 0.68404$
$\angle D = 43.2°$

② find θ

$\theta = 180° - 43.2° - 43.2°$
$\theta = 93.6$

③ $$\frac{\sin 43.2°}{250} = \frac{\sin 93.6°}{AD}$$

$AD \sin 43.2° = 250 \sin 93.6°$

$$AD = \frac{250 \sin 93.6°}{\sin 43.2°}$$

$$AD = \frac{250\,(0.99803)}{0.684547}$$

$AD = 364.486$
$AD = 364.5$ m

they used more decimal places in the text book answers

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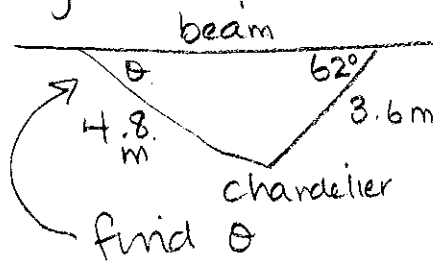
12.



$$\frac{\sin 62^\circ}{4.8} = \frac{\sin\theta}{3.6}$$

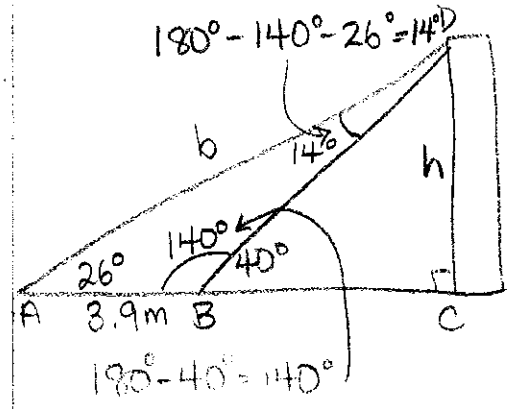
$$\frac{3.6\sin 62^\circ}{4.8} = \sin\theta$$

$$0.662211 = \sin\theta$$

$$41.469 = \theta$$

$$\theta = 41^\circ$$

13.



① $\frac{b}{\sin 140^\circ} = \frac{3.9}{\sin 14^\circ}$

$$b = \frac{3.9\sin 140^\circ}{\sin 14^\circ}$$

$$b = \frac{3.9(0.64279)}{0.24192}$$

$$b = 10.363$$

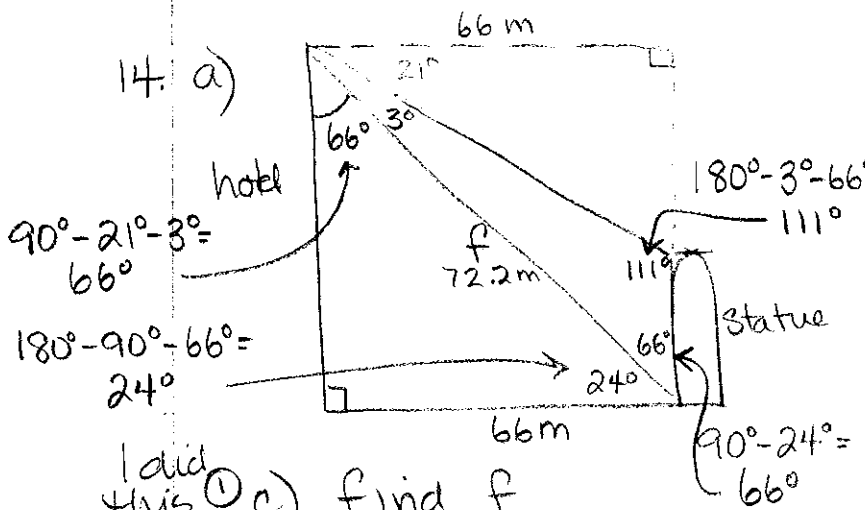
② $h = b\sin A$

$h = 10.363\sin 26^\circ$

$h = 4.54$

$h = 4.5\text{ m}$

14. a)



I did this ① first

c) find f

$$\sin 66^\circ = \frac{66}{f}$$

$$f\sin 66^\circ = 66$$

$$f = \frac{66}{\sin 66^\circ}$$

$$f = \frac{66}{0.913545}$$

$$f = 72.246$$

$$f = 72.2\text{m}$$

② find all the angles

③ b) $\frac{72.2}{\sin 111^\circ} = \frac{\text{statue}}{\sin 3^\circ}$

$$\frac{72.2\sin 3^\circ}{\sin 111^\circ} = \text{statue}$$

$$\frac{72.2(0.05236)}{0.93358} = \text{statue}$$

$$4.049 = \text{statue}$$

$$4.0\text{ m} = \text{statue}$$

they carried more decimal places to get the answer in the text

Note: these problems have several ways they can be done - your work may not look like this!