## Class Test 4

30

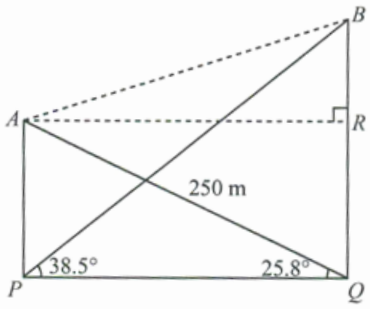
**Answer all questions. Show your working clearly.**

1. Calculate the unknown values in each of the following equations:

   (a) $\cos 82° = \frac{y}{2.5}$ [1]

   (b) $21 \tan \theta = 8.2$ [1]

2. In the diagram below, Ali and Betty stand on top of two separate cliffs, a distance away from each other. Ali is at $A$ and Betty is at $B$. $AQ = 250$ m and the angle of elevation from $Q$ to $A$ is 25.8°. $\angle BPQ = 38.5°$.




   Find

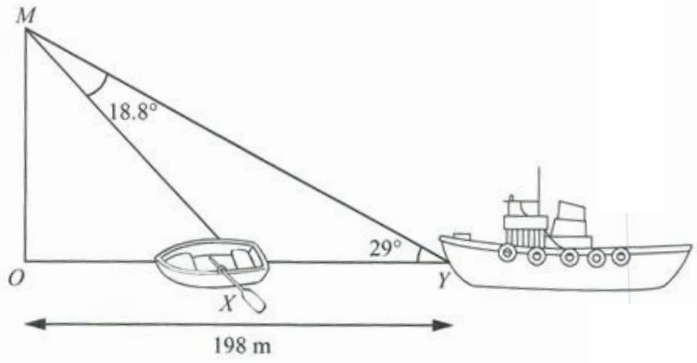
   (a) the distance between the two cliffs, $PQ$, [1]

   (b) the difference in height between the two cliffs, [2]

   (c) the angle of elevation when Ali looks towards Betty. [1]

3. In $\triangle ABC$, $\angle ABC = 90°$. Given that $AB = 24$ cm and $\cos \angle CAB = \frac{3}{4}$, find
   (a) $AC$, [1]
   (b) the value of $\sin \angle CAB + \tan \angle ACB$, [2]
   (c) $\angle ACB$. [1]

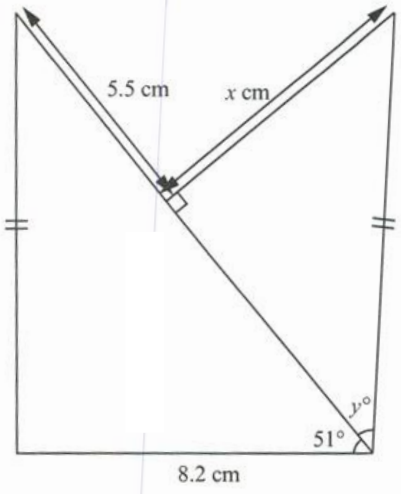
4. In the diagram below, $OM$ is a lighthouse, a small boat is at $X$ and a ship is at $Y$. The ship is 198 m from the base of the lighthouse, the angle of elevation from the ship to the top of the lighthouse is 29° and $\angle XMY = 18.8°$.




Find
   (a) the height of the lighthouse, [1]
   (b) the distance of the ship from the boat. [2]

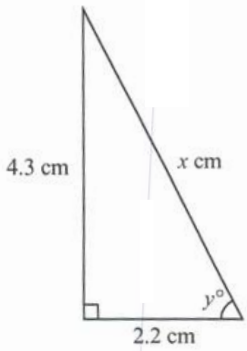
5. Find value of $x$ and of $y$ in the following diagrams.

(a)



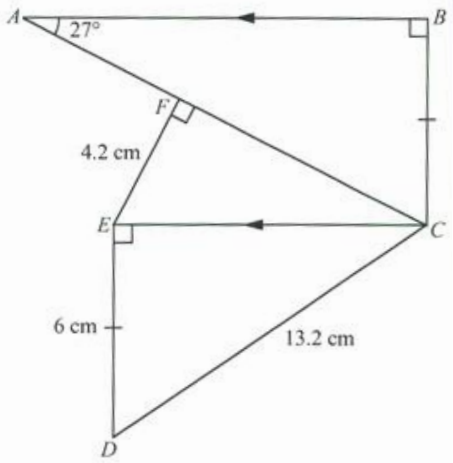

[4]

(b)




[2]

6. In the diagram below, $\triangle ABC$, $\triangle EFC$ and $\triangle DEC$ are right-angled triangles and $BC = ED$.




Find

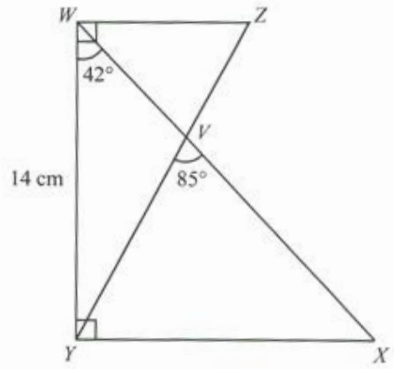
(a) $\angle CDE$, [1]

(b) $FC$, [1]

(c) $AF$, [1]

(d) the area of the entire figure. [3]

7. In the diagram below, $WY = 14$ cm, $\angle YWX = 42°$ and $\angle YVX = 85°$.




Find

(a) $XY$, [1]

(b) $\angle WZY$, [1]

(c) $YZ$. [1]

8. A hot air balloon rises vertically in the air. Tom stands at a distance from the lift-off point of the hot air balloon. As he looks up at the hot air balloon with an angle of elevation of 48°, the hot air balloon is 27 m above the ground.

(a) Find the distance between Tom and the lift-off point. [1]

(b) When Tom looks up a while later, the hot air balloon has risen another 42.5 m. Find the new angle of elevation between Tom and the hot air balloon. [1]