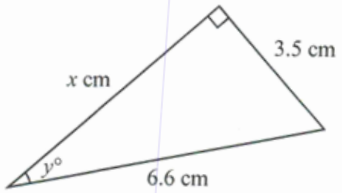
Class Test 1

30

Answer all questions. Show your working clearly.

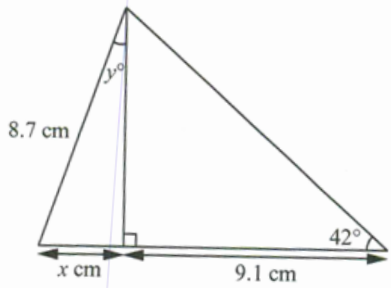
1. Find the value of x and of y in the following diagrams.

(a)



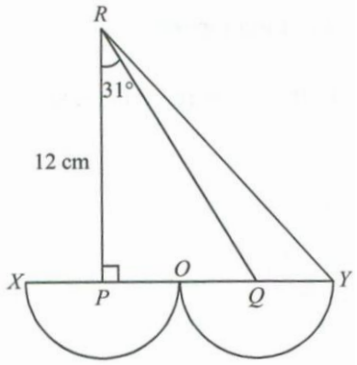
[2]

(b)



[3]

2. The diagram below shows P and Q which are centres of the semicircles respectively and $OP = OQ$. (Take $\pi = 3.142$)



Find

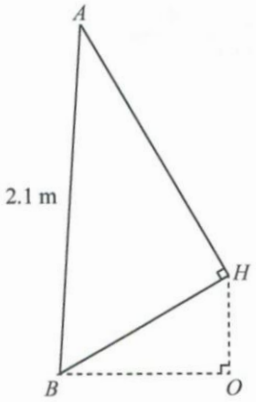
(a) PQ, [1]

(b) RY, [2]

(c) $\angle RYP$, [1]

(d) area of the entire figure. [1]

3. The town council wants to build a new swing in the park as shown in the diagram below. AB is the wooden frame supporting the swing and it is 2.1 m high.



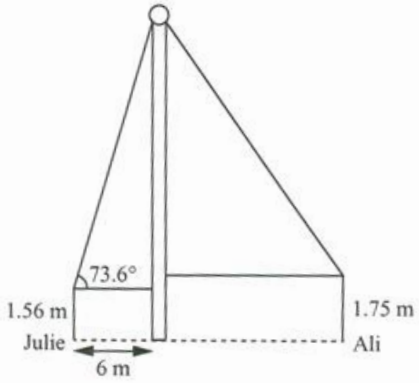
(a) Given that the angle between the frame and the swing, $\angle HAB$, is 33°. Find the length of the swing, AH. [1]

(b) The town council wants to adjust the length of the swing. The height of the frame remains the same. Given that $OH = 45$ cm and $\angle HBO = 25°$, find

(i) the new length of the swing, AH, [2]

(ii) the new angle, $\angle HAB$. [1]

4. Julie and Ali stand on opposite sides of a flagpole as shown in the diagram below. Julie is 1.56 m tall and she is standing 6 m away from the flagpole. Ali is 1.75 m tall. If Julie looks up to the top of the flagpole, her angle of elevation is 73.6°.



(a) Find the height of the flagpole. [2]

(b) If Ali's distance from the flagpole is 2.5 times Julie's distance, find Ali's angle of elevation of the top of the flagpole. [1]

5. Calculate the unknown value in each of the following equations.

(a) $\sin\theta = \frac{17}{21}$ [1]

(b) $\tan 72° = \frac{x}{18.5}$ [1]

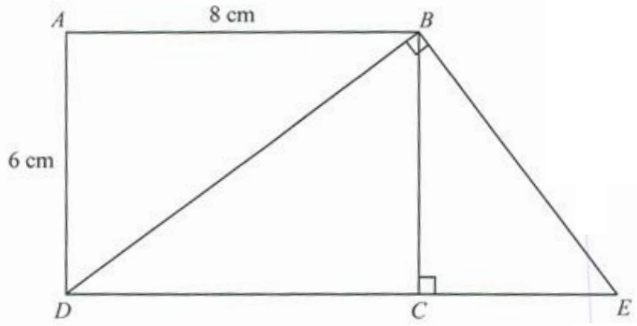
6. In $\triangle PQR$, $\angle PRQ = 90°$. Given that $\cos \angle QPR = 0.6$ and $PQ = 45$ cm, find

(a) QR, [2]

(b) the value of $\tan \angle QPR - \cos \angle PQR$, [2]

(c) $\angle PQR$. [1]

7. The diagram below shows rectangle $ABCD$ and $\angle DBE = \angle BCE = 90°$.



Find

(a) $\angle BDC$, [1]

(b) CE. [2]

8. Alice stands at the top of a tower and looks down at a fire station, P, and a church, Q. The tower, fire station and church lies in a straight line. The angle of depression from Alice to the base of the fire station is 32° and the angle of depression from Alice to the base of the church is 17.6°. The fire station is 448 m from the base of the tower.

(a) Find the height of the tower. [1]

(b) Find the distance between the fire station and the church. [2]