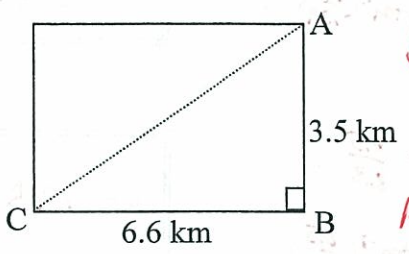


Math 10 Pure  
Trigonometry Hand-In Assignment

For the following questions, show ALL work, then write your answer in the box provided, including the correct units.

- 1. Calculate how much shorter path AC is than walking along path AB and then along path BC. Round your answer to the nearest tenth. [3 marks]

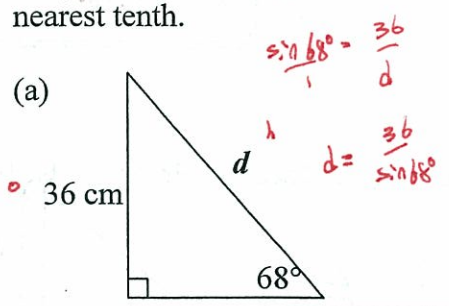


$AC^2 = 6.6^2 + 3.5^2$   
 $\sqrt{AC^2} = \sqrt{55.8}$   
 $AC = 7.47 \text{ km}$   
 $AB + BC = 6.6 + 3.5 = 10.1$

$10.1 - 7.47 = 2.6$

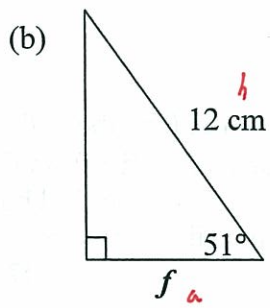
ANSWER: 2.6 km

- 2. Calculate the missing side for each of the following triangles. Round your answers to the nearest tenth. [4 marks]



$\sin 68^\circ = \frac{36}{d}$   
 $d = \frac{36}{\sin 68^\circ}$

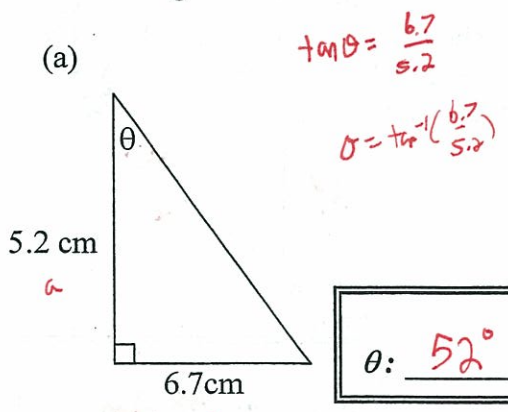
d: 38.8 cm



$\cos 51^\circ = \frac{f}{12}$   
 $f = \cos(51^\circ) \times 12$

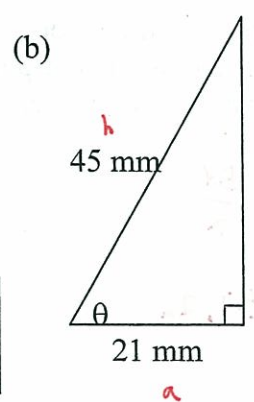
f: 7.6 cm

- 3. Solve for the missing angle in each of the following triangles. Round your answers to the nearest degree. [2 marks]



$\tan \theta = \frac{6.7}{5.2}$   
 $\theta = \tan^{-1}\left(\frac{6.7}{5.2}\right)$

$\theta$ : 52°



$\cos \theta = \frac{21}{45}$   
 $\theta = \cos^{-1}\left(\frac{21}{45}\right)$

$\theta$ : 62°

4. Given the following triangles, solve for all missing sides and/or angles. Round all lengths to the nearest tenth and all angles to the nearest degree. **[6 marks]**

(a)

Handwritten calculations:

$$\tan 53^\circ = \frac{r}{12}$$

$$r = 15.9$$

$$t^2 = 12^2 + 15.9^2$$

$$\sqrt{t^2} = \sqrt{472.6}$$

$$t = 19.9$$

$$\tan S = \frac{12}{15.9}$$

$$S = \tan^{-1}\left(\frac{12}{15.9}\right)$$

$$S = 37^\circ$$

$r = \underline{15.9}$   
 $t = \underline{19.9}$   
 $\angle S = \underline{37^\circ}$

(b)

Handwritten calculations:

$$y^2 = 6.5^2 + 8.3^2$$

$$\sqrt{y^2} = \sqrt{111.14}$$

$$y = 10.5$$

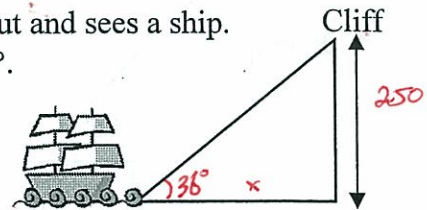
$$\tan X = \frac{6.5}{8.3}$$

$$X = \tan^{-1}\left(\frac{6.5}{8.3}\right)$$

$$X = 38^\circ$$

$y = \underline{10.5}$   
 $\angle X = \underline{38^\circ}$   
 $\angle Z = \underline{52^\circ}$

5. A person standing on top of a cliff 250 m above the sea looks out and sees a ship. The angle of elevation to the top of the cliff from the ship is  $36^\circ$ . **Complete the diagram below** and use it to find how far it is from the ship to the bottom of the cliff. Express your answer to the nearest metre. **[2 marks]**



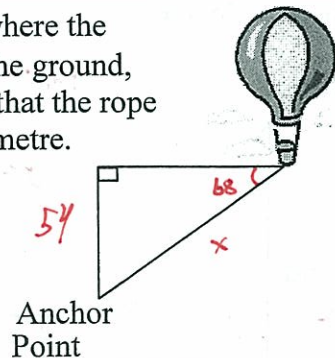
Handwritten calculations:

$$\tan 36^\circ = \frac{250}{x}$$

$$x = 344.1$$

**ANSWER:** 344.1 m

6. From the basket of a hot air balloon, the angle of depression to where the balloon is anchored is  $68^\circ$ . If the hot air balloon is 54 m above the ground, how long is the rope connecting it to the anchor point? Assume that the rope line is straight and express your answer to the nearest tenth of a metre. **[2 marks]**



Handwritten calculations:

$$\sin 68^\circ = \frac{54}{x}$$

$$x = 58.2 \text{ m}$$

**ANSWER:** 58.2 m