සබරගමුව පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව සබරගමුව පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව සබ
Sabaragamuwa Provincial Department of Education Sabaragamuwa Provincial Department of Educ
சபரகமுவ மாகாண கல்வித் திணைக்களம்
சபரகமுவ மாகாண கல்வித் திணைக்களம்
Sabaragamuwa Provincial Department of Education

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අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) පෙරහුරු පරීක්ෂණය, 2020
General Certificate of Education (Ord. Level) Pre Test, 2020

ගණිතය **I** கணிதம் **I** **Mathematics I**	පැය දෙකයි இரண்டு மணித்தியாலம் **Two hours**

Index Number: ....

Certified Correct

....
Signature of Invigilator

Important:

* This question paper consists of **8** pages.

* Write your **Index Number** correctly in the appropriate places on **this page** and on **page three**.

* Answer **all** questions **on this question paper itself**.

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

* Indicate the **relevant steps** and the **correct units** when answering the questions.

* Marks are awarded as follows:

  In Part A
  2 marks for each question

  In Part B
  10 marks for each question

* Blank papers can be obtained for scratch work.

For Marking Examiners' Use Only

Part	Question Numbers	Marks
A	1 – 25	
B	1	
	2	
	3	
	4	
	5	
	Total	

.... First Examiner	.... Code Number
.... Second Examiner	.... Code Number
.... Arithmetic Checker	.... Code Number
.... Chief Examiner	.... Code Number

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Part A
Answer all question on this paper it self

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1. Select the 1$^{\text{st}}$ approximation of $\sqrt{67}$ using the answer given below.

$8{\cdot}1$, $8{\cdot}2$, $8{\cdot}3$, $8{\cdot}4$

**2.** Two identical pumps are taken two hours to empty a water pool. How many hours will it take to empty the same water pool using 3 identical pumps ?

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3. A provincial council charges Rs. 7500 for year as rates for a property. The annual assessed value of the property is Rs. 50 000. find the percentage of annual rates.
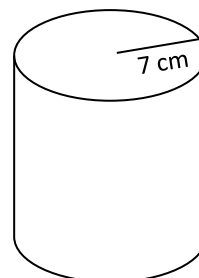
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4. if $x^2 + bx + c = (x + 5)\,(x - 2)$, find b and c

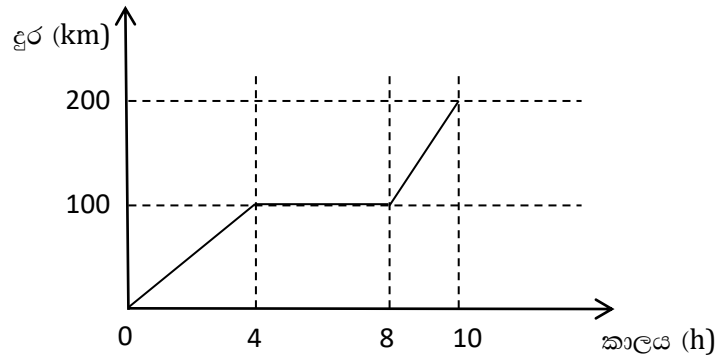**5.** Using the information given in the figure, find the value of x.

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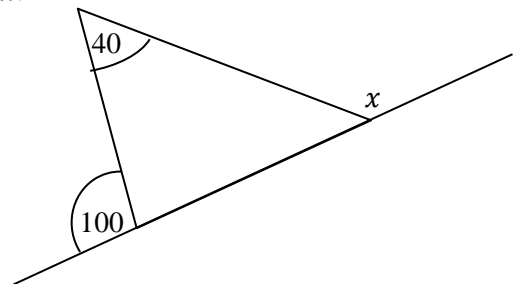
6. Represent in index form $\log_3 x = 4$

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7. In the given figure, the curved surface area of a solid right circular is 220 cm^2 . Find the height of the cylinder.
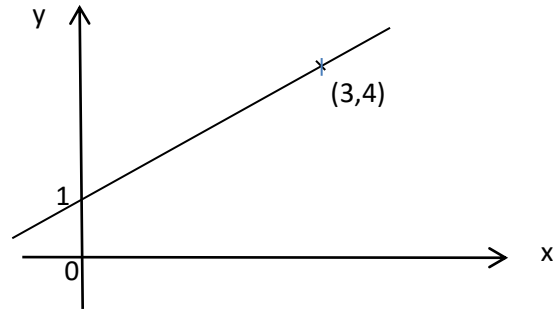

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8. The following distance - time graph that represent the journey of a taxi. If Rs. 50 charges for 1 km of travelling, find the total amount charge for the journey.
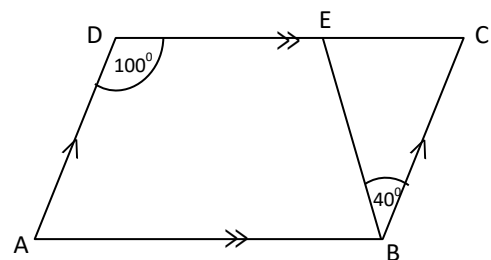
දුර (km)

200 - - - - - - - - - - - - - - - - -

100 - - - - - - - - - - - - - - -

0   4   8   10   කාලය (h)

---

9. Simplify. $\dfrac{1}{2x} + \dfrac{1}{3x}$

---

10. Find the gradient of the line graph shown in the given figure.

y

(3,4)

1

0   x

---

11. Solve. $x^2 - 1 = 0$

---

12. Parallelogram ABCD is shown in the figure find the value of $B\hat{E}C$ according to the given information.

D   E   C

100^0

40^0

A   B

---

13. A man takes a loan of Rs. 50 000 under the 8% of annual interest rate. How many years taken to settle the loan by paying Rs. 8000 as total interest.

14. Write the 10th term of the geometer progression where the first term 4 and the common ratio 2, as power of 2.
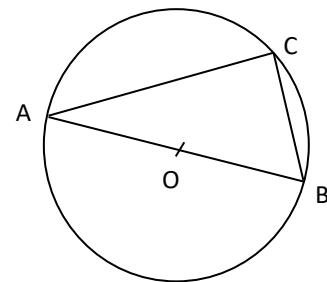
15. Simplify, $10x \div \dfrac{x^2}{y}$

16. The center of the circle in the given figure is "O". Find the magnitude of x where $\hat{OBA} = 50^0$
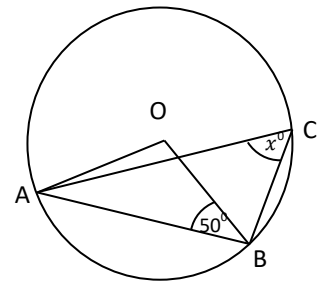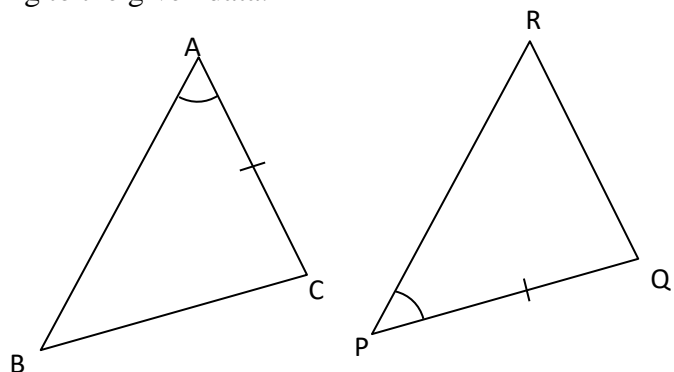

17. Find the test common multiple of the following three algebraic terms.

$2x^2$, $10xy$, $2xy^2$

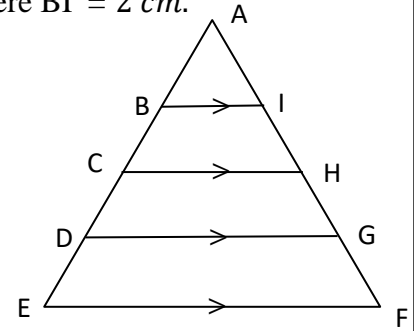**18**. AB is the diameter of the circle with the Centre "O". Find the radius of the circle where AC = 8 cm and BC = 6 cm in the given figure.
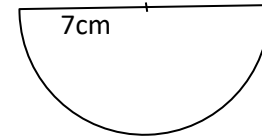

19. Write the other pair of elements to be equal to congruent the following pair of triangles.under the angle, angle, side case (A,A,S) according to the given data.
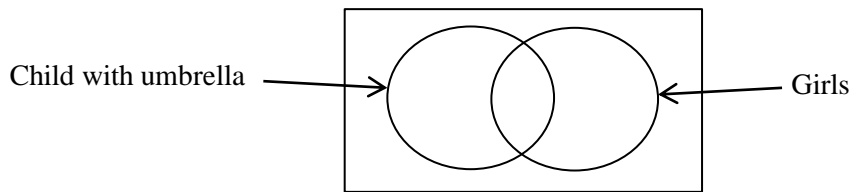
**20**. In the given figure AB=BC=CD=DE. Find the length of EF where BI $= 2\ cm$.

21. Perimeter of the semicircle of the radius 7 cm is 36 cm . Find the arc length of the semicircle show in the given figure.

7cm

22. In the given venn diagram, Shade the region that represent the boys.

Child with umbrella

Girls

23. It is needed to grow two trees on the BC boundary of the certain land, 5 m away from post "A" . Draw a sketches of the above using the knowledge of loci, named the above point as "X" and "Y".

C

B

3m

A
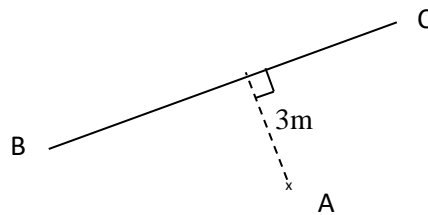
24. 2,4,6,7,8,9,14 using the above frequency distribution. Find the inter quartile range.

25. Mark "✞" in front of the simple event among the event given below.

i	The event of getting head of tossing unbiased coin.	
ii	The event of getting even numbers, when tossing unbiased die numbered from 1 to 6.	
iii	The event of getting red bead from a bag contain 1 red and 2 white and 3 yellow bead's	

50

**Part B**
Answer all question on this paper it self.

1. In a country where an epidemic is spreading, people suspected of having disease are referred to quarantine. But $\frac{6}{7}$ of the people who are referred to quarantine are not having disease.

   i)   What fraction of total people who are referred to quarantine are having disease.

   ii) $\frac{2}{3}$ Of the people who having disease in the quarantine Centre are coming from abroad. What fraction of total are coming from abroad.

   iii) The rest of 15 people who having disease are in the quarantine Centre. Find the total number of people who are referred to quarantine.

   iv) $\frac{3}{5}$ of total , who are referred to quarantine are male. Find the number of female are referred to quarantine.

10

2. The land consists of a portion ABC in the shape of a right angled triangle and BCD semicircular portion with BC = 28 cm.

   i)   Find the radius of the semicircular portion.

   ii) Find the area of BCD semicircular portion.
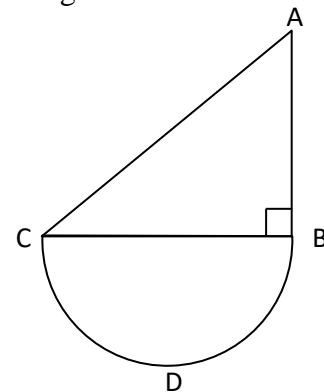
   iii) Find the length of AB where the area of ABC right angled triangle is equal to the area of BCD semicircular portion.

   iv) The length of AC= 35.6 m approximately. Find the total length of wire needed to make fance 3 round around the land.

10

MAWANELLA MATHS

3. Mr.Sunil who getting loan of Rs. 40 000 at a compound interest rate of 8% per year. Then the invest that amount of loan to bought shares in a company at the market price of Rs. 20 per share. The company pays annual dividends of Rs. 3 per share.

   i) Find the interest to the loan for the 1st year.

   ii) Calculate the total amount required to repay the entire loan in two years.

   iii) Find the annual dividend's income that he receives from this investment.

   iv) After two years , he sold all the shares at the current market price of Rs. 23 per share and paid off the loan together with the interest. Find the amount of money he has left at the end of the 2 years.

10

4. The following incomplete frequency distribution and corresponding incomplete histogram have been prepared using the amount of rice sold withing 30 day in a shop. "Here 15-25 denotes the amount of interval greater than 15 and less than or equal to 25" and the other intervals denotes similarly.

| Amount of rice (kg)	Days
5 - 10	2
10 - 15	3
15 - 25	10
25 – 30	....
30 – 45	9
45 - 50	....

Days / Amount of rice (kg)
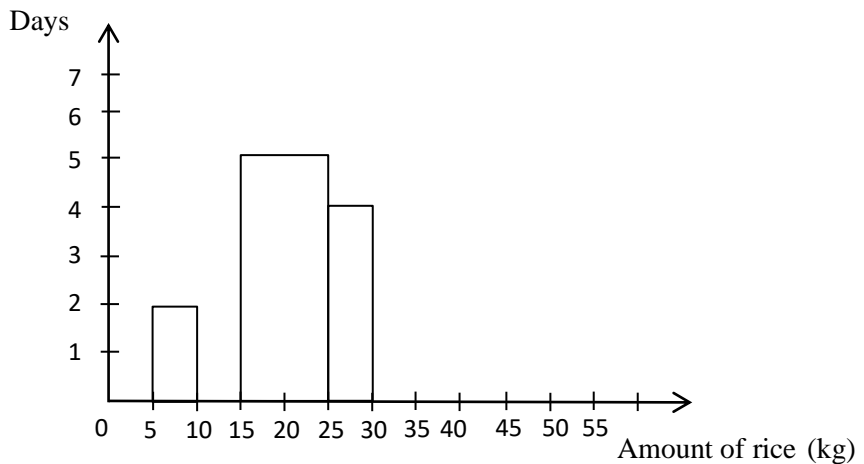
   i) Fill in the blank of the above frequency table.
   ii) Complete the histogram.
   iii) Express the number of days which sold more than 25 kg of rice as percentage of total number of days.

   iv) Draw the frequency polygon on the histogram.

10

5. 5 Students who come to a restaurant bought 3 parcels of fish meals (F) and 2 parcels of Vegetable meals (V) on the 1st day. on the 2nd day they bought 2 parcels of fish meals and 3 parcel of vegetable meals.

  i) Using the symbol " $\times$ " mark the sample space of a two parcels of meal bought by a student randomly the given grid.
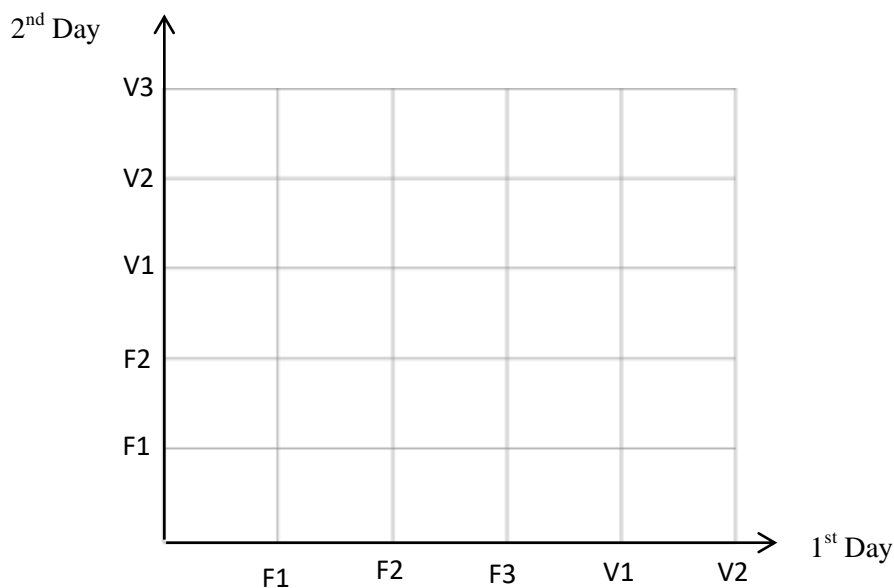
  ii) Indicate the event that random selected student who bought same types of meal on the 2 days on the sample space and find its probability.

  iii) The following incompleted diagram is represents the meal bought by 5 student in the two days as shown below.
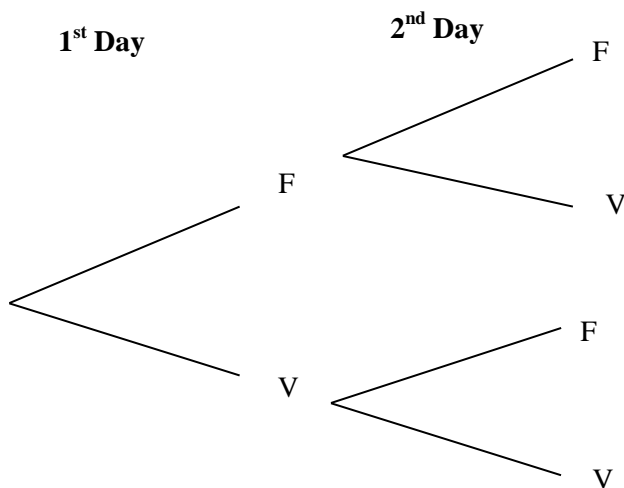
  a) Complete the tree of diagram by indicating all the relevant probability.
  b) Find the probability of student who bought parcel of fish meal at least once.

සබරගමුව පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
சபரகமுவ மாகாண கல்வித் திணைக்களம்
Sabaragamuwa Provincial Department of Education

අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) පෙරහුරු පරීක්ෂණය, 2020
General Certificate of Education (Ord. Level) Pre Test, 2020

ගණිතය **II** கணிதம் **II** **Mathematics II**	පැය තුනයි மூன்று மணித்தியாலம் **Three hours**

Important:
* Answer **ten** questions selecting **five** questions from **Part A** and **five** questions from **Part B**.
* Write the **relevant steps** and the **correct units** in answering the questions.
* Each question carries **10** marks.
* The volume of a right circular cylinder of radius r and height h is $\pi r^2 h$.

Part A
Answer five questions only.

1. An incomplete table of values prepared to draw a graph of a quadratic function is given below.

x	-1	0	1	2	3	4	5
y	-5	0	3	4	3	…….	-5

i. By considering the symmetry of the quadratic function obtain the value suitable for the blank.

ii. Using the scale of 10 small divisions representing one unit along the x axis and along the y axis draw the graph of the above function on a graph paper.

iii. Write down the interval of values of x on which the function is increasing positively.

iv. Suppose that the function of the graph is written in the form $y = -(x - p)^2 + q$. Indicate the point (p, q) on the graph as A.

v. Using the graph, find the positive root of x such that $-x^2 + 4x = 0$ to the first decimal place.

2. The information regarding the number of lottery sales within a 30 days month collected by a lottery seller is given below.

No of lotteries	150-250	250-350	350-450	450-550	550-650	650-750	750-850
No of days	3	2	5	9	3	6	2

   i.   Write down the modal class of the distribution.
   ii. By taking the mid value of the modal class as the assumed mean or otherwise, find the mean number of lottery sold within a day to the nearest whole number.
   iii. The seller gets a commission of 3 rupees per lottery he sells. If the seller sells a lottery tickets for 20 rupees. find the total commission he receives in a day
   iv. 10% of the remaining amount is received by the lottery distributor, after paying the commission to the lottery seller. Accordingly show that the lottery distributor earns more than 26 000 rupees within a month by the lottery sales of this lottery seller.

3. Nimesh bought a television set worth 180 000 rupees by paying the half of the value as the down payment and agreed to pay the rest in 10 equal monthly installments at 20% annual interest rate where the interest is calculated on the racing loan balance.

" If Nimesh has 110 000 rupees with him, he will be able to pay two monthly installments and the down payments."

State with reasons and appropriate calculations whether this statement is true.

4. (a) Ashen has 100 rupees out of 5 rupee coins and 10 rupee coins. The number of 5 rupee coins is twice the number of 10 rupee coins.

taking the number of 5 rupee coins as x and the number of 10 rupee coins as y construct a pair of simultaneous equations in x and y.

Solve the pair of simultaneous equations and find separately the number of 5 rupee coins and 10 rupee coins.

(b) Solve the inequality $45p + 750 \geq 1100$ and find the minimum integral value that p can take.

5. a) The length breadth and height of a water tank in a pumping station are $5m , 3\,m, 2\,m$ respectively.
   i.   Calculate the volume of water required to fill the tank completely.
   ii. The tank discharges water in to an empty cylindrical tank with a cross-sectional area of $3.2\,m^2$. If the cylindrical tank fills to a height of $3\,m$ in 40 minutes, show that the water flows at the rate of 240 liters per minute.

b) Using the logarithms table, find the value of $\dfrac{\sqrt[3]{56.5}}{0.56}$

6. The length of a rectangle is $6\,cm$ and the breadth is $2\,cm$. A new rectangle is formed by reducing $x\,cm$ from the length and adding $x\,cm$ to the breadth of this rectangle. If the area of the new rectangle is $13\,cm^2$. show that $x^2 - 4x - 2 = 0$ and by solving the quadratic equation find the value of x correct to the first decimal place.

(Take the value of $\sqrt{6}$ as $2\cdot44$)

Part B
Answer five questions only.

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7. A private computer training institute is conducts 15 days of computer training course including theory and practical training. The practical training is conduct 75 minutes on the first day and 15 minutes more than the previous day on the days.

    i) Kumara is a trainee who completed the computer course; Find the how many hours did he spend on the last day of practical training.

    ii) If the number of days the course was held is n, show that the total time of practical training in n days is $\frac{n}{2}$ (135 + 15n) minutes.

    iii) Find the total time he received practical during the course in hours.

    iv) If Rs. 200 per hour was charged for practical training, Find the total amount that Kumara has to pay for practical training ?

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

    i) Construct the triangle PQR such that PQ = QR = 7.5 cm and $P\hat{Q}R = 90^0$

    ii) Construct the perpendicular bisector of PQ and named the interesting point of PQ and PR as X and Y respectively.

    iii) Construct the circle with PQ as diameter.

    iv) The perpendicular bisector of PQ intersects the circle at Z , complete PZQR quadrilateral and write a special name of that quadrilateral.

    v) Show that QR = 2XY

9. In the trapezium ABCD given in the figure, AB $//$ BC. E is the midpoint of BC. BC = 2AD and the lines AE and BD intersect at O
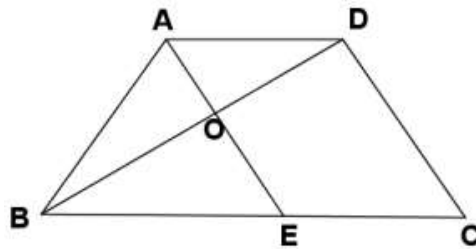
    i) Prove that BO = OD.

    ii) Show that the quadrilateral OECD is a trapezium.

    iii)Name a triangle which is equal to the area of the triangle ABD, giving reasons.

10. A solid metal cylinder and metal cone with radius of the base is r and height is twice of its radius. Melted both cylinder and cone, made 26 solid metal spheres without wasting metal. Show that the total volume of metal of the sphere and cone is $\frac{8\pi r^3}{3}$, hence Show that $a = \frac{r}{2}$.

11. The sports unit of Jayasumana maha vidyalaya called up the boys and girls squad to select the school the school volleyball and cricket. 36 boys are selected to the team and 20 of them are selected to the volleyball team. 46 students are selected to the volleyball team. The number girls are selected to the cricket is exactly half the boys who selected to the squad.

i) Copy the given Venn diagram in your answer script and include above information in diagram.
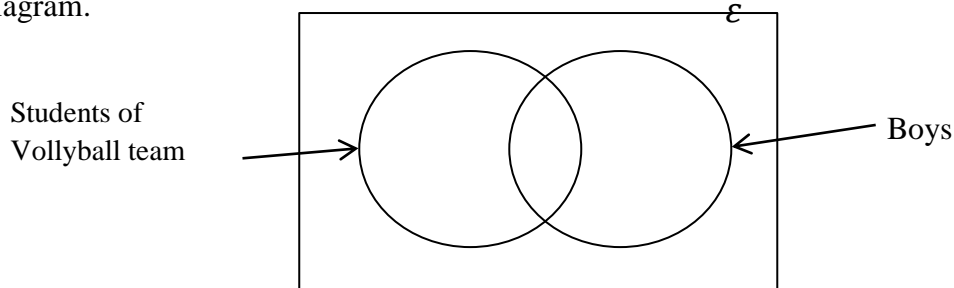
ii) Shade the regions which represent the girls who are selected to the volleyball.
iii) Find the total number of students who are selected to the school team.
iv) Show that the boys of volleyball team is 25% of students who are selected to the school team.

12. PQ is a diameter of the circle with centre of O. R is the point on the circle and $\stackrel{\wedge}{QPR} = 30^0$. The bisector of $\stackrel{\wedge}{PQR}$ is intersect the circle at S. Show that $\stackrel{\wedge}{SPQ}$ is bisected by PR and prove that QRSO is a parallelogram.

* * *