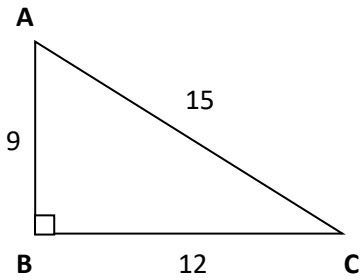


1. State each ratio, in lowest terms, for the triangle below. (1 mark each)



a) $\sin A = \frac{4}{5}$

b) $\cos A = \frac{3}{5}$

c) $\tan C = \frac{3}{4}$

2. State each value to 4 decimal places. (1 mark each)

a) $\sin 65^\circ = 0.9063$

b) $\cos 33^\circ = 0.8387$

c) $\tan 6^\circ = 0.1051$

3. For each given trig ratio, state the angle to 1 decimal place. (1 mark each)

a) $\cos A = 0.7832$

b) $\tan B = 2.362$

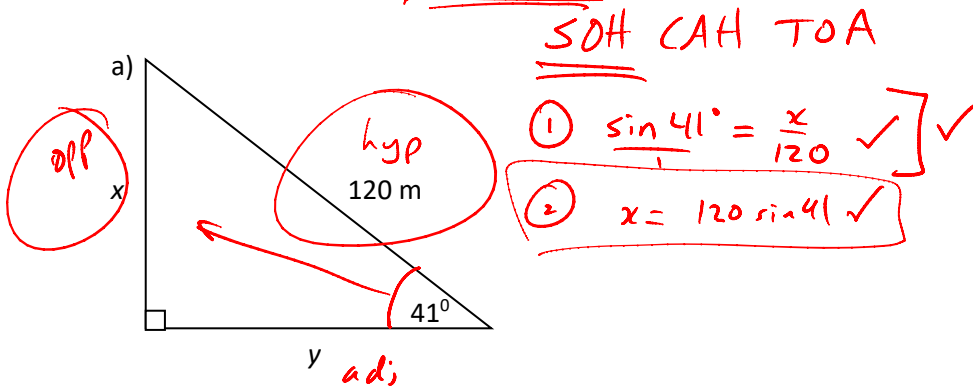
c) $\sin C = \frac{5}{7}$

$\angle A = 38.4^\circ$

$\angle B = 67.1^\circ$

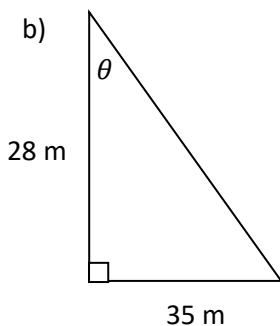
$\angle C = 45.6^\circ$

4. Find indicated unknown to 1 decimal place. Show work. (2 marks each)



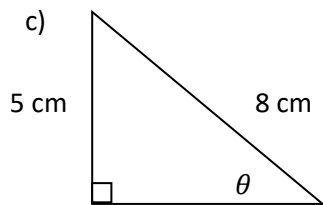
$x = 78.7 \text{ m}$

$y = 90.6 \text{ m}$

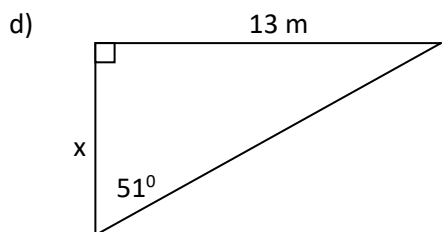


$\tan \theta = \frac{35}{28}$
 $\theta = \tan^{-1}(\frac{35}{28})$

$\theta = 51.3^\circ$



$$\theta = \underline{38.7^\circ}$$



$$x = \underline{10.5 \text{ m}}$$

5. Solve each triangle. Show work (including a diagram). Side lengths to 1 decimal place, angles to the nearest degree. (4 marks each)

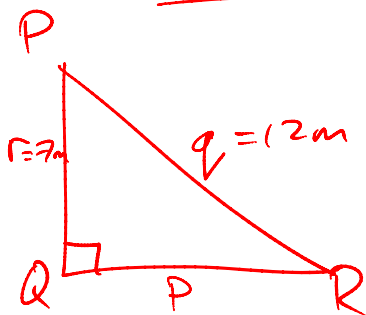
a) $\triangle ABC, \angle B = 90^\circ, \angle A = 35^\circ, AB = 5 \text{ cm}$

$$\angle C = \underline{55^\circ}$$

$$AC = \underline{6.1 \text{ cm}}$$

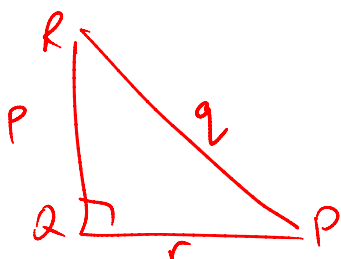
$$BC = \underline{3.5 \text{ cm}}$$

b) $\triangle PQR, \angle Q = 90^\circ, q = 12 \text{ m}, r = 7 \text{ m}$



$$\angle P = \underline{54^\circ}$$

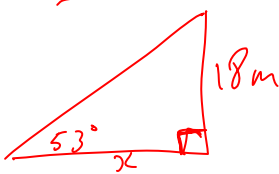
$$\angle R = \underline{36^\circ}$$



$$p = \underline{9.7 \text{ m}}$$

6. Solve each problem. Include a diagram and show all work. Answers to the nearest tenth.

- a) On a sunny day, the angle of elevation of the sun is 53° . A tree, 18 m in height, casts a shadow. How long is the shadow? (3 marks)



$$\tan 53 = \frac{18}{x}$$

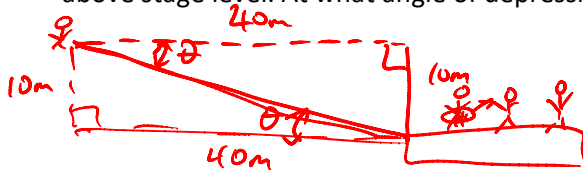
$$x = \frac{18}{\tan 53}$$

$$\underline{13.6\text{m}}$$

- b) A wire 69.8 m in length is attached to the top of a tower. The wire makes an angle of 63° with the ground. How high is the tower? (3 marks)

$$\underline{62.2\text{m}}$$

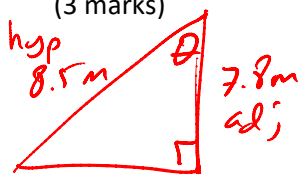
- c) At a stadium concert, Tony is sitting 40 m horizontally away from the stage. He is 10 m vertically above stage level. At what angle of depression is he watching the concert? (3 marks)



$$\tan \theta = \frac{10}{40}$$

$$\theta = \tan^{-1}\left(\frac{10}{40}\right) = \underline{14.0^\circ}$$

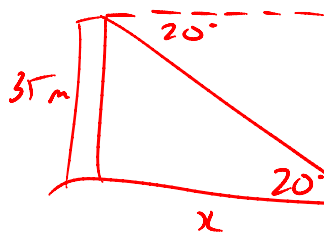
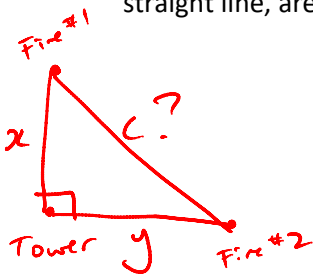
- d) A ladder that is 8.5 m long leans against the wall. The ladder just reaches a window that is 7.8 m above the ground. What is the measure of the angle that the ladder makes with the wall? (3 marks)



$$\cos \theta = \frac{7.8}{8.5}$$

$$\theta = \cos^{-1}\left(\frac{7.8}{8.5}\right) = \underline{23.4^\circ}$$

- e) A forest ranger in a tower 35 m tall spots two fires on the ground. One is due North at an angle of depression of 20° . The second is due East at an angle of depression of 25° . How far apart, in a straight line, are the two fires? (5 marks)



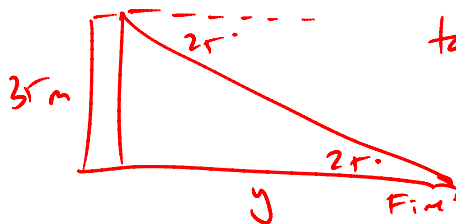
$$\tan 20^\circ = \frac{35}{x}$$

$$x = \frac{35}{\tan 20}$$

$$= \underline{96.16\text{m}}$$

$$96.16^2 + 75.06^2 = c^2$$

$$\sqrt{c^2} = c$$



$$\tan 25^\circ = \frac{35}{y}$$

$$y = \frac{35}{\tan 25}$$

$$= \underline{75.06}$$

$$\underline{122.0\text{m}}$$