

Part A

Answer *all* questions on this paper itself

1. In which two square numbers lies $\sqrt{41}$

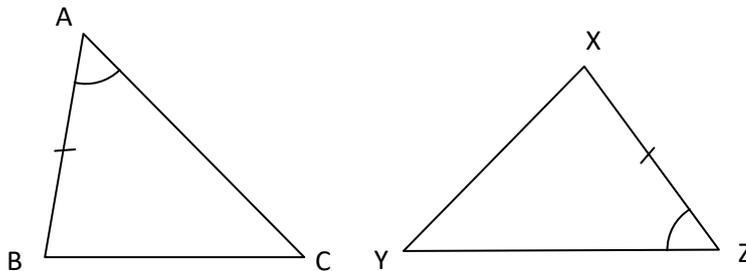
2. Simplify. $\frac{x}{2} + 1 = 3$

3. Write in logarithm form. $2^4 = 16$

4. Simplify.

$$(x + \dots)^2 = x^2 + \dots + 36$$

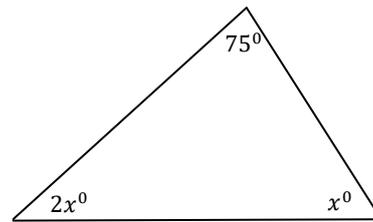
5. What is the other condition to congruent two triangles of ABC and XYZ.



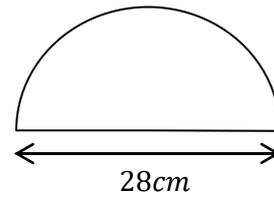
6. The capacity of a certain water tank is 500l. What is the remaining volume of water after consuming $\frac{2}{5}$ of that tank.

7. ABCD is a parallelogram. Write down two relationships between AB and CD sides.

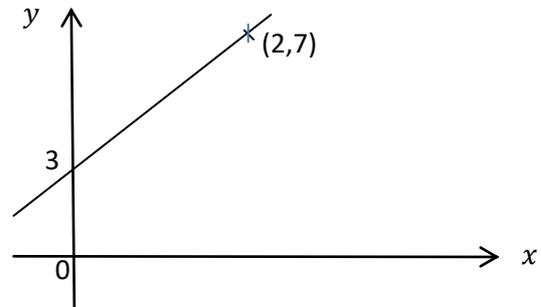
8. Find the value of X.



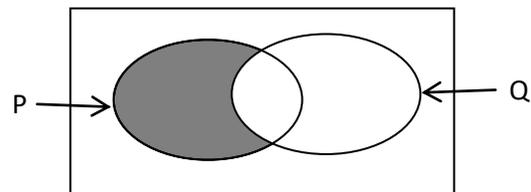
9. Find the arc length of the sector.



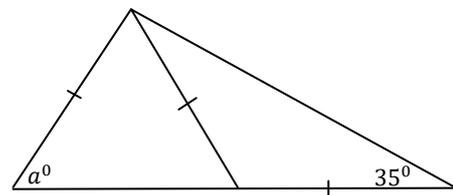
10. Find the gradient of the function.



11. Write down the shaded region as set notation.



12. Find the value of a .



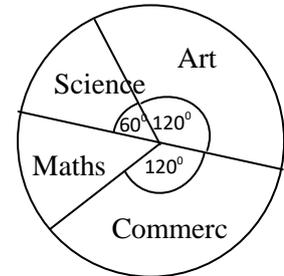
13. The uniform rate of water flowing of a certain pipe is 75 litres per minute. Find the time taken in minute fill a tank having the capacity of 1.5 m^3 .



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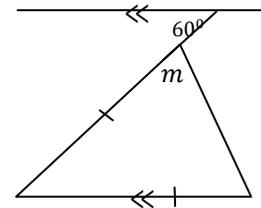
In a certain farm the foods are sufficient for 20 days to 12 cattles.If 4 cattles were removed to another farm,find the number of days sufficient that foods for memaining cattles.

15. The pie chart represents the information about 180 students regarding the subject scheme of G.C.E.(A/L).Find the number of students of maths scheme.

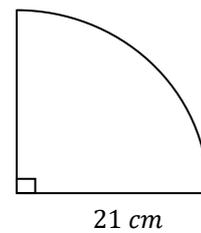


16.Simplify $\frac{1}{x} \div \frac{1}{3x}$

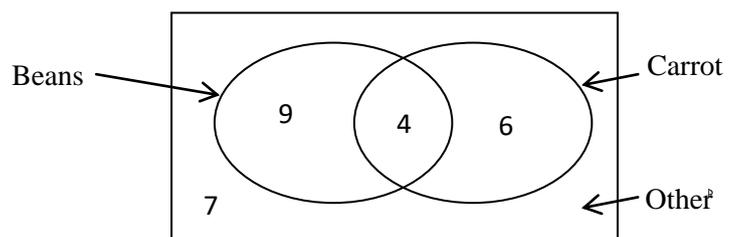
17.Find the value of m .



18. Find the area of the sector.



19. The following venn diagram has been drawn with the information about the type of cultivations of the farmers in a certain village.Find the number of farmers that grow only one cultivation.

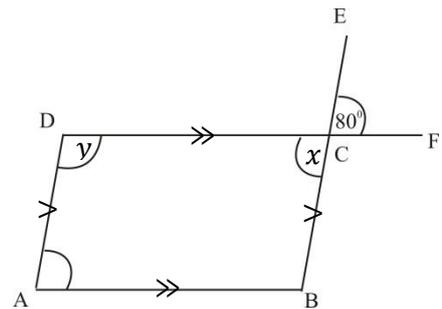


20. Simplify $x(x + 3) = 0$

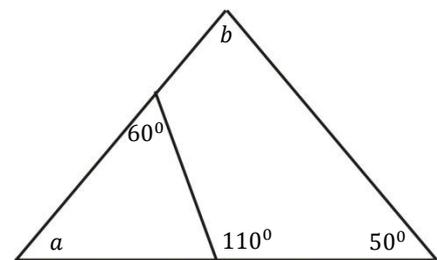
21. Calculate the total amount that has to be paid in two years to settle a loan of Rs.50 000 taken at an annual simple interest rate of 12%.

22. Find the least common multiple of $2a^2b, 6ab^2$

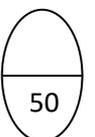
23. Find the value of X and Y.



24. Find the value of a and b based on the information given in the diagram.



25. Find the function of the straight line which goes through the points of (0,3) and (4,6).



Part B*Answer all questions on this paper itself.*

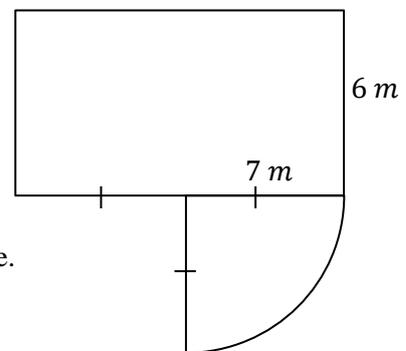
1. When Nimal checked his water consumption in a day he knows that $\frac{1}{10}$ capacity for household chores and $\frac{1}{2}$ for cultivations. He further noticed that 600 l water was remaining in the tank.

- i) Write down the functions of water capacity for household chores and cultivation respectively.
- ii) What is the fraction of water remaining in the tank?
- iii) How many litres of water was consumed in that day?
- iv) What is the capacity of the tank?

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2. The following figure represents a rectangular compound. There is a pond in sector shape having the radius 7m.

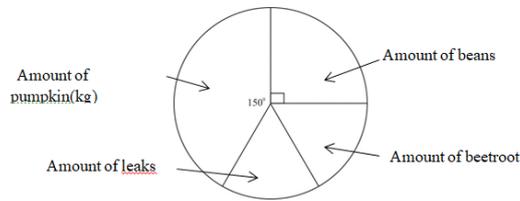
- i) Find the arc length of the sector.
- ii) 14 cm part of the compound is attached to the wall of the house. It is decided to construct a iron fence around the remaining Margin of the compound. Find the length of the fence.
- iii) If there is an intention of fixing cement blocks in the rectangular part. How many rectangular cement blocks having the length of 30cm and width of 20cm are needed?
- iv) What is the total area separated for the pond and compound?



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3. The pie chart represents the amount of sold vegetables by a seler in a certain day,leaks and beetroots were sold in equal quantities.

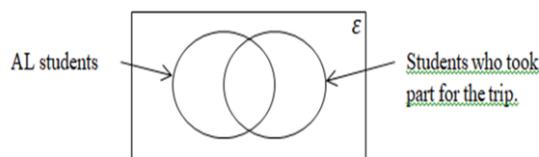


- i) What is the value of angle for sold leaks?
- ii) If the sold quantity of leaks 180 kg what is the quantity of sold pumpkin rather than the quantity of sold beans.
- iii) Find the income frombeans if 1kg of beans is Rs.120?
- iv) Find the fraction of sold pumpkin.

4.

It is estimated that 10 days are spent to construct a building by 25 labourers.After 4 days another 45 labourers joined for the construction work.

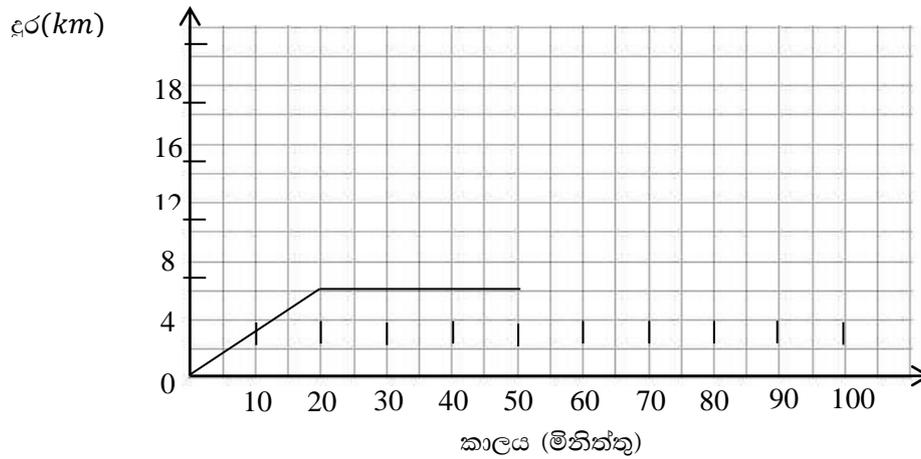
- i) How many man days are needed for the work in first 4 days?
 - ii) If another one labourer is joined to the work ,find the number of days required to complete that work before the expected date.
- a) 20 out of 44 A/L students have participated for a trip which has 480 students in a school.The total number of students who took part for the trip is 80.
 - b) Represent the above information in the following venn diagram.



- i) How many students did not participate for the trip who are not belonged to the AL s?
- ii) Show that there are $\frac{5}{6}$ students did not participate for the trip?

5.

Sujith returns his home after solving some maths by his bicycle. The following Distance-Time graph represents how he went to the friend's home and how long he stayed there.



- (i) How long did he take to go by bicycle in minutes.
- (ii) Find the speed of kilometres per hour for Sujith to go his friend's home.
- (iii) If the speed he returned is 12kmh^{-1} draw the relevant graph in the above graph itself.
- (iv) Find the time spent for he going for the home of friend and returned?

3. i) Expand. $(-2x + 3y)^2$

ii) Find the Least Common Multiple of $2(x - 3)$, $x^2 - 9$, $x^2 + 6x + 9$

iii) Find the value of $1 \times 94^2 + 4 \times 94 - 12$ by factors.

iv) If $b - a = -(a - b)$, Simplify $\frac{5}{x^2-9} - \frac{2}{3-x}$.

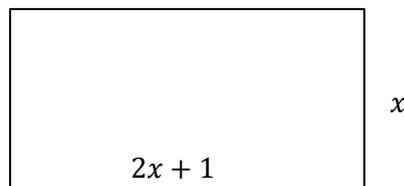
4. a) Two days are spent by 8 train servants for the disinsection a city because of corona pandemic.

i) How many man days are spent for the disinsection.

ii) If this is to be finished from two days how many train servants should be deployed?

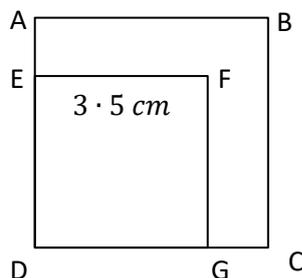
b) Water supplied to a tank for acultivation in spricle by a pipe A which has capacity of 2000 l and the rate of 150 l per minute. The pipe B supplied water from the tank for that cultivation at the rate of 100 l per minute and C pipe also supplied water. When the tank has 500 l of water, all the pipes are opened at once and after one hour C pipe and after 1 hour and 15 minutes other two pipes are closed. If the remaining capacity of the tank is 50 l find the rate of suppling water of C pipe in litres per minute.

5. There is a rectangular block of land in the following figure. Its' length and width indicated in metres. Area of the land is $36 m^2$. It is decided to make a fence around the land. Find the length of the wire needed for 3 lines around the fence.



6. a) i. Find the square root of 2304 by the method of division.

ii. There are two squares of $ABCD$ and $EFGD$. The area of $ABCD$ is $33 \cdot 64 cm^2$. Find the length of GC .

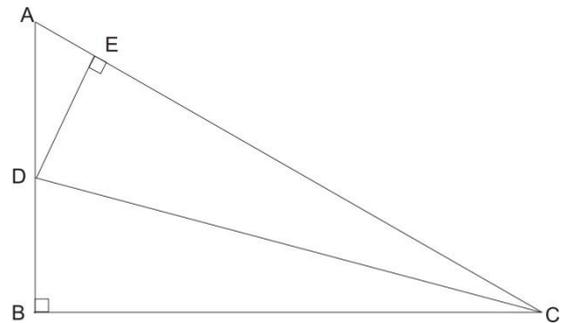


b) Thamali was given amount by her farther $\frac{1}{3}$ for books, $\frac{5}{6}$ of rest to buy her tool box. After expending he has Rs.200. How much did the farther give.

Part B

Answer five questions only.

7. In the right angled triangle of ABC, $\angle BCA = 60^\circ$ The bisector of $\angle BCA$ meets at D. The perpendicular drawn from D to AC is DE.



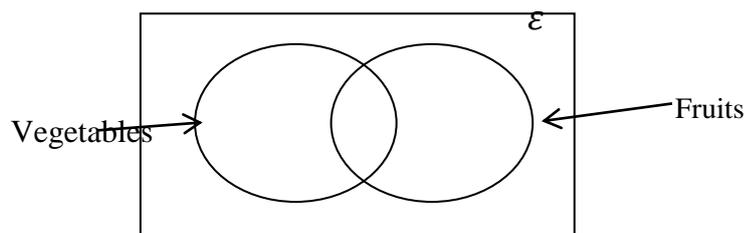
- i) Find the value of $\angle BAC$.
- ii) Show that the $\triangle ADC$ triangle is an isosceles triangle.
- iii) Find the value of $\angle ADE$.
- iv) Prove that $DC + BD = AB$.

8. The figure depicts a running track of a playground with two semi-circular parts having the radius a and one rectangular part. The perimeter of the running track is $2a(\pi + 4)$. Show that the area of the running track is $a^2(\pi + 8)$.

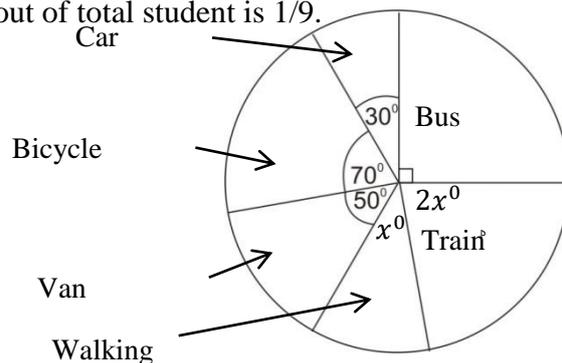


9. a In a certain village 37 farmers grow vegetables and 23 farmers grow fruits. Five of them grow only fruits. Further more the number of those who do not grow vegetable is 13.

- i) Represent this information in a Venn diagram.
- ii) How many of the farmers grow neither of the two crops?
- iii) Shade the region of those who grow only vegetables.



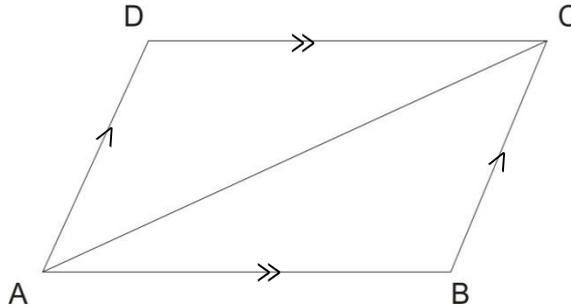
b) The following pie drawn with the information gathered from a school of a certain city regarding the mode of their transportation is given below. Show that the number of students who come to school by walking out of total student is $\frac{1}{9}$.



10. i) Find the value of $\log_2 32 + \log_3 27 - 2$
 ii) Simplify. $\log_a x + \log_a 2 = \log_a 16 - \log_a 4$
 iii) Simplify using the table of logarithms.

$$\frac{125 \cdot 4 \times 5 \cdot 41}{10 \cdot 56}$$

11. In the $ABCD$ parallelogram \odot X and Y points are located on AC , such that $AX = CY$.



- i) Copy the figure on your paper and mark the point X and Y . Join DX and BY .
 ii) Prove that $\triangle ADX \cong \triangle BCY$.
 iii) Show that $\angle DXY = \angle BYX$.
 iv) Show that $DXBY$ is a parallelogram.

12. $ABCD$ is a square and AB is produced to E such that $AB = BE$. DE intersects the line of BC at F . Prove that $2 DF = DE$.

