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சபரகமுவ மாகாண கல்வித் திணைக்களம்  
**Sabaragamuwa Provincial Department of Education**

දෙවන වාර පරීක්ෂණය 2018  
இரண்டாம் தவணைப் பரீட்சை 2018  
**Second Term Test 2018**

11 ශ්‍රේණිය  
தரம் 11  
**Grade 11**

ගණිතය I  
கணிதம் I  
**Mathematics I**

පැය දෙකයි  
இரண்டு மணித்தியாலம்  
**Two hours**

Name / Index No.. ..... Class: .....

★ Answer all questions on this paper itself.

**Part - A**

01) Consider the following statements about  $\sqrt{20}$  mark ( $\checkmark$ ) or ( $\times$ )

$4 < \sqrt{20} < 5$	
$4.4^2 = 19.36$	
$4.5^2 = 20.25$	
1 <sup>st</sup> approximation of $\sqrt{20} = 4.4$	

02) Simplify :  $24a^2b \div 8ab^2$

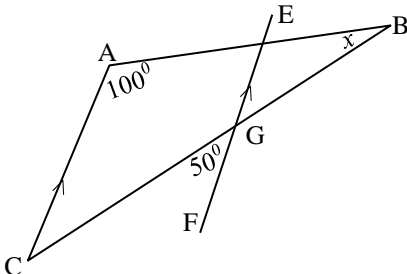
03)  $p \in \mathbb{Z}^+$ ,  $(x + p)^2 = x^2 + ax + 16$  Find the

i. value of  $p$

ii. value of  $a$

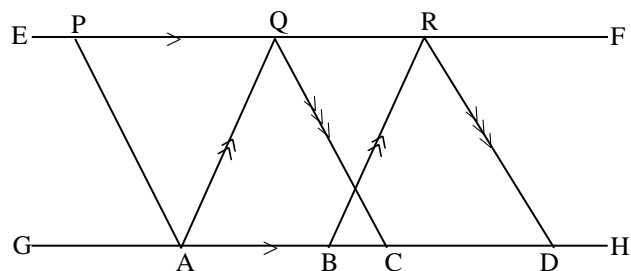
04) Solve :  $\frac{4}{x+2} = \frac{2}{x}$

05)



If  $\angle BAC = 100^\circ$ ,  $AC$  parallel  $EF$ , and  $\angle CGF = 50^\circ$  find the value of  $x$

- 06) In the figure  $EF$  and  $GH$ ,  $AQ$  and  $BR$ ,  $QC$  and  $RD$  parallel each other. If the area of parallelogram  $QRDC$  is equal  $24\text{cm}^2$  and  $PQ = QR$ , find the area of  $PQA\Delta$

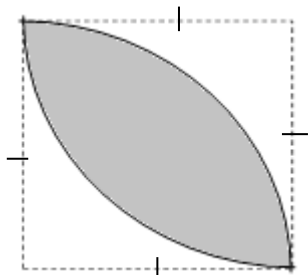


- 07) If  $\lg x = n$

i Write in index form.

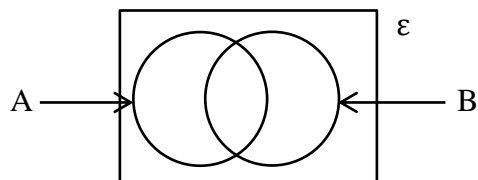
ii Find the value of  $x$ , when  $n = 2$

08)

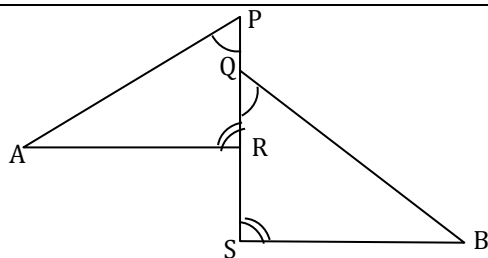


Consider the card board block cut from a square sheet with 7cm length as appear on the figure. What is the perimeter of the figure?

- 09) If  $n(A) = 15$  and  $n(B) = 20$  and  $n(A \cap B) = 8$  find the value of  $n(A \cup B)$

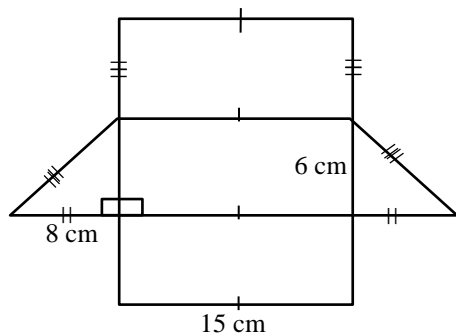


10)



In the triangle  $APR$  and  $BSQ$ , if  $\hat{A}PR = \hat{B}QR$  and  $\hat{A}PR = \hat{B}SC$ ,  $PQ = RS$  what is the congruent state?

11)

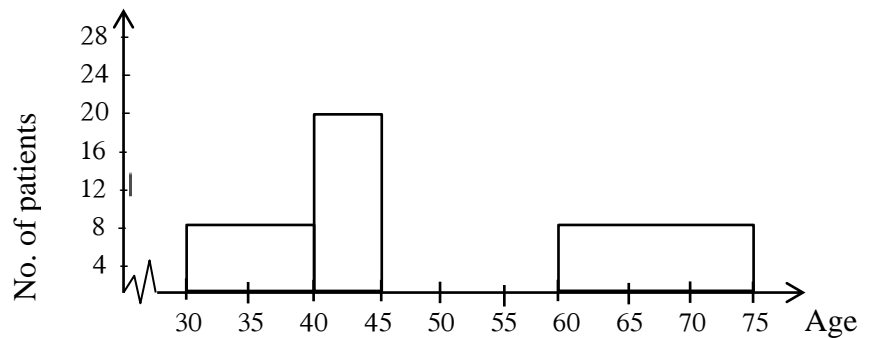


Consider the given block of an object,

- Give a specific name of the object?
- Find the volume of the object if the cross section area is  $24\text{cm}^2$

- 12) Consider the following data of patients in a clinic of rural hospital. Complete the histogram.

Age of patients years	No. of patients
30 - 40	16
40 - 45	20
45 - 50	28
50 - 60	24
60 - 75	24



- 13) If a father gave  $\frac{1}{2}$  of his land to son and  $\frac{1}{5}$  to his daughter, what is the fraction remains with him?

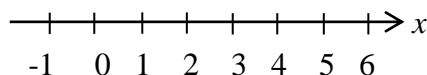
- 14) Factorize :  $y^2 - 3y - 10$

- 15) Wimal invests Rs 60000 in a business when the market price is at 30.00, if the annual dividend profit is at Rs. 2.25 per share, what is his annual income?

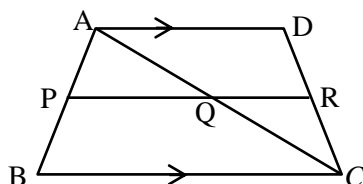
- 16) 600 l capacity tank fills water with a pipe 40 l per minute. How long will it take to fill the tank completely?

- 17) Probability of germination a of bitter guard seed is  $\frac{90}{100}$ . Probability of germination a Beet Root seed is  $\frac{80}{100}$ , Find the probability of germinating both bitter guard and Beet Root seeds.

- 18) Represents the value of x of the inequality  $2x < \frac{3x+5}{2}$  on the given number line.

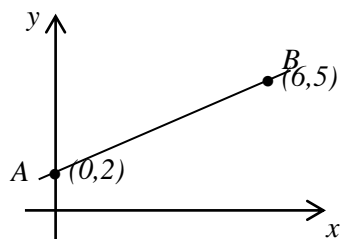


- 19)



In the figure,  $AD \parallel BC$ , P and Q are the two mid points of AB and AC, CR = 6cm. Find the length of CD

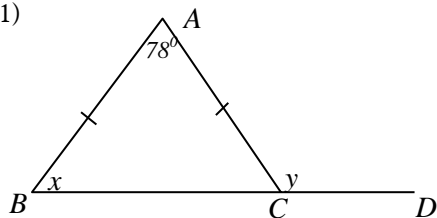
20)



i. What is the gradient of the line AB

ii. Write the equation of the line AB

21)

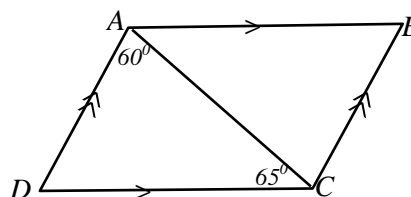


In the triangle  $ABC$ ,  $AB = AC$ ,  $BC$  produced to  $D$ , if  $\hat{BAC} = 78^\circ$ , find the

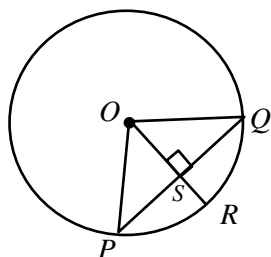
i. value of  $x$ ii. value of  $y$ 

22)

Based on the information given in the parallelogram  $ABCD$  find The magnitude of  $\hat{ABC}$

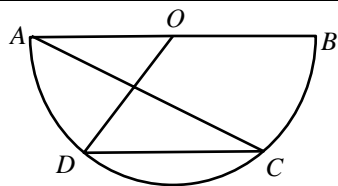


23)



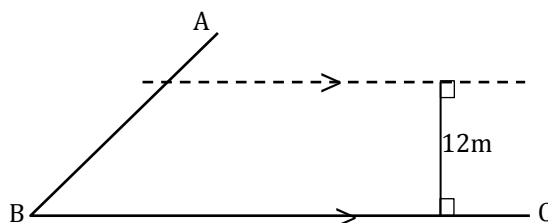
The Centre of the circle is  $O$ . If radius is 13cm,  $PQ = 24$ cm, and  $OS = 5$ cm, find the length of  $PS$

24)



The Centre of the given circle is  $O$ ,  $AB$  is a diameter of the given semicircle.  $C$  and  $D$  are two points on the circle if  $\hat{ACD} = 36^\circ$ , find the value of  $\hat{BOD}$ ?

25) The light post  $L$  is to be fixed at a point at the equal distance with to  $AB$  and  $BC$  and 12m from the road  $BC$ . Mark the location of  $L$  of the given diagram by using the knowledge of loci.

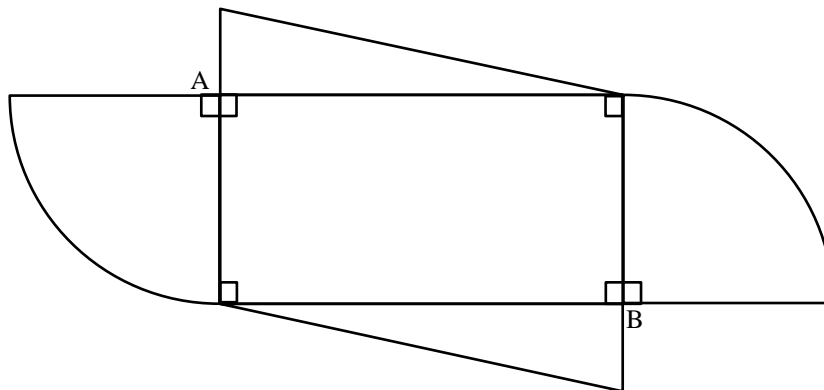


## **Part - B**

**(Answer all the questions on this paper itself.)**

- (01) A vendor bought a stock of mangoes for Rs. 12 each per fruit. He kept aside  $\frac{1}{15}$  of the stock and separated the rest for the sale. Out of the number of mangoes separated for sale,  $\frac{1}{16}$  were spoilt and he received Rs. 1400 by selling the remaining mangoes at Rs. 20 each per fruit.
- i) Find the number of mangoes separated for sale as a fraction of the whole stock.
  - iii) Find the number of mangoes sold as a fraction of the whole stock.
  - iii) What is the number of mangoes sold?
  - iv) Find how many mangoes the vendor bought.
  - v) Find the profit he gained.

(02)

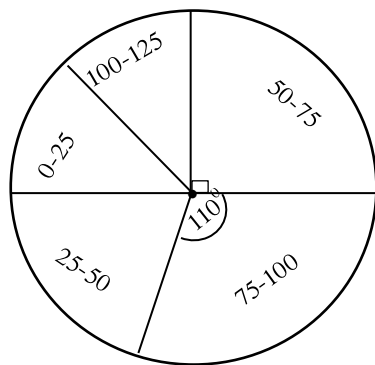


The figure shows a brass sheet used to make a memorial plaque. It consists of two sectors of radius 7cm, a rectangle of length 12 cm and breadth 7cm and two right angled triangles of the length of the hypotenuse 13 cm and the lengths of the two sides containing the right angle 12cm and 5 cm.

- i) Find the length the arc of a sector
- ii) Find the perimeter of the sheet.
- iii) Find the area of a sector.
- iv) Calculate the area of the sheet.
- v) Find the area of the rectangular brass sheet required to cut out the plaque sheet.

- (03) a) A vehicle dealer imports a motor bike worth Rs. 120 000/-
- If customs duty of 60% is charged when importing the bike, find the amount of customs duty he has to pay.
  - If an additional amount of Rs. 12000 is charged for unloading the bike at the harbour and transportation, find the total amount spent on the bike.
  - If Rs. 30600 has to be paid as VAT on the total amount he spent for the bike, calculate the percentage VAT charged.
- b) It has been estimated that it takes 4 men 6 days to construct a stone retaining wall in a land. After all 4 men work for 4 days, how many more men should be employed to complete the remaining amount of the task in one day?

(04)



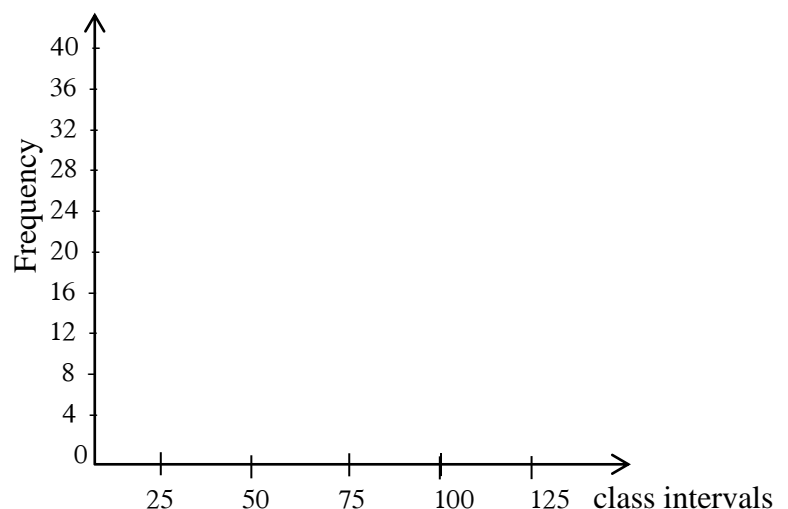
The pie chart given here shows the number of units of electricity used by a group of households in a certain housing scheme.

- ★ The number of households that used 0-25 units is equal to the number of house holds that used 100-125 units
- ★ The number of households that used 25 - 50 units is twice the number of households that used 0-25 units.

- What is the angle at the centre of the sector that represents the number of house-holds that used 0-25 units.
- If the number of house-holds that used 0-25 is 12, fill in the blanks in the table given below.

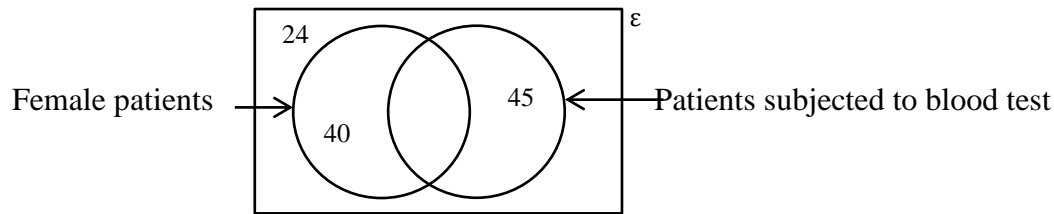
No. of units	No. of house-holds
0 - 25	12
25 - 50	24
50 - 75	_____
75 - 100	_____
100 - 125	12

- Using the data in the table, draw the relevant histogram on the axes shown below.

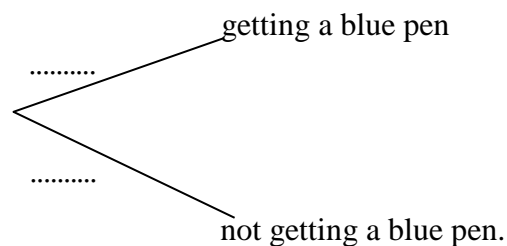


- Draw the frequency polygon using the histogram.

- 05) a) The Venn diagram given below shows information collected regarding 150 patients who attended a medical clinic on a certain day.



- i) Shade the region, in the above Venn diagram, that represents the female patients who were subjected to the blood test.
  - ii) Find the number of male patients who attended the clinic.
  - iii) Find the number of female patients who were subjected to the blood test.
- b) A box contains 3 blue pens and 7 pens of different colours. All pens are of the same size and same shape. One pen is taken randomly out of the box.
- i) What is the probability of getting a blue pen?
  - ii) An incomplete tree diagram that illustrates the events relevant to above random experiment is shown below. Complete the tree diagram by writing the relevant probabilities on the branches.



- iii) There is another box containing two blue pens and 3 red pens of the same shape and same size. From this box, one pen is taken randomly. Extend the above tree diagram to include this information and find the probability of getting two blue pens in both instances.

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