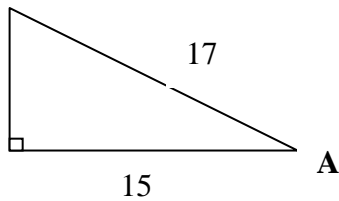
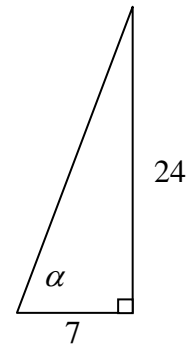


1. Find the length of the unknown side and state the primary trigonometric ratios for the marked acute angles:

a)



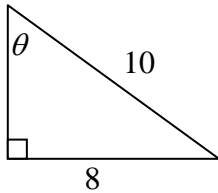
b)



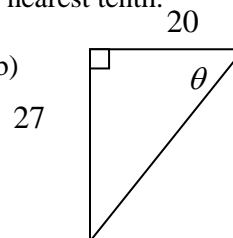
2. If $\cos \theta = \frac{5}{13}$ and θ is an acute angle, determine the other 2 trig ratios for θ .

3. Find the measure of the indicated angle accurate to the nearest tenth:

a)

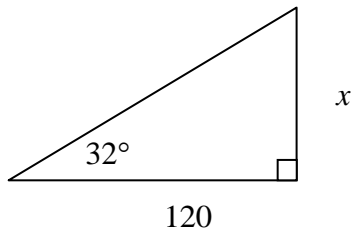


b)

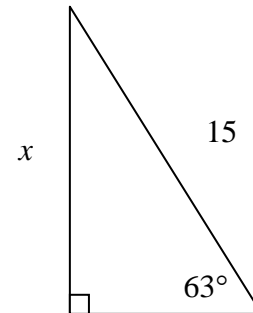


4. Find the length of the indicated side accurate to the nearest tenth:

a)



b)



5. Solve for θ , (to the nearest degree), given that:

a) $\sin \theta = 0.468$

b) $\tan \theta = 1.897$

c) $\cos \theta = 0.263$

d) $\tan \theta = 0.263$

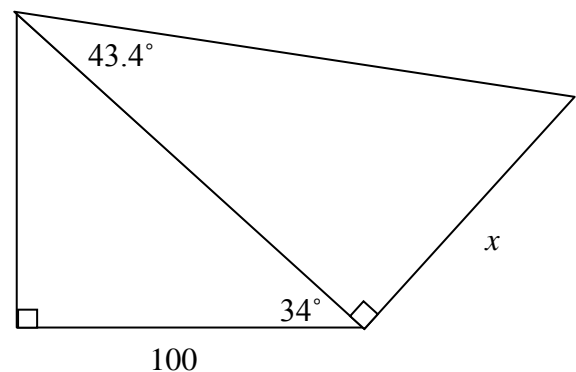
6. Solve the following triangles:(all answers expressed to the nearest tenth)

a) $\triangle ABC, \angle A = 90^\circ, a = 153, b = 107$

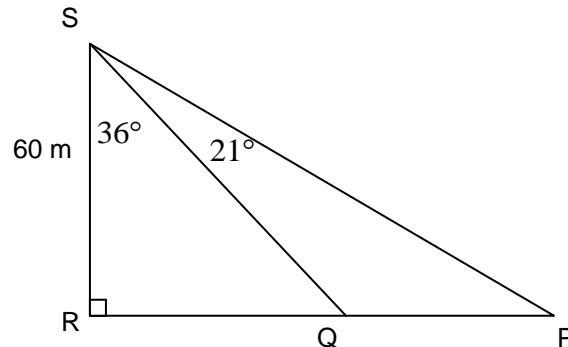
b) $\triangle DEF, \angle E = 90^\circ, \angle D = 35.1^\circ, f = 100$

c) $\triangle ABC, \angle A = 90^\circ, \angle B = 25^\circ, a = 5.65$

7. Determine the value of x in the following diagram:
 (accurate to 1 decimal place)



8. A flagpole casts a shadow of 300 m when the angle of elevation of the sun is 55° . Determine the height of the flagpole to the nearest metre.
9. From a point 120 m from the base of a building, the angles of elevation of the top and bottom of a flagpole attached to the roof of the building are 40° and 35° respectively. Calculate the height of the flagpole.



10. Determine the value of PQ to the nearest metre.

11. The Confederation Bridge joins New Brunswick to Prince Edward Island. From one point on the bridge the angle of elevation of the highest point of the bridge is 27° . From a point 100 metres closer, the angle of elevation is 73° . Determine the height of the bridge to the nearest metre.

12. From the window of one building, Sam determines that the angle of elevation to the top of a neighbouring building is 41° and the angle of depression of the bottom is 54° . If Sam knows that the buildings are 56 metres apart, determine the height of the neighbouring building and the height of Sam's window.
13. A plane is trying to fly due north. After three hours flying, the pilot notices that he is actually on a course of $N21^\circ E$. If he was traveling at an average speed of 350 km/h, how far "off-course" is he?
14. When a pendulum swings 40° from the vertical, the bob moves 20 cm horizontally and 7.3 cm vertically. Determine the length of the pendulum to the nearest centimeter.

Answers

1a. $\sin \angle A = \frac{8}{17}$ $\cos \angle A = \frac{15}{17}$ $\tan \angle A = \frac{8}{15}$ b) $\sin \alpha = \frac{24}{25}$ $\cos \alpha = \frac{7}{25}$ $\tan \alpha = \frac{24}{7}$

2. $\sin \theta = \frac{12}{13}$ $\tan \theta = \frac{12}{5}$ 3. a) $\theta \doteq 53.1^\circ$ b) $\theta \doteq 53.5^\circ$

4. a) $x \doteq 75.0$ b) $x \doteq 13.4$ 5. a) $\theta \doteq 28^\circ$ b) $\theta \doteq 62^\circ$ c) $\theta \doteq 75^\circ$ d) $\theta \doteq 15^\circ$

6. a) $c \doteq 109.36$ $\angle B \doteq 44.4^\circ$ $\angle C \doteq 45.6^\circ$
 b) $\angle F = 54.9^\circ$ $d \doteq 70.28$ $e \doteq 122.23$
 c) $\angle C = 65^\circ$ $b \doteq 2.39$ $c \doteq 5.12$

7. $x \doteq 114.1$ 8. The height is approximately 428 metres. 9. The height is approximately 16.67 metres.

10. 48.80 11. 60.35 12. 77.08m ; 125.76m 13. 382.7 14. 31.14