SECTION A

[40 marks]

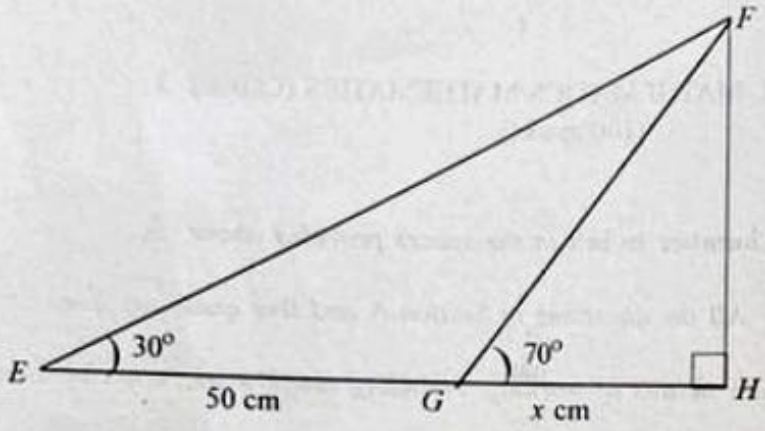
Answer **all** *the questions in this section.* **All** *questions carry* **equal** *marks.*

1. Adama rode a bicycle for 45 minutes and walked for an hour to cover a total distance of 10.4 km. If the riding speed is 3 times the walking speed, find, correct to **two** significant figures, the:

   (*a*) walking speed;

   (*b*) distance travelled by riding.

2.



NOT DRAWN TO SCALE

In the diagram, *EFH* is a triangle, $|\overline{EG}| = 50$ cm and $|\overline{GH}| = x$ cm . Find , correct to **one** decimal place,:

(*a*) the value of x;

(*b*) $|\overline{FH}|$.

3. A man travels 4 km from a point **A** on a bearing of 135° to **B**. He continues 13 km on a bearing of 045° to **C**.

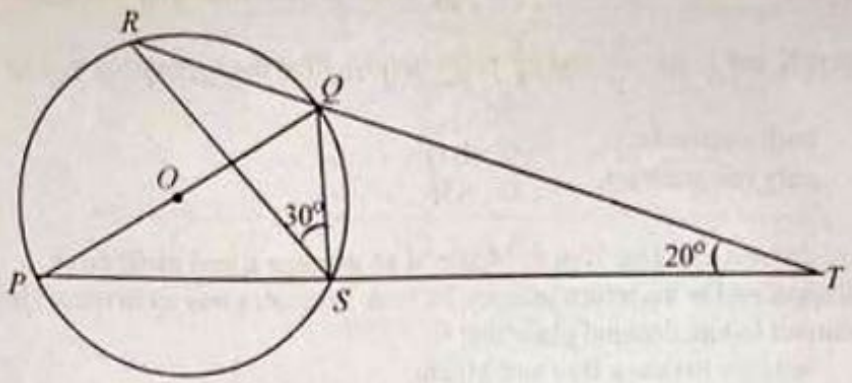
   (*a*) Illustrate the information in a diagram.

   (*b*) Find:

   (i) correct to **two** significant figures, $|\overline{AC}|$;

   (ii) the bearing of **C** from **A**.

4.



NOT DRAWN TO SCALE

In the diagram, P, R, Q and S are points on a circle centre O. T is a point outside the circle such that $\angle RTP = 20°$, $\angle QSR = 30°$ and $\overline{PQ}$ is a diameter. Calculate:

(*a*) $\angle QRS$;

(*b*) $\angle PQS$.

5. The mean age, in years, of m students in a class was 17.6. At the end of the academic year, 4 students aged 16, 19, 20 and 17 were dismissed. The new mean age of the class became 0.2 less than the original mean. Find the value of m.

SECTION B

[60 marks]

Answer **five** *questions* **only** *from this section.* **All** *questions carry* **equal** *marks.*

6. (*a*) Two towns, P and Q on the equator are on longitude 67 °E and 123 °E respectively.

(i) Illustrate the information in a diagram.

(ii) Find the distance between P and Q along the equator.

(iii) How far is P from the North pole?

[Take R = 6,400 km and $\pi = \frac{22}{7}$]

(*b*) $M(2, -1)$, $N(3, 5)$, $O(-1, 6)$ are the coordinates of the vertices of triangle MNO. Find, correct to **one** decimal place, the perimeter of the triangle.

7. (*a*) The time a man takes to paint a room alone is an hour **less than** the time his apprentice takes to paint the same room. If both of them take 72 minutes to paint the room, find the time that the apprentice takes to paint the room alone.

(*b*) The angle of elevation of the top of a tower from the top of a building, 5 m high is 30°. If on the horizontal ground, the building is 40 m away from the foot of the tower:

(i) illustrate the information in a diagram;

(ii) calculate, correct to **three** significant figures, the height of the tower.

Turn over

8. (*a*) A company bids for two contracts K and L. The probabilities that it will win contracts K and L are $\frac{1}{5}$ and $\frac{3}{8}$ respectively. Find the probability that the company wins:

(i) **both** contracts;

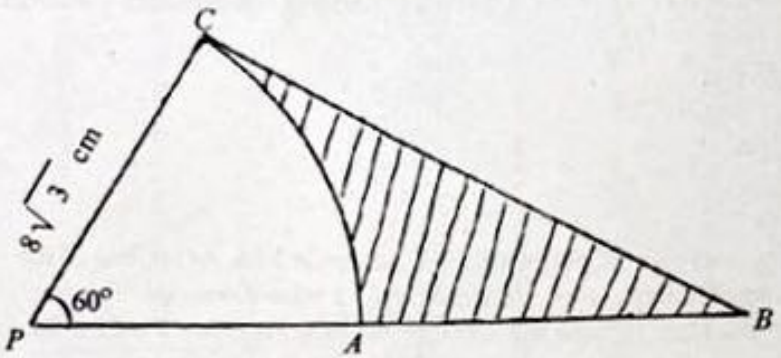
(ii) **only** one contract.

(*b*) Abanga drove a car from Buu to Mpatu at an average speed of 60 km/h in 135 minutes. On his return journey, he took 3 minutes **less** to arrive at Buu. Find correct to **one** decimal place the:

(i) distance between Buu and Mpatu;

(ii) the return speed.

9.



NOT DRAWN TO SCALE

In the diagram, AC is an arc of a circle centre P. BC is a tangent to the circle at C and PB is a straight line. $|\overline{PC}| = 8\sqrt{3}$ cm and $\angle APC = 60°$. Calculate:

(*a*) the length of $\overline{AB}$;

(*b*) correct to **three** significant figures, the area of the shaded portion. [Take $\pi = \frac{22}{7}$]

10. (*a*) At a music festival, the number of individuals who like choral music is **thrice** the number who like gospel music. Those who like **both** music is **one-third** those who like gospel.

(i) Illustrate the information in a Venn diagram.

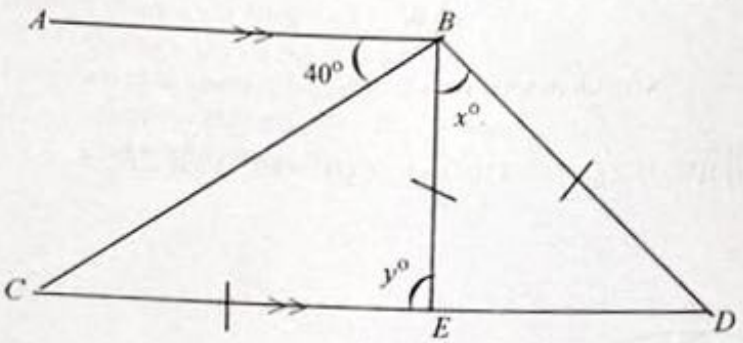
(ii) If 139 out of the 1,382 persons at the festival did **not** like **any** of the two types of music, find the number of persons who like:

(α) choral music;

(β) **one** type of music **only**.

12. (*a*) Amoah starts a business with $1,250.00. Aku joins the business later with a capital of $1,875.00. At the end of the first year, profits are shared equally between Amoah and Aku. When did Aku join the business?

(*b*)



NOT DRAWN TO SCALE

In the diagram, $\overline{AB} \parallel \overline{CD}$ and $|\overline{BD}| = |\overline{BE}| = |\overline{CE}|$, find the value of:

(i) y;

(ii) x.

13.

Height (m)	9	10	11	12	13	14
Number of trees	5	4	6	5	6	4

The table shows the height (m) of 30 selected trees in a forest.

(*a*) Find the mean height of the trees.

(*b*) Calculate, correct to **one** decimal place, the:

(i) median;

(ii) mean deviation.

END OF PAPER