පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව උතුරුමැද පළාත
DEPARTMENT OF EDUCATION NORTH CENTRAL PROVINCE

Seeond Term Test - 2017

Mathematics I

Grade
10

පාසලේ නම :- .....

ඇතුළත්වීමේ අංකය :- ..... Time: 2hrs

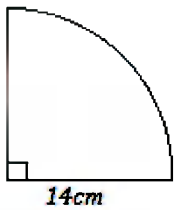
- **Answer all the questions of part A and B on the paper itself.**

Part A

01. Select a whole number whose square root is 2.6 approximately

i. 6 ii. 7 iii. 8

02. The figure denotes a sector of a circle of radius 14cm with angle at the centre 90^0. Find its arc length.

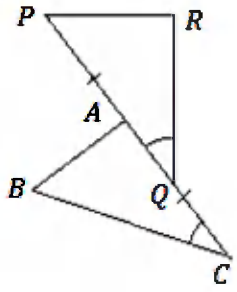


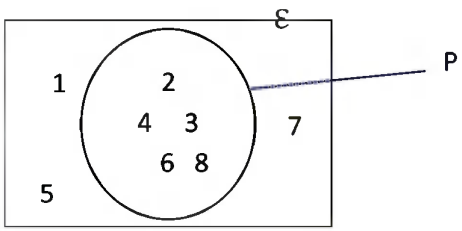
03. Find the solutions of quadratic equation, $(x-3)\,(x+5) = 0$

04. In the diagram, PQ = AC and $P\hat{Q}R$ = A$\hat{C}$B. To congruent ΔABC and ΔPQR,

i. Write down the other pair of corresponding elements which must be equal.

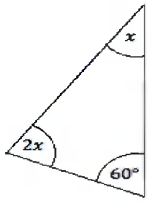
iii. Write down the congruency case of them



05. 

According to the information given in the Venn diagram, find $n(p')$

06. According to the given information, Find the value of x

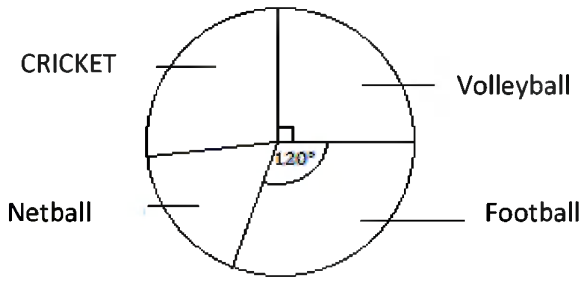


07. Select, whether the following sentences are direct proportion or inverse proportion and put "√ " sign in relevant box.

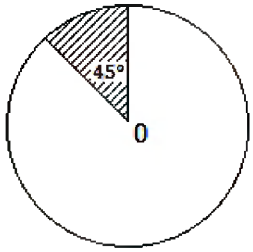
	Sentence	Direct proportion	Inverse proportion
i	The number of persons engaged in a certain job of work and the time taken to complete it.		
ii	A number of meters of cloth and its value		

08. Factorize, $a^2 - 7a + 12$

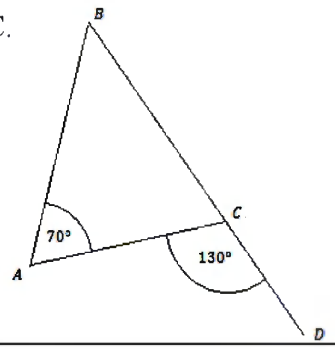
09. The information gathered from a certain class regarding the sport they like the most , is given by the following pie chart. If the number of students who like football is 18, how many students did the class have?



10. If the radius of a circle of centre '0" is 14cm, find the area of the shaded part. (Take $\pi = \frac{22}{7}$)



11. According to the information given, find the magnitude of $A\hat{B}C$.



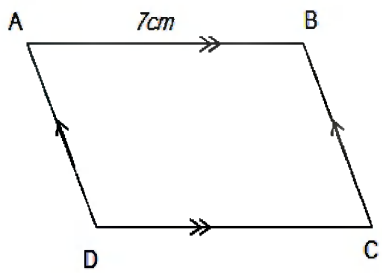
12. Find the least common multiple of $6x^2y, xy^2$ and $2xy$.

13. A house of assessed annual value of a house is Rs 20 000. If the relevant provincial council institution charges 8% of the value of the house as rates, calculate the rates that have to be paid for a quarter.

14. There are 102 cows in an animal farm which has 180 total number of animals. The necessary steps which can be used to find the angle at the centre of the sector which denotes number of cows represent in a pie chart, is given below fill in the blanks of it,

$\frac{\text{.....}}{180^0} \; x \; 360^0 =$ ... ...

15. In the given parallelogram, If AB = 7cm and perimeter is 24cm, Find the length of BC.



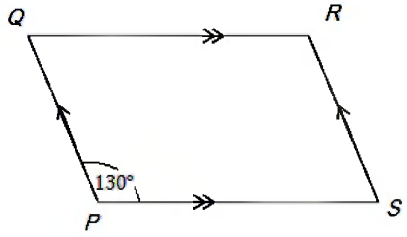
16. i. Express 125 as a power of base 5

ii. Find the value of $log_5 125$

.17. Simplify, $\frac{3}{a} - \frac{2}{3a}$

18. Find the amount of water in liters (l) which flows during a minute by a pipe through which water flows at a uniform rate of $2ls^{-1}$ (liter per second)

19. In parallelogram PQRS, If $S\hat{P}Q = 130^0$, find the magnitudes of $S\hat{R}Q$ and $P\hat{S}R$

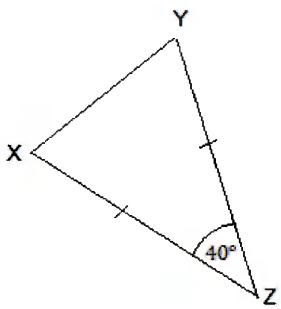


20. Solve, $\frac{3x}{5} - \frac{2x}{5} = 3$

21. A father gave $\frac{3}{5}$ part from his land to his son. The son sold $\frac{1}{3}$ part from his part which was given by his father. What fraction of the whole land did the son sell?

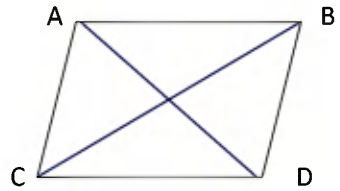
22. Obtain the equation of the straight line whose gradient is (+3) and intercept is (-2)

23. According to the information given in the figure, find the magnitude of $X\hat{Y}Z$



24. Quadrilateral ABCD is a parallelogram.

i) If AB = 8cm, find the length of CD



ii) If the area of the parallelogram ABCD is $80cm^2$, find the area of triangle ABC.

25. Find the equation of the straight line passing through the points A ≡ (2, 3) and B ≡ (0, I)

Part B

01. Mala who went near the olive (Veralu) tree and picked up some of olives in the morning. $\frac{7}{12}$ from the olives she picked up, was sold to a fruits shop. The remaining part was brought to the school. $\frac{3}{5}$ from the part which was brought to the school, was given to Meena who is her classmate and the remaining part was given to Kasim.

I. Express the number of olives which was brought to the school as a fraction.

II. Express the number of olives which was given to Meena as a fraction of total number of olives.

III. If the number of olives given to Kasim is 20, find the total number of olives which was picked up by Mala.

IV. Find the number of olives given to Meena.

V. If an olive was sold to the shop for Rs. 2.00, find the total amount that was gained by selling olives.

02.a) The annual income of Mr. Fernando is Rs. 1 500 000. The Island Revenue Department calculates the income tax according to the following table.

Annual Income	Tax percentage
First Rs 500 000	Tax free
Second Rs 500 000	4%
Third Rs 500 000	8%
Fourth Rs 500 000	12%

According to the above table,

i. Find the taxable income of Mr. Fernando.

ii. Find the tax changed on the first Rs 500 000 from taxable income.

iii. Find the tax charged on the next Rs 500 000.

iv. Find the total annual income tax Mr. Perera has to pay.

b) The annual income of Mr. Fernando is Rs 1 500 000" was written as a mistake. After recorrect it, Rs. 75 000 has to be paid as income tax.

i. Find the income tax which he has to pay more than earlier.

ii. Find the taxable income for the income tax which he has to pay more than earlier.

03.a) A flower seller sold 550 white lotus and 300 Red lotus on a poya day.

i. Express the ratio among the number of white lotus and red lotus which were sold in simplest form.

ii. If a red lotus was sold for Rs. 15 and a white lotus was sold for Rs 10, Find the total amount that was gained by selling the flowers by the seller.

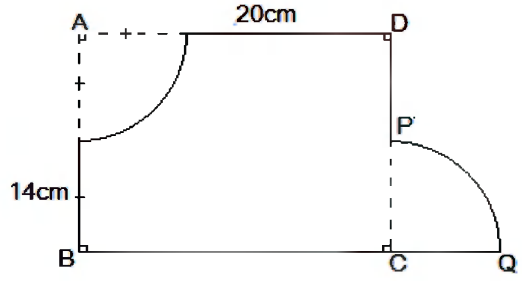
iii. Express the income which was gained by selling the red lotus, as a percentage of total income gained.

b) The distance between cities A and B is 144km.

i. Calculate the time it takes a cyclist to travel from city A to city B at a uniform speed of $12kmh^{-1}$

ii. Calculate the speed of a cyclist which travels from city A to city B in 4 hours with uniform speed.

04. A house captain decided to create a sketch of a house symbol for a sports meet by removing a sector from rectangular shaped cardboard piece ABCD and then that sector was pasted which was shown in the figure. AB = 14cm and AD = 20cm.



i. Find the perimeter of rectangular cardboard piece.

ii. Find the radius of the sector.

iii. Find the arc length of PQ

iv. If a coloured ribbon is going to paste around the outer boundaries of the symbol, find the minimum length of ribbon which is needed.

v. Find the area of one face of the symbol.

05.a) $\in = \{1,2,3,4,5,6,7,8,9,10\}$

A = {2, 3, 4, 5, 7}

B = {3, 6, 10}

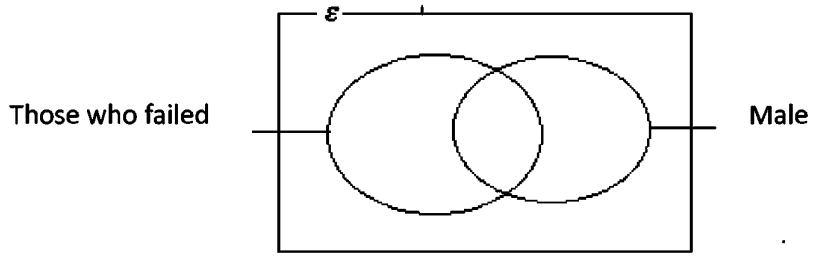
i. Fill in the blanks according to the set notations.
5.....A

ii. Find $n(A \cap B)'$

b) The information about a written test which was held to give driving licenses, is given below.

- The total number of participants for the test - 100
- The number of males those who participated - 65
- The number of males those who failed - 12
- The number of females those who passed - 20

i. Represent the above information in the following Venn diagram.



ii. Shade the region which is represented "The female those who failed the test" in the above Venn diagram.

iii. If the persons those who passed the written test, are only called for the practical test, how many persons can be faced for it.

පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව උතුරුමැද පළාත
DEPARTMENT OF EDUCATION NORTH CENTRAL PROVINCE

Second Term Test - 2017

Mathematics II

Grade
10

පාසලේ නම :- .....

ඇතුළත්වීමේ අංකය :- ..... Time: 3hrs

- **Answer I0 questions selecting 05 questions from part A and 05 questions from part B.**
- **Each question carries I0 marks.**
- **The area of a circle of radins r is πr^2**
- **The area of the curved surface of a cyliuder of radins r and height h is $2\pi rh$**

Part A

01. When a hybrid car is imported, 35% of its value has to be paid as customs duty. The value of it which is being imported is Rs 4 000 000.

i. Explain "What the customs duty is" in briefly.

ii. Find the amount that has to be paid as customs duty, when the car is imported.

The importer expects 20% profit by selling this car.

iii. According to it, find the marked price of the car to sell.

iv. If 3% discount is given when it is going to sell in outright purchase, find the selling price of the car and the profit which is gained by importer.

02.a) The incomplete table given below is used to draw the graph of the function $y = 2x^2 - 8$

x	-3	-2	-1	0	1	2	3
y	10	.....	-6	-8	-6	0	10

i. Fill in the blanks of the above table.

ii. Using the scale of 10 small divisions as one unit along the x - axis and two units along the y – axis, draw the graph of the above function.

b) Using the graph,

i. Find the minimum value of the function.

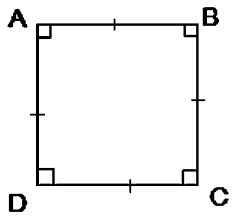
ii. Find the co-ordinates of the turning point.

iii. Write down the equation of the axis of symmetry.

iv. Write down the range of x when the function is increasing negatively.

03. The distance between the two cities A and B is 400km. A train X leaves city A at 6.00 a.m and reaches the city B at 11.00 a.m. After 2 hours, the train X leaves city B at the same uniform speed towards city A. After 2 hours from it a train Y leaves city A travels at uniform speed of half the uniform speed of train$X$, towards city B. Calculate the time at which the two trains meet each other.

04. a) ABCD is a square whose length of one side is 'a'cm. A rectangular shaped plane figure is going to make by increasing the length of sides AB and CD 3cm and reducing the length of the other two sides by 2cm.



i. Write down the length and breadth of the rectangle in terms of a.

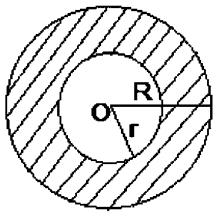
ii. Show that "area of the rectangle can be taken by $a^2 + a - 6$"

b) The diagram shows two concentric circles of radius R and r, and centre 'O'

i. If the area of the shaded part is A square units, Build up an expression for A.

ii. Make "R^2" as the subject of the above expression.

iii. If $A = 462, r = 7, and\ \pi = \frac{22}{7}$, find the value of R.

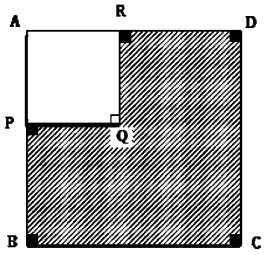


05. While Kasun paid Rs 56 to buy 5 mangoes and 3 guavas, Dasun paid Rs 68 to buy 6 mangoes and 4 guavas.
If the cost of a mango is Rs x and the cost of a guava is Rs y, build up a pair of simultaneous equations and solving them, find the cost of a mango and a guava separately.

06.a) i. Find L.C.M of $x^2 + 4x + 4$ and $(x-2)(x+2)$

ii. Simplify, $\frac{1}{x^2+4x+4} + \frac{1}{(x-2)(x+2)}$

b)



ABCD and APQR are two squares of length of a side x and y respectively. By giving reasons, show that "the area of the shaded part is $(x-y)(x+y)$" using the knowledge of factors.

Part B

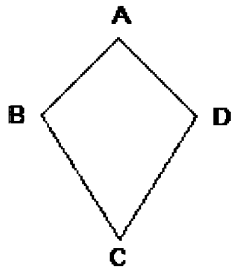
07.a) i. Find the value of $log_3\ 81$

ii. Find the value of $log_2 8 + log_5 125$

b) A label is pasted around a curved surface of a cylindrical shaped milk tin covering it completely. If the base radius (r) of the milk tin is 3.5cm and its height is I2.7cm, Find the area of the label to the nearest whole number using logarithmic tables (Take $\pi = 3.\ I42$)

08. i. Explain two congruency cases of a pair of triangles correctly.

ii. In quadrilateral ABCD, AB = AD and the bisector of B $\hat{A}$ D is AC. Copy the given diagram in your answer sheet and mark all the above information in it.



If AC and BD diagonals intersected at T,

iii. Prove that ΔABT ≡ ΔADT

iv. Prove that AC and BD are perpendicular to each other.

09.a) A certain financial institute pays annual simple interest rate of 6% for savings accounts. According to it,

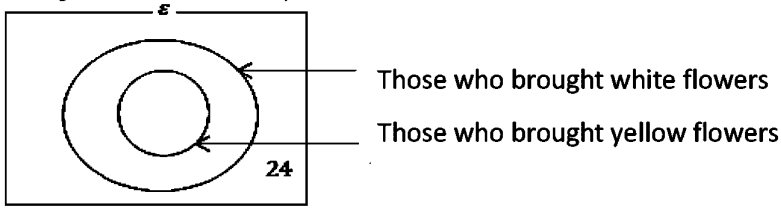
i. How much annual interest is received for a person who has deposited Rs. I00?

ii. How much annual interest is received for Namali who has deposited Rs 25 000 on 1st of January 2012 in her savings account.

iii. After few years, Namali got Rs 7500 as interest for her deposit. At which year end, She got that interest.

b) 60 students those who participated the morning assembly of Dhamma School, brought white flowers. All the students those who brought yellow flowers, brought white flowers. 35 students brought yellow flowers.

i. Complete the following Venn diagram according to the given information. (copy the Venn diagram in your answer sheet)



. **According to the Venn diagram, auswer the followiug questious**

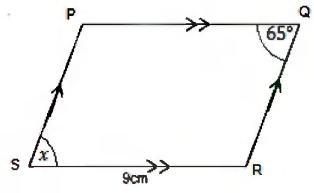
ii. How many of the students brought only white flowers.

iii. How many of the total number of students participated the morning assembly

vi. Shade the region of "those who did not bring yellow flowers" in the above Venn diagram.

10. a) Write down two properties of a parallelogram.

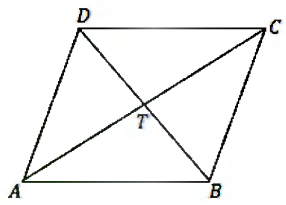
b) PQRS is a parallelogram. $P\hat{Q}R = 65^0$ and RS = 9cm. The perimeter of parallelogram PQRS is 28cm. According to the given information ,



i. Find the magnitude of x^0

ii. Find the length of PS

c) In rombus ABCD, AC and BD diagonals bisected at T. Prove that, the area of ABCD = $\frac{1}{2}$ BD BD. AC

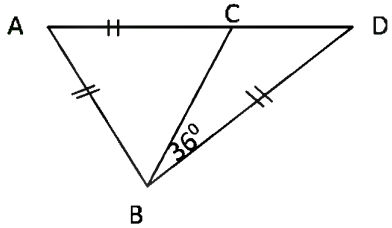


11. In triangle PQR, PQ = PR. RP produced to S. Prove that, the parallel line which is parallel to RQ through P, bisects $Q\hat{P}S$. (Marks will be given for correct diagram and marking the information correctly.)

12. In the triangle ABC, AB =AC. AC produced to D such that AB = BD. According to the given information

i. Name an angle which is equal to $A\hat{B}C$

ii. Name an angle which is equal to $C\hat{A}B$.



iii. Prove that, CB = CD.