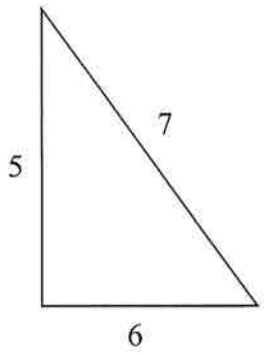
Section B

Right Angled Triangle
(29 marks) **Marks**

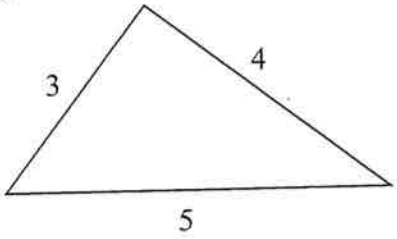
Show all necessary working in the space provided.
For Questions 1 – 2 circle the correct answer.

1. Which of the following is a right-angled triangle?
(None of the diagrams are drawn to scale). **1**

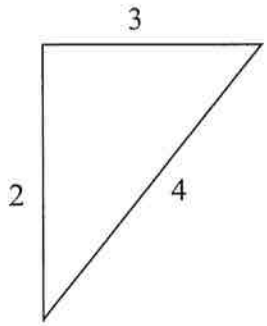
(A)



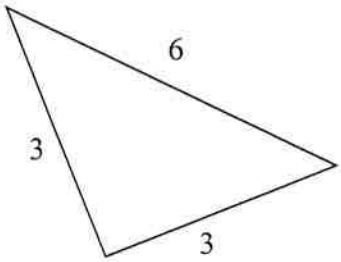
(B)



(C)



(D)



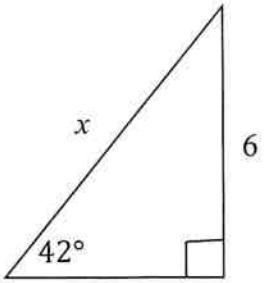
2. The correct expression for the triangle shown is: **1**

(A) $x = \dfrac{6}{\sin 42°}$

(B) $x = 6 \sin 42°$

(C) $x = 6 \tan 42°$

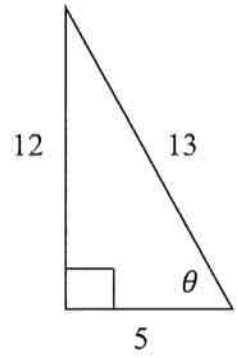
(D) $x = \dfrac{\sin 42°}{6}$



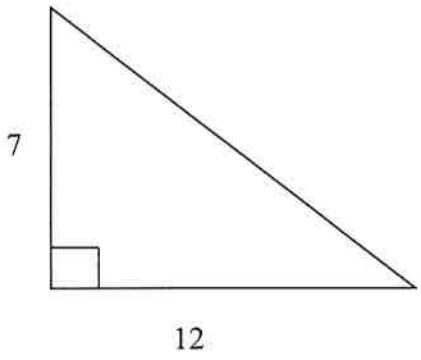
3. Find the value of the acute angle A to the nearest degree if $\cos A = 0.7532$. **1**

Section B (continued) **Marks**

4. Find the value of $\sin\theta$ in the following triangle. **1**



5. Find the length of the hypotenuse in the diagram below, correct to two decimal places. **2**

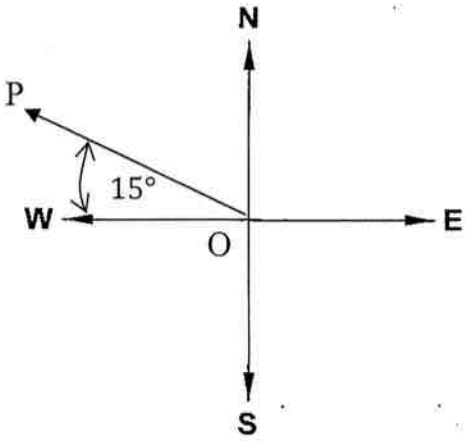


6. If θ is an acute angle and $\cos\theta = \frac{4}{5}$ determine the value of $\sin\theta$. **2**

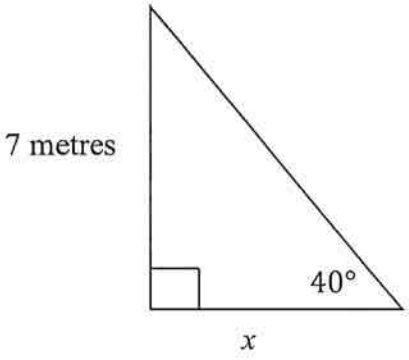
7. A ship is located on a compass bearing of ESE from the port. Write the equivalent true bearing. **1**

Section B (continued) **Marks**

8. Write the true bearing of P from O. **1**

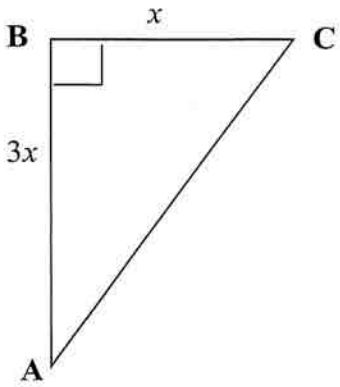


9. For the triangle given below, find the value of x correct to two decimal places. **3**



10. Answer part (i) and part (ii) based on the triangle given below.

(i) Calculate the size of the smallest angle on triangle ABC. Give your answer to the nearest minute. **3**



(ii) If the area of the triangle in part (i) is 30 sq m, find the value of x, in exact form. **2**

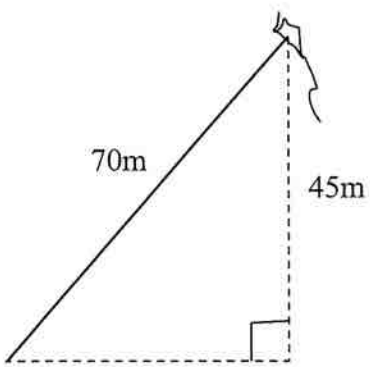
Section B (continued) **Marks**

11. A ladder leaning against a vertical wall reaches 3.5m up the wall and makes an angle of $55^{\circ}16'$ with the ground.

a) Draw a diagram to represent this information. **1**

b) Determine the length of the ladder to the nearest metre. **3**

12. A kite is flying at a height of 45m above the ground at the end of a string of length 70m.

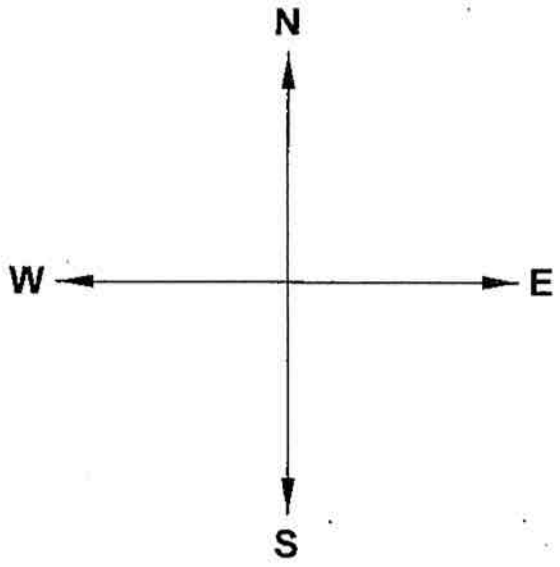


Find the angle of elevation between the string and the ground, to the nearest minute. **3**

Section B (continued) **Marks**

13. A ship 35km from a port A on a bearing of 318°T to a buoy B.

a) Complete the diagram below showing this information. **1**



b) Find how far the ship is north of A. Give your answer correct to the nearest km. **3**

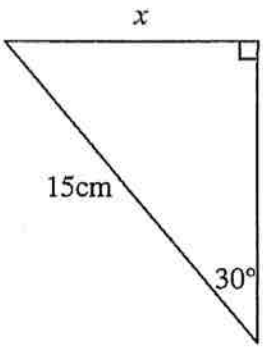
End of Paper

Question 3 – (12 marks) Trigonometry

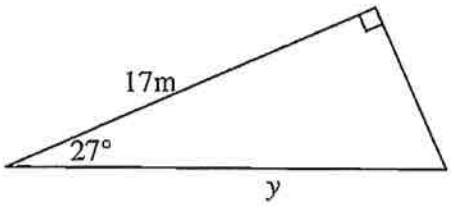
MARKS

(a) Find the value of all pronumerals, correct to 2 decimal places where necessary..

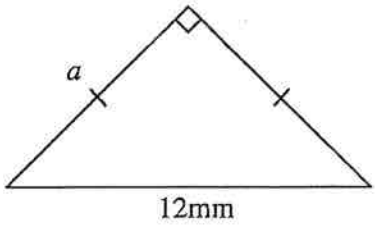
i) 1



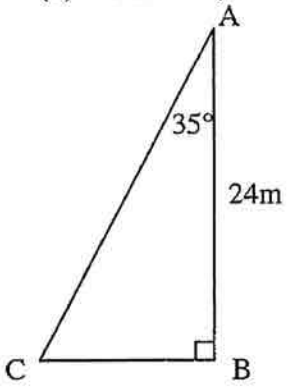
ii) 1



iii) 1



(b) Calculate, correct to the nearest square metre, the area of ΔABC 3



Question 3 (continued)

MARKS

(c) Given $sin\beta = \frac{7}{25}$ find the exact value of $cos\beta$, leaving your answer as a fraction. 2

(d) Standing 90m away from the base of a Ferris wheel, Juan looks up and observes the top of the Ferris wheel on an angle of elevation of 28°. How high is the Ferris wheel, to the nearest metre? 2

(e) Two runners, Alicia (A) and Benedict (B), set out from the same starting point. Alicia runs due north for 800m, then stops, while Benedict runs on a bearing of 050°, stopping when he reaches the point due east of Alicia.

i) Draw a diagram representing this information, showing the positions of A, B and the starting point. 1

ii) How far apart are the two runners, to the nearest metre? 1

Section B

Right-Angled Triangles (30 marks) Marks

Show all necessary working in the space provided.
For Questions 1 – 4 circle the correct answer. 3

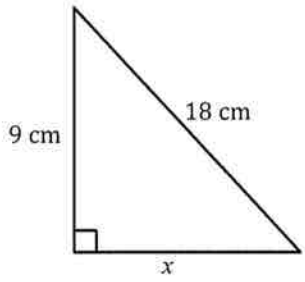
1. The length of the side marked x in this triangle is closest to:

(A) 20.12 cm

(B) 15.6 cm

(C) 9 cm

(D) 27 cm



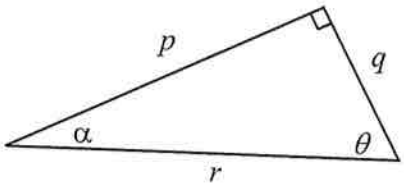
2. Which trigonometric ratio for the triangle shown is <u>incorrect</u> ?

(A) $\sin \alpha = \frac{q}{r}$

(B) $\cos \theta = \frac{q}{r}$

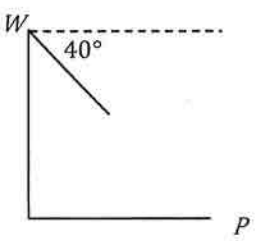
(C) $\tan \alpha = \frac{p}{q}$

(D) $\tan \theta = \frac{p}{q}$

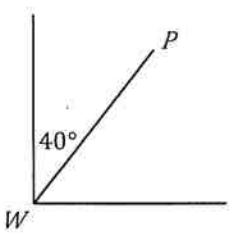


3. In which diagram is the angle of depression of P from W equal to $40°$?

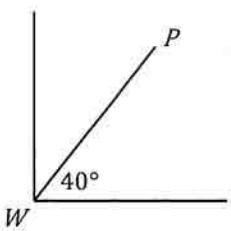
(A)



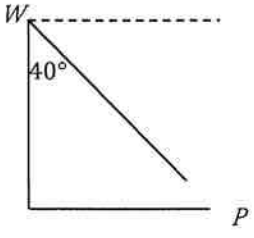
(B)



(C)



(D)



End of Multiple Choice

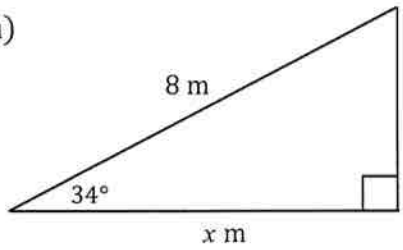
Section B (continued) **Marks**

5. Evaluate $\cos 63°29'$ correct to 2 decimal places. 1

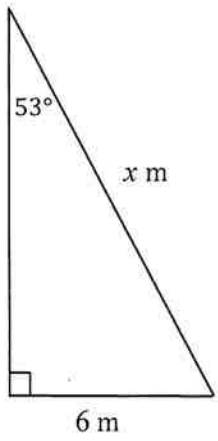
6. Convert $S\ 58°\ W$ to a true bearing. 1

7. Find the value of x correct to 1 decimal place.

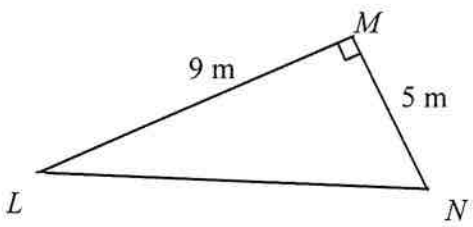
(a) 2



(b) 2



8. What is the size of $\angle$LNM to the nearest minute. 2

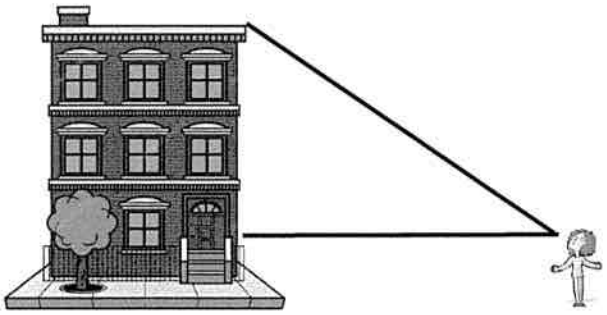


Section B (continued) **Marks**

9. An observer, who is standing 35m from a building, measures the angle of elevation of the top of the building as 16°.

If the observer's eye is 158 cm above ground level :

(a) Label the given diagram with all the above information. 1



(b) What is the height of the building correct to the nearest centimetre? 2

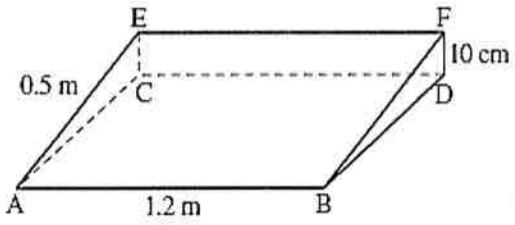
10. A hiker travels 4.3 km on a bearing of 285°T.

(a) Draw a diagram of this information. 1

(b) How far west has she travelled from her starting point? 2
Answer correct to the nearest metre.

Section B (continued) **Marks**

11. A diagram of a desk top of length 1.2m and width 0.5m rising to 10cm is shown.

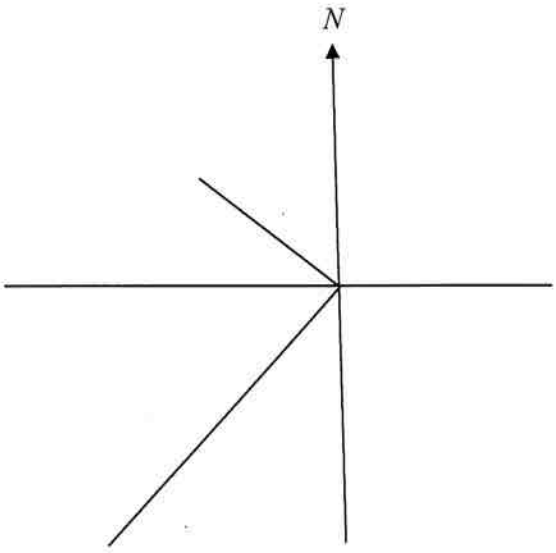


(a) Find the exact length of CB. 2

(b) Find $\angle CBE$ correct to the nearest degree. 2

12. A life raft (L) is 10km from a port (P) on a bearing of 340°.
A rescue vessel (V) is 30km from the same port on a bearing of 250°.

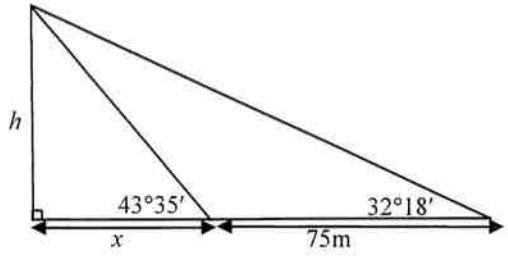
(a) Complete the following diagram to illustrate this information. 2



(b) Calculate the bearing of the life raft (L) from the rescue vessel (V). 2

Section B (continued) **Marks**

13. A surveyor decides to measure the angle of elevation of the top of the building from different sites, which are 75m apart. This information is shown in the given diagram.



(a) Show that $h = x \tan 43° 35'$ 1

(b) Using the larger right-angled triangle, write another expression for h in terms of x. 1

(c) Hence, find the height of the building correct to 1 decimal place. 3

End of Paper