Name / Index number   …………………………………………………………………………………
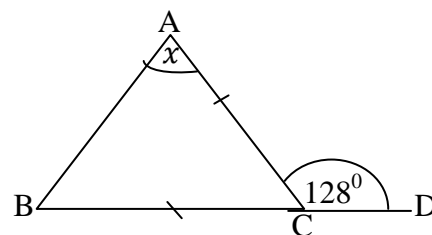
❖ **Answer all the questions**

Part A

1) A trader bought a wall clock for Rs. 600 and sold it for Rs. 750. Find the percentage of profit received by the trader.
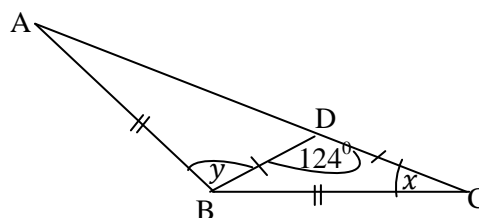
2) Factorize $x^2 - 5x + 6$

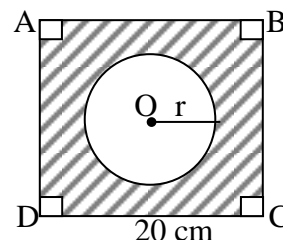3) The side BC of the triangle ABC is produced upto D. If AC= BC and $A\hat{C}D = 128^0$; find the value of x.

4) Find the L.C.M. of the terms $12C, 18a^2b$.

5) 30 men need 24 days to complete a certain task. How many days need to complete $\frac{1}{3}$ of the same task with 12 men.

6) In the triangle ABC, AB = BC and the point D is on the side AC such that BD = DC and $B\hat{D}C = 124^0$. Find the value of x and y.

7) The figure shows a square ABCD of side 20cm and a circle which is inside of it. The centre of the circle is O. If the area of the shaded part is 246cm², find the radius of the circle.
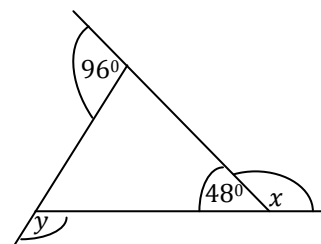
8) Find the equation of the straight line which is goes through the point $(0, 2)$ and the gradient is $\left(-\frac{2}{3}\right)$.

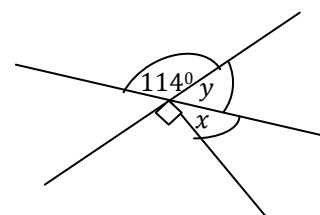9) Simplify and write the answer in simplest form.
$\frac{5x-3}{4} - \frac{3x-1}{4}$.

10) Using the information given in the diagram, find the value of x and y.

11) Factorize $\frac{x^2}{4} - 1$

12) Find the first approximation of $\sqrt{19}$.

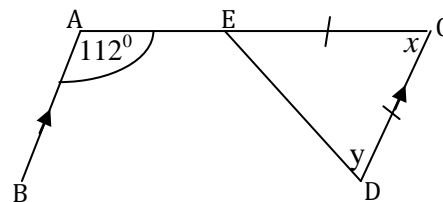13) Using the information given in the diagram, find the value of x and y.

14) The marks obtained for 9 subjects of a student are given below.
72, 63 , 87 , 53, 69, 76, 91, 84 , 59
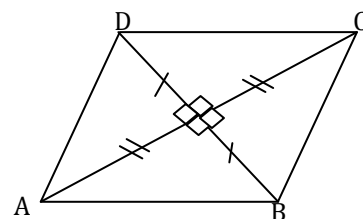
    (i) Find the range
    (ii) Find the median mark.

15) The "n"th term of a number pattern is $7n - 3$. Which term is 81.

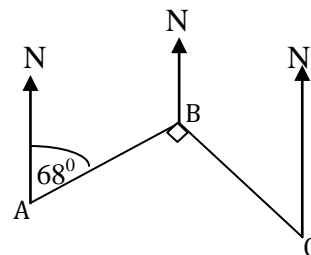16) In the diagram AB//CD, CE = CD and $B\hat{A}E = 112^0$. Find the value of x and y.

17) If $a - b = 5$ and $ab = 3$, find the value of $a^2 + b^2$.

18) ABCD is a rhombus. If AC = 8cm , BD = 6cm. Find the perimeter of the rhombus.

19) The bearing of B from A is 068^0. Find the bearing of B from C.

20) There are 9 cards equal in shape and size numbered from 1 to 9 in a box. A card is taken randomly form the box.
    (i) Write the sample space of the above random experiment.
    (ii) Find the probability of getting a card with a square number.

21) In the diagram AC//BD, $A\hat{B}C=B\hat{C}D$. Prove that the triangle ABC and triangle BCD are congruent with reasons and write the case of congruency.

22) Remove brackets and simplify $(2x + 3y) (\frac{1}{2}x - \frac{1}{3}y)$

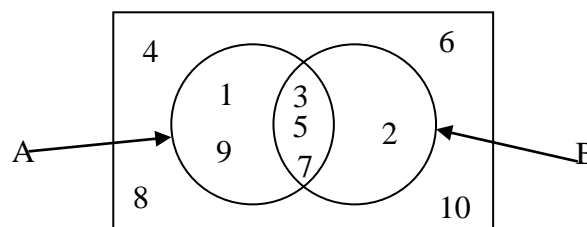23) Using the data given in the venn diagram, list out the elements of the followings.

    (i) A ∩ B

    (ii) A$^{/}$

24) The area of the base of cuboid shape vessel is 400cm^2. An amount of 7.2l of water has been filled into the vessel. Find the height of the water level.

25) A and B are two houses 25m apart each other. PQ is a straight boundary of 50m long. Draw a sketch of the construction lines required to find the location of a lamp post that is 15m equidistance from A and B houses and 10m away from the boundary PQ.
(The distance between the line AB and PQ is 40 m)

A •   B •

P ———————————— Q

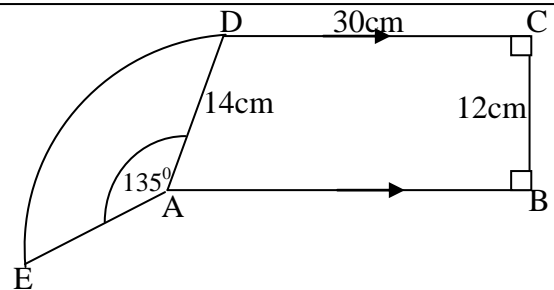## Mathematics I - Part B

- **Answer all the questions.**

(1)   In a certain area, $\frac{1}{12}$ of the houses were damaged completely due to heavy rain. $\frac{7}{11}$ of the remaining houses were not damaged.

    (i)   Write the number of houses except the houses damaged completely as a fraction of the total.

    (ii)   Write the number of houses which were not damaged as a fraction of the total.

(iii) The remaining houses were damaged slightly. Then write the number of houses which were damaged slightly as a fraction of the total number of houses.

(iv) Calculate the total number of houses in that area, if there were 72 houses damaged slightly.

(v) A compensation of Rs. 500 000 was given for a house damaged completely and Rs. 200 000 were given for a house damaged slightly. Calculate the total compensation of money.

(2) The sector ADE, which the centre A with angle 135^0 is joined with the trapezium ABCD. Its radius is 14cm. BC = 12cm and DC = 30cm.
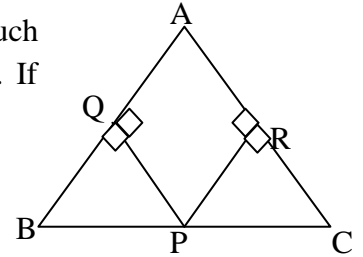

(i) Calculate the area of the sector.

(ii) The area of the trapezium ABCD is twice as the area of the sector ADE. Find the length of AB.

(iii) Find the length of the arc DE.

(iv) Calculate the perimeter of the compound figure.

(3) The information about the students who sat for mathematics paper for G.C.E O/L is given below.

- 540 students sat for the exam.
- 216 students obtained A passes.
- 96 students obtained B passes.
- 156 students obtained C passes.
- Others obtained S passes. None of them failed

(i) Find the angle allocated for one student when representing data in a pie chart.

(ii) What are the angles allocated to represent the number of students in each category?

(iii) Indicate this data correctly in a pie chart using a protector.

(iv) If 6 students who failed, were categorized mistakenly as S passes. What is the angle allocated for them.

(4) A group of 15 people working 6 hours per day, completed $\frac{2}{5}$ of a certain work within 8 days.

(i) Calculate the number of man hours completed.

(ii) What is the amount of man hours of the total task.

(iii) Another group of 10 people who work 12 hours per day were implemented for the remaining part of the work. Calculate the number of days taken to complete remaining part of the work.

(iv) Rs. 1500 of daily wages is given for a person in the first part of the work and Rs. 2500 of daily wages is given for a person in the second part of the work. What is the total payment for the work.

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(5) (a) In the triangle ABC, AB = AC. The point P is located on BC such that PQ is perpendicular to AB and PR is perpendicular to AC. If PQ = PR , prove that the midpoint of BC is P.

(b) In the given triangle ABC, P and Q are located on the side BC such that the bisector of $P\hat{A}C$ is AQ. If $B\hat{A}P = A\hat{C}B$, prove that AB = BQ.