වර්ෂ අවසාන ඇගයීම – 2024 (2025)
ஆண்டிறுதி மதிப்பீடு – 2024 (2025)
Year End Evaluation – 2024 (2025)

| ශ්‍රේණිය / தரம் / Grade | 11 | විෂය / பாடம் / Subject | **Mathematics** | පත්‍රය / வினாத்தாள் / Paper | I | කාලය / காலம் / Time | 02 hours |

නම / பெயர் / Name } .... විභාග අංකය / சுட்டிலக்கம் / Index No. } ....

Name / Index No.: ....

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....
Signature of inviglator

Important:

- This paper consist of 8 pages.

- Write your name correctly in the appropriate place on page one and page three.

- Answer all questions on this paper itself.

- Use the space provided under each question for working and writing the answer.

- It is necessary to write relevant steps and correct units.

- Marks will be awarded as follows:
  02 marks each for questions 1-25 in part A
  10 marks each for questions in part B
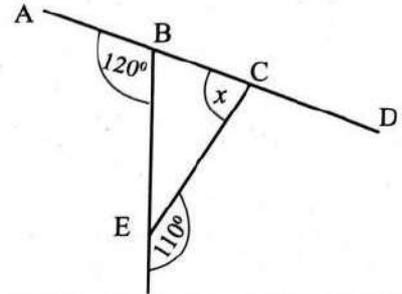
For marking examinor's use only

Question number		Marks
A	1-25	
B	1	
	2	
	3	
	4	
	5	
Total		

....
Marked by

Part A

- **Answer all questions on this paper itself**

01. It is estimated that four men can complete a certain task in four days. How many men will be needed to complete the task in three days.

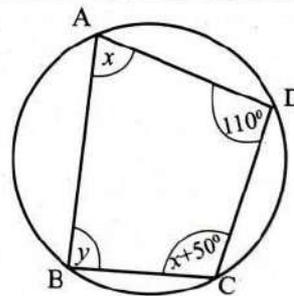02. Find the value of x according to the given information

03. Find the L.C.M of the following algebraic terms.
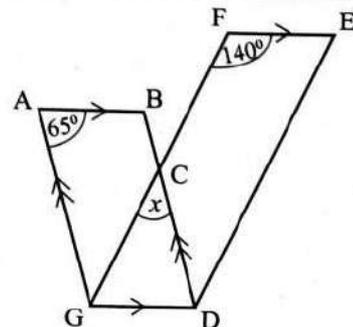
$6a^2b$, $8ab^2$

04. Write in logrithmic form "Logarithm of 125 to the base five is three"

05. ABCD is a cyclic quadrilateral, find the values of x and y

06. Write the equation of the straight line, with the form of $y = mx + c$ which interecpt is 4 and passes through point (2, 2)
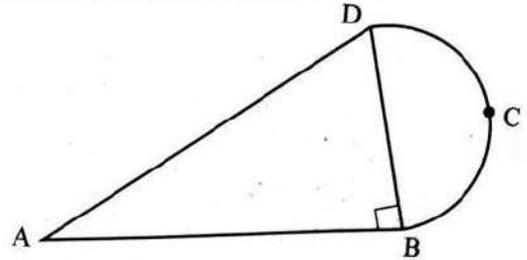
07. Find the value of x according to the given information

Name/Index No...

08. 37 500 rupees was paid as customs duty when importing a product worth 150 000 rupees. Find the percentage of custom duty.

09. Area of the BCD semi circle is equal to the area of ABD triangle.
If $AB = \pi$ and $BD = 2r$ find the value of r.

10. Centre of the given circle is O, A, B, C and D are on circle as AB // DC, If $A\hat{O}D = 80^0$ find the value of x.
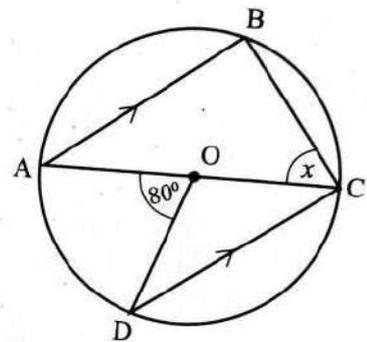
11. A vehicle took 1 hour to cover the first 25 km of a journey and 2 hours to cover the next 80 km of the journey. Find the average speed of the vehicle.

12. A frequency distribution prepared based on the scores obtained by a group of students on a test as follows. Write the suitable value for the blanks.

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	3	5	....	12	14
cumelative frequency	3	8	14	26	....

13. G and F are the mid poins of AB and AC respectively. GE // BC

If the given statement is true, mark " ✓ " and If Statement is false mark " ✗ " in front of the given box.

AF = FC	
FD // AE	
2FD = AE	
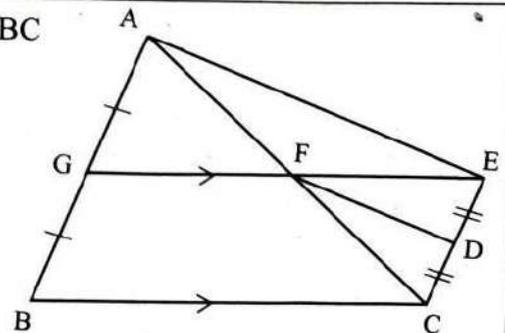
14. Simplify : $\dfrac{4a^2}{5b} \times \dfrac{b^2}{2a}$

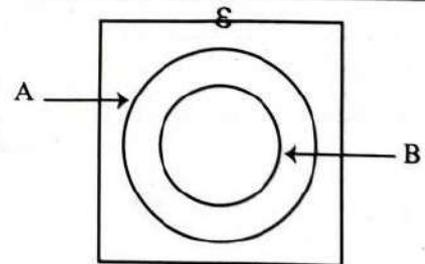15. If $(1 \quad 2)\begin{pmatrix} 1 & 2 \\ 3 & 1 \end{pmatrix} = (a \quad b)$ find the values of a and b.

    $a =$ .... $b =$ ....

16. If $\operatorname{Sin} x = \dfrac{3}{5}$, find $\operatorname{Cos} x$.
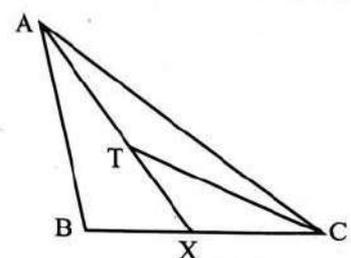
17. A value added tax of 18% is payable on purchase of goods. What is the amount of tax to be paid on the purchase of an item worth Rs. 7 500.

18. Solve : $x^2 - 2x = 0$

19. Shade the region $A' \cup B$ in the given Venn diagram.

20. $B\hat{A}C$ is bisected by AX and $A\hat{C}B$ is bisected by CT in the given diagram. If $C\hat{T}X = 32^0$ find the value of $A\hat{B}C$.
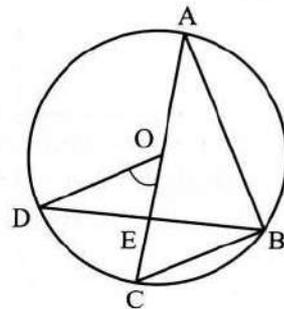
21. If curved surface area of a cylindrical shaped tin is 1320 cm² and height is h, find the radius of the base. (Hint: curved suface area of a cylinder with radius r and height h is $2\pi rh$. $\pi = \dfrac{22}{7}$)

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22. Number of elements belong to the sets X and Y are given in the venn diagram.
Find $P(X \cap Y)'$
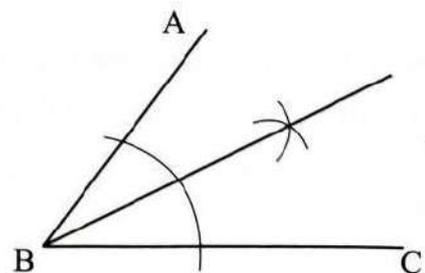
X ⟶

| 7 | 4 | 2 |

⟵ Y

6
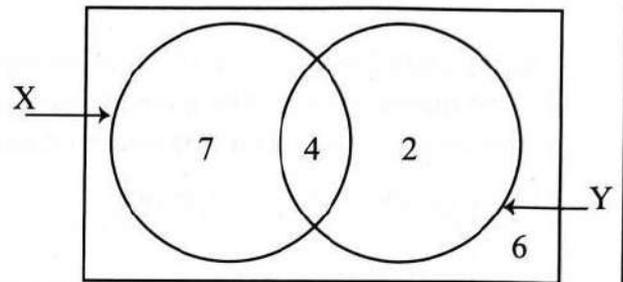
23. Centre of the circle is O. $E\hat{A}B = 40^0$ and $AE = AB$
Find the value of $D\hat{O}C$.

A
O
D
E
B
C

24. Solve. $\dfrac{1}{x} + \dfrac{2}{3x} = \dfrac{5}{6}$

25. In the given figure the position of a point P which is 3 cm away from the AB line and equidistant from the AB line and BC using the knowledge of loci, Mark point P on the sketch.

A

B   C

Part B

- **Answer all questions on this paper itself**

01. Selling price of a share of company A is Rs. 40. Bimal purchases 750 shares at the beginning of the year.

    i.   How much did Bimal invested?

    ii. Bimal recieved Rs. 4500 as annual dividend income. Find the dividend paid per share by the company.

    At the end of the year the above shares were sold at Rs. 42 each. An additional amount was added to the inome and the total amount was deposited in account paying an annual interest rate of 10% for two years. Thus the interest received at the end of the first year was Rs. 4200.

    iii. Find the added extra amount?

    iv. Find the total amount at the end of second year.

02. PQRS is a rectangular cardboard length 31 cm.
    Part of it is shaded to get ABCD shape. It consists with a semi circle BCD and height 24 cm isosceles triangle.
    (Take π as $\frac{22}{7}$)
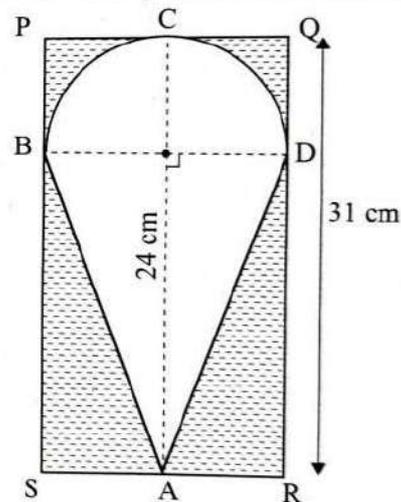
    i.   Find the radius of semi circle.

    ii. Find the arc length of BCD arc.

    iii. Find the area of ABCD shape.

    iv. Find the length of a rectangle which is equal to the area of shaded region and width equal to the radius of the semi circle.

03. Nirmala, who is self employed in the sewing industry, used $\frac{3}{5}$ of the fabric to sew children's clothes and $\frac{1}{4}$ th of the remaining to sew pillowcases.

    i.   What fraction of the total fabric used was the left over after fabric used for children's clothes?

    ii. What fraction was used to sew pillow cases out of the total fabric?

If after sewing the above two types, the remaining fabric was to sew rugs was 12 kg.

iii. Find the total mass of fabric Nirmala bought.

iv. She bought 1 kg for Rs. 200 each and spent Rs. 2750 on other expenses. She received Rs. 12900 by selling above three types. Express the profit She got as a percentage of the total amount she invested.

04. a) There are tokens numbered as 1, 2, 3, 4, 5 in a box. All tokens are in same size and shape. Kamal took a token out and after checking the number put it back to the box and takes another one.

i. Represent the sample space of the above random experiment on a grid, using 'x'

ii. If the event A denotes getting square number by Kamal in both occasions, write the set A as elements.

iii. Find the probability of A.
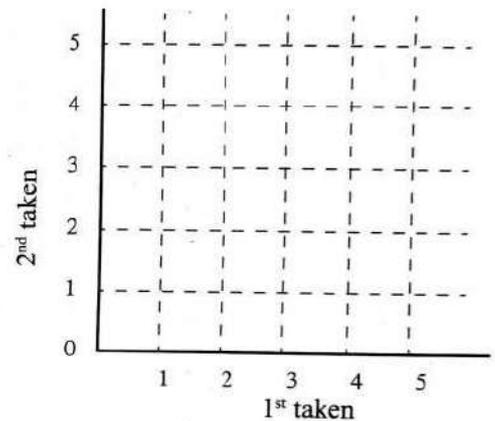
b) There are 3 black balls, 2 white balls in box A and 1 black ball, 3 white balls in box B. All balls are in same size and shape. When a fair dice numbered 1,1, 2, 3, 4, 5 was tossed. A ball is taken randomly. If even a ball is taken by box A and if odd a ball is taken by box B.
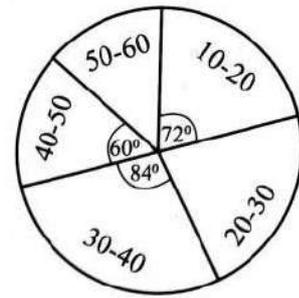
i. Complete the tree diagram according to the above random experiment.
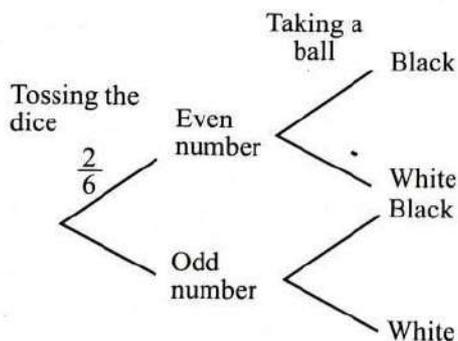
ii. Find the probability of taking a white ball.

05. Following pie chart shows class intervals with the length of waste pile of scraps of wire.

i. If the number of wire belong to the 30 - 40 class interval is 7 find the total number of scraps of wire.

If the number of scraps of wire belong to 20 - 30 is twice as the number of scraps of wire belong to 50 - 60,

ii. Fill in the blanks in below table.

Class intervals (length)	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Mid value	15	25	35	45	55
Number of scraps			7		

iii. Draw the frequencey polygon to represent the above information on the given grid using the mid values of the class intervals.

(No marks will be given if histogram was used)

Number of scraps

Mid values of class intervals
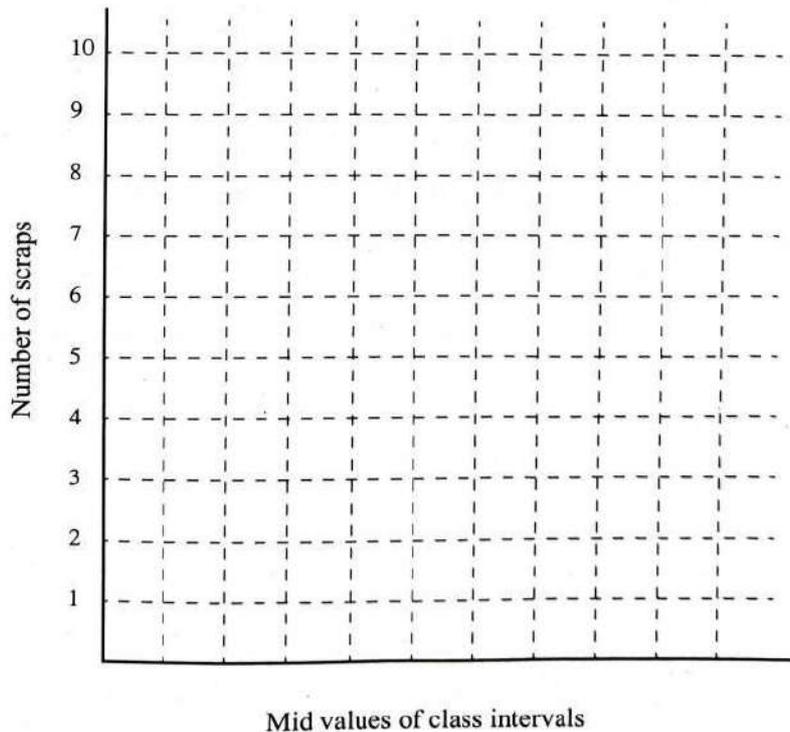
බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම - 2024 (2025)
ஆண்டிறுதி மதிப்பீடு - 2024 (2025)
Year End Evaluation - 2024 (2025)

ශ්‍රේණිය தரம் **Grade**	11	විෂය பாடம் **Subject**	**Mathematics**	පතුය வினாத்தாள் **Paper**	**II**	කාලය காலம் **Time**	**3 Hours**

Additional reading time is 10 minutes

- Answer **10 questions** selecting **05 questions** from part A and **05 questions** from part B.
- Write relevant steps and correct units when answering the questions.
- Each question carries 10 marks.
- The volume of a right cylinder with the radius of the base r and the height h is $\pi r^2 h$.
- The volume of a sphere with the radius r is $\frac{4}{3}\pi r^3$.

Part A
Answer five questions only.

1. The following grouped frequency distribution has been prepared using the information obtained on the number of eggs laid by 46 hens during certain time period, in a certain farm.

Number of eggs received in a day	50 - 54	55 - 59	60 - 64	65 - 69	70 - 74	75 - 79	80 - 84
Number of days	2	5	8	11	10	8	6

i. Write the modal class of the distribution.

ii. Find the mean number of eggs received per day during this time period.

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iii. How many eggs have been received from one hen during this time period.

2. The price of an electric item for outright purchase is 75 000 rupees. It can be bought by making a down payment of 15 000 rupees and paying the rest in 15 equal monthly installments of 4 480 rupees. If the interest on the loan is calculated on the reducing loan balance, find the monthly interest rate.

3. y is a quadratic function of x. An incomplete table of y values corresponding to several x values is given below.

x	-2	-1	0	1	2	3	4
y	-5	0	3	4	3	0	....

   a) i. Obtain the value of y when $x = 4$ by considering the symmetry of the quadratic function.

   ii. Using the standard system of axes and a suitable scale, draw the graph of the given quadratic function on a graph paper according to the above table of values.

   b) Using the graph,

   i. Write the coordinates of the turning point.

   ii. Express the quadratic function in the form $y = (x + a)(x + b)$ (Here a and b are constants)

   iii. Write the interval of values of x, where the values y is decreasing from 4 to -2.

4. A and B are two rectangular flower beds of area 20 m². Length of a one side of A is (x)m and length of one side of B is $(x - 4)$m.

   a) i. Express the breadth of A flower bed in terms of x.

   ii. Express the breadth of B flower bed in terms of x.

   b) Breadth of the flower bed B is 2m greater than to that of A (to the breadth of the flower bed) show that x satisfies the equation $x^2 - 4x - 40 = 0$.

   c) Slove the above equation and find the length of the A flower bed. (take $\sqrt{11}$ as 3.32)

5. A, B, C, D and E are five points located on flat ground.

   • E is situated North of A, C is East of A.
   • Bearing of B from E is 150⁰, BE = 50m.
   • B is situated south west of D on where BC = 15m

   Copy the above diagram in your answer script and mark the information, Using the trigonometric.
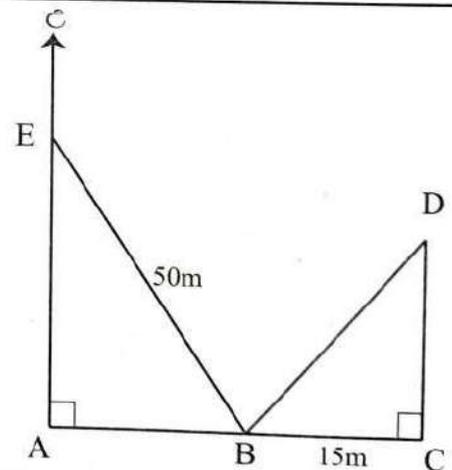
   i. Find the distance AB.

   ii. Deduce the distance DC and find the bearing of D from A.

6. The following figure depicts how a 30 cm wire is folded to form a triangle ABC lengths of each side of the triangle is given in terms of m and n length of the side AB is 7 cm more than the side BC.
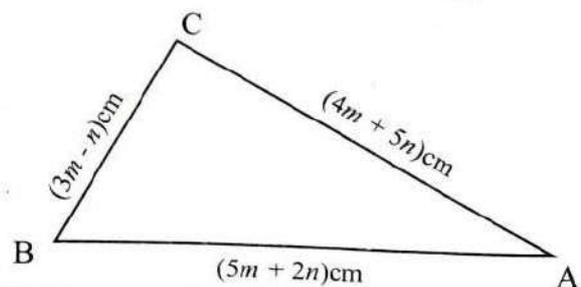
   a) Construct a pair of simultaneous equation and solve them.

   b) Give reasons the triangle ABC is a right angled triangle.

7. A wire has been cut to make a wire frame as follows: The length of the first piece is 7 cm, and the length of each piece thereafter is 2 cm greater than the previous one.

a) i. Write the length of the nth piece, Tn in terms of n, hence find the length of the 25th piece.

ii. Show that $Sn = n(n+6)$, where Sn is the sum of first n terms.
Find the length of first 25 pieces.

b) Find the sum of first 6 terms of the geometric progression 8, 12, 18, ... by using the formulae.

8. Use only a straight edge with a cm/mm scale and a pair of compass for the following geometric constructions. Draw the construction lines clearly.

i. Construct the triangle ABC, such that AB = 6cm, $B\hat{A}C = 30°$, and AC = 9cm.

ii. Construct the perpendicular bisector of the side BC. Construct the circumscribed circle of the triangle ABC and name its centre as 'O'.

iii. Construct a tangent to the circle at B

iv. Mark the point D, which is equidistant from B and C and lie on the above tangent.

v. Find the value of $B\hat{D}O$, with reasons.

9. a) Prove the theorem that, " In a teangle, if two sides are equal the angles opposite to it are equal"

b) In the triangle ABC, AB = BC, point P is lie on the side BC. Perpendiculars drawn from P to AB and AC are PQ and PR respectively. RP is produced to S such that PS = PQ

i. Copy the figure in your answer script and mark the above information.

ii. Show that PBQ Δ ≡ PBS Δ.

iii. Show that BS // AC.
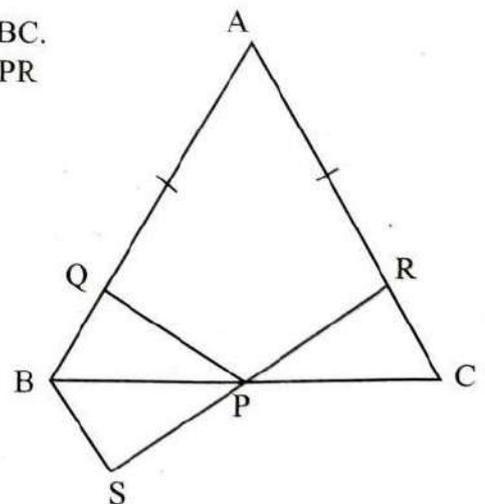
10. Water flows through a cylindrical pipe of diameter 7 cm, at a uniform rate of 6cms^{-1} .
(6 centimeter per second) And if took 12 seconds to fill a hemispherical container of radius 7 cm.
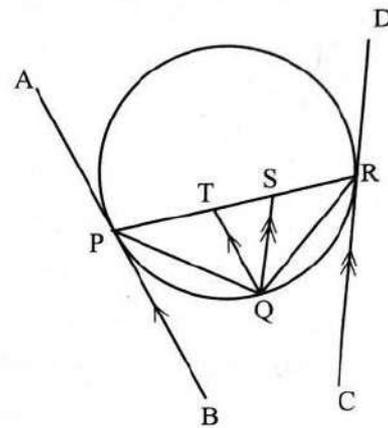
(take π as $\frac{22}{7}$)

  i.   Show that $r = 3\sqrt[3]{49}$ cm using the water flows through the pipe is one second.

  ii. Find the value of r using the logarithmic tables.

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11. P, Q and R are points are on a circle. AB and CD are tangents drawn at P and R respectively.

AB // QT and CD // QS.

Copy the given diagram in your answer script.

  i.   Prove that $P\hat{Q}T = S\hat{R}Q$ and PTQ and SRQ triangles are equi angular.

  ii. Prove that $SQ^2 = PT \cdot SR$.

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12. The following information is given about 198 students studying in grade 11 in a mixed school.

- There are 105 girls, out of which 55 are studiying dancing and 43 are studying accounting.
- Number of students who are studying accounting is 80.
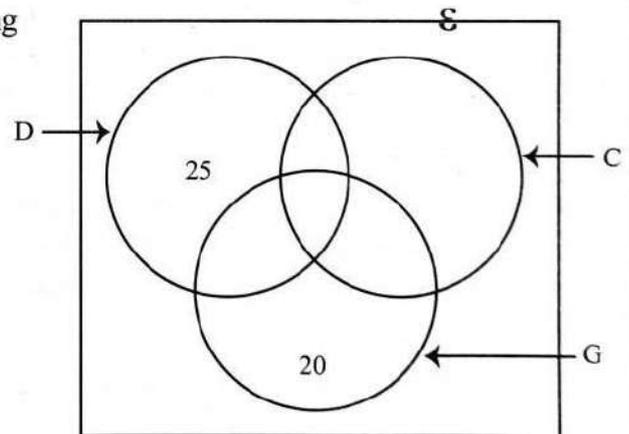- Number of students who are studying acounting and dancing is 42.

Venn diagram is as fallows.

ε = { Students in grade 11 }

G = { Girls in grade 11 }

C = { Accounting students in grade 11 }

D = { Dancing students in grade 11 }

  i.   Copy the Venn diagram in your answer script and complete the Venn diagram using given information.

  ii. Shade the subset representing boys studying Accounting.

  iii. How many girls are studying Accounting and Dancing.

  iv. Write in set notation the subset which the number shown as 20.