Provincial Department of Education
Northern Province
Placement Exam -2021

Grade - 10	Mathematics	Time : 3 hours 10 minutes

Part - I

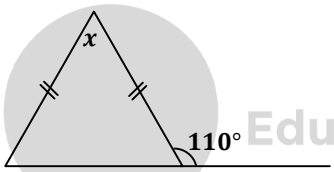
Answer all questions.

01) If custom duty of 8 % of the value of has to be paid when a hand phone is imported. How much duty has to be paid this type of phone value Rs 20 000 is imported?

02) Simplify : $\frac{4}{3x} - \frac{1}{3x}$

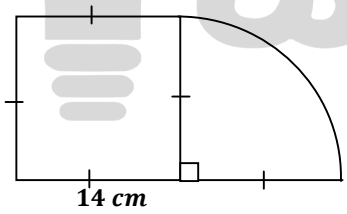
03) $\sqrt{47}$ is in which two whole numbers?

04) Find the value of x in the given figure?



05) Find the L. C. M. $3x^2y,\ 2xy$

06) Find the area of the figure?

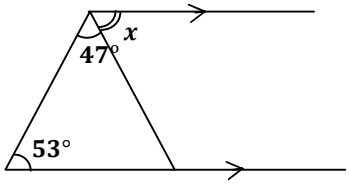


07) The scores of 11 cricket players are given below.

2, 3, 8, 11, 15, 16, 18, 22, 25, 30, 31

What is the median?

08) Find the value of x in the given figure?



09) 8 men take 3 days to complete a given task. How many men are required to complete twice of that task in 3 days.

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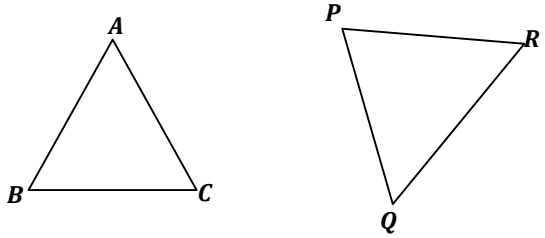
10) Factorize :$x^2 + 3x - 40$

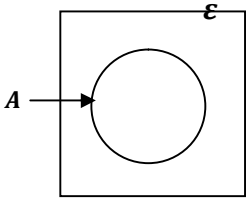
11)



$AB = PR, \quad A\hat{B}C = R\hat{P}Q$

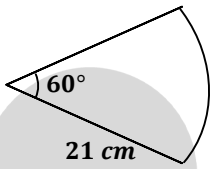
If these two triangles are congruent (Side, Angle, Side) what is 3rd condition (data)?

12)



Shade A'in the given Venn diagram

13)

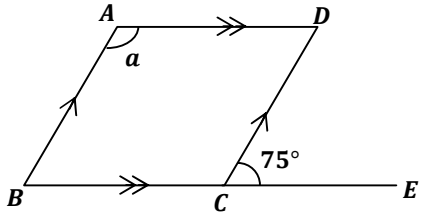


Find the perimeter of the given sector?

14) Solve : $x(x - 7) = 0$

15) A bag contains Red and white balls. If the probability of getting red colour ball is $\frac{7}{10}$, Find the probability of getting white colour ball.

16)



Find the value of a in the given parallelogram?

17) Find the gradient and intercept of a straight line given by 2y = 3x - 2

18) Fill in the blank space

(i) Opposite sides of a parallelogram are .....

(ii) ..... of a parallelogram bisect the area.

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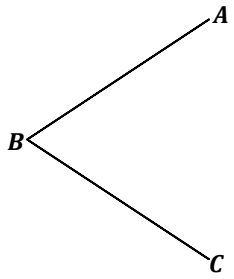
19) $x^2 + 8x + \ldots\ldots\ldots = (x + \ldots\ldots)^2$

Write the suitable number on the blank space.

20) 

A tree has to be planted equal distance from the boundaries of lines AB, BC and equal distance from the points A, B.

Mark the suitable point on the diagram using the knowledge of loci.

$(20 \times 2 = 40$Marks$)$

Part - II

Answer for 6 questions only

01) A person spends $\frac{1}{3}$ of the salary for food and $\frac{1}{4}$ of the salary for educations $\frac{3}{5}$ of the remaining portion for the medical expenses. He deposits the remaining amount at the bank.

Additional amount of money he spends for food than education is Rs.6000.

(i) What fraction of the total salary spent for food and education?

(ii) What fraction of the total salary spent for medical expenses?

(iii) Give the additional amount of money spent for food than education as the fraction of the total salary.

(iv) Find his monthly salary.

(v) Find the amount he deposited at the bank.

02) (a) Solve

$$\frac{3x-2}{5} = \frac{2x+1}{3}$$

(b) Abinas saves money by putting the coins of Rs.10 and Rs.5 in a till.

When count the collected money.

He observed that the numbers of Rs.5 coins are equal to three times the number of Rs. 10 coins. Total money he collected in that till is Rs. 500.

(i) Form simultaneous equations by taking the number of five rupee coins as x and the number of ten rupee coins as y.

(ii) Find the numbers of five rupee coin and number of ten rupee coin by solving the above equations.

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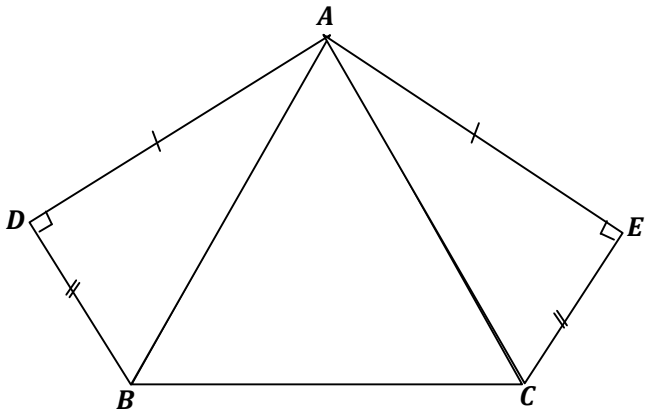
03) (a) Write the conditions for the two triangles to be congruent.

(b)



In the figure $AD = AE,\ DB = CE,\ A\hat{D}B = A\hat{E}C = 90°$ and $\hat{AD} = 20°$.

(i) Show that $\Delta\, ABD \equiv \Delta\, ACE$.

(ii) Find the value of $A\hat{C}E$.

(iii) Show that the $\Delta\, ABC$ is an Isosceles triangle.

04) (a) Assessed annual value of a shop is Rs.240 000. If Rs.4800 has to be paid as quarterly rate.

(i) Find the rate that has to be paid for a year.

(ii) Find the percentage of the rate.

(b) A person got Rs. 50000 as loan at 12 % of simple interest after a particular time he released from the loan by paying Rs. 80000.

(i) Find the total interest he paid?

(ii) Find the annual interest for Rs. 50000?

(iii) He released from loan in how many years?

(iv) A person got Rs. p as loan at same interest. He released from loan in t years. Show that the total amount he has to pay Rs. $p\left(1 + \frac{3t}{25}\right)$.

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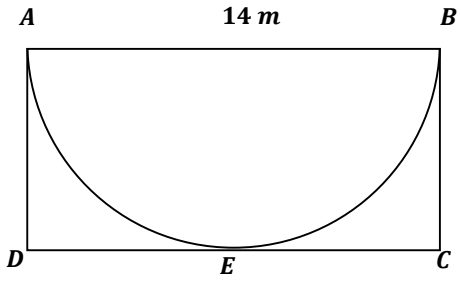
05) $ABCD$is a rectangular shape land. A semicircular shape water pool AEB is situated in the land $ABCD$. Grass was planted in the remaining part. If the length of the rectangle is $14\ m$.



(i) Find the breadth of the rectangle.

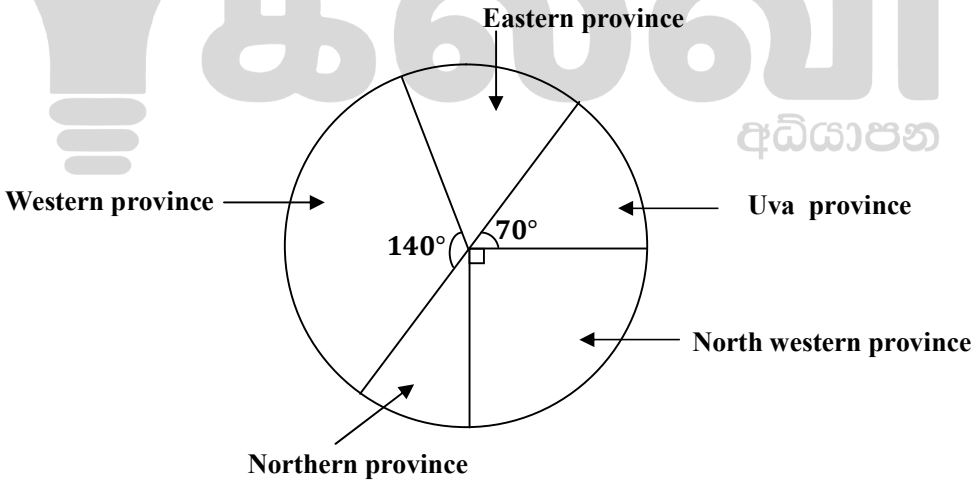
(ii) Calculate the area of the water pool.

(iii) Find the area of the portion that planted grass.

(iv) Bulbs have to join along the arc of the water pool with the distance of $2\ m$. How many bulbs are needed?

(v) A path has to be constructed around out of the rectangular land with the distance of $1.5\ m$. Find the area of the path.

06) The pie chart is given below illustrates the information about the persons who affected by covid - 19 in five provinces of Sri Lanka during a certain day.



(i) If the number of persons who affected in Eastern Province is two times of the number of persons who affected in Northern Province, find the angle at the centre of the circle which denotes the persons who affected in Northern Province.

(ii) Find the percentage of persons who affected by covid - 19 in North Western Province.

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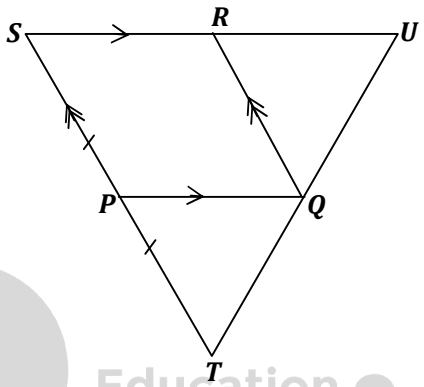
(iii) Find the ratio between the persons who affected by covid - 19 in Uva Province and Western Province. Express it in simplest form.

(iv) If 30 more patients identified in Eastern Province than Northern Province, calculate the total number of patients infected during that day, in all 5 provinces.

(v) Next day, 60 newly infected persons were identified in western province only. If they decided to include the above information in the new pie chart. Find the angle at the center of the sector which donates the Western Province.

07)



In the parallelogram $PQRS$, side SP is produced up to T, So that $SP = PT$. Also SR and TQ when produced meet at 'U'.

Prove that.

(i) $PTQR$ is a parallelogram.

(ii) $PQUR$ is a parallelogram.

(iii) $SR = RU$

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