



EDUCATION ZONE - NEGOMBO

SECOND TERM EVALUATION - 2017

Mathematics I

GRADE 10

INDEX NO - :

TIME - 02 HOURS

Part - I

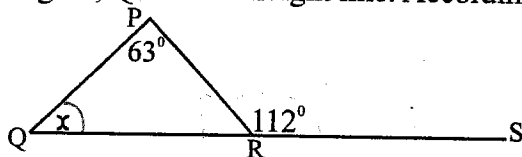
- * Answer all the questions on this paper itself.
- * Each question in Part A carries 2 marks.
- * Each question in part B carries 10 marks.

Part - A

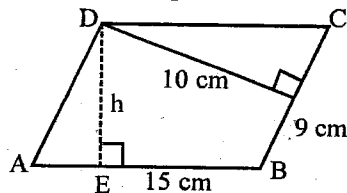
01. Find the length of one side of a square with a perimeter of 48 cm.

02. Find $\frac{1}{4}$ of 1000 ml.

03. In the figure, QRS is a straight line. According to the given data, find the value of x .

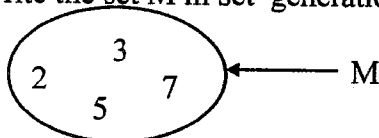


04. According to the given information, find the value of "h" in the parallelogram.

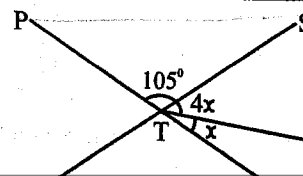


05. Find the least common multiple of 4, 8, 12

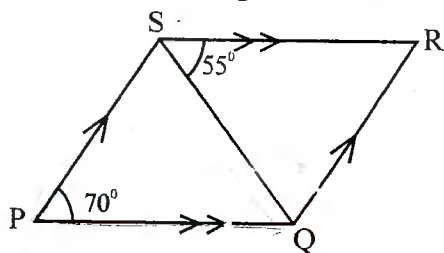
06. Write the set M in set generation method.



07. The straight lines PQ and RS intersect at point T.
Find the magnitude of x .



08. According to the given information on the parallelogram,

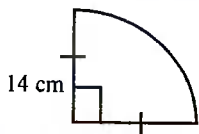


- (i) Find the magnitude of \hat{PQS} .
(ii) Find the magnitude of \hat{SRQ} .

09. Simplify

$$\frac{12}{x+7} - \frac{4}{7+x}$$

10. The figure shows a sector with a radius of 14 cm. Find the area of it.



11. 10 men need 3 days to complete a certain piece of work. How many days are needed for 15 men to finish the same piece of work?

12. If $\log_x 81 = 4$,

(i) Write it in index form.

(ii) Find the value of x .

13. Write the function of the following keys of a calculator.

CE

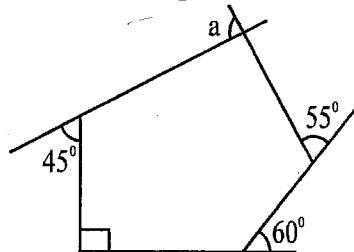
AC

14. Find the value : $\lg 40 + \lg 2 - \lg 8$

15. The ratio between the angles of an isosceles triangle is 3 : 3 : 4. Find the magnitude of the largest angle of it.

16. An aeroplane travels 2240 km within 8 hours with a uniform speed. Find the speed of it, in kilometres per hour.

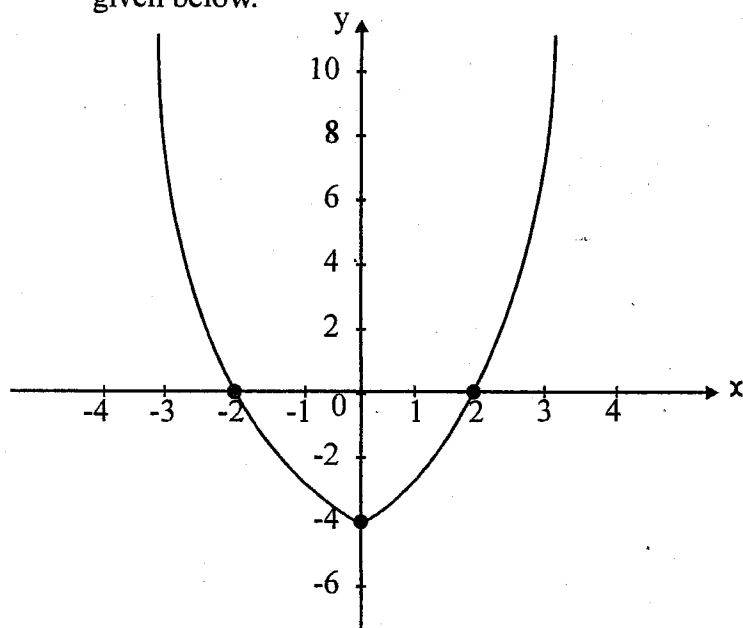
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17. According to the information given on the figure, find the magnitude of "a".



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18. The annual assessed value of a house is Rs. 50 000. If 3% annual rate is charged on it, find the value of one quarter.

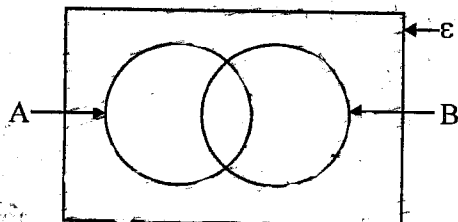
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19. Make "l" the subject of $T = 2\pi \sqrt{\frac{l}{g}}$

-
20. Write the co-ordinates of the minimum point and the equation of axis of symmetry in the graph given below.



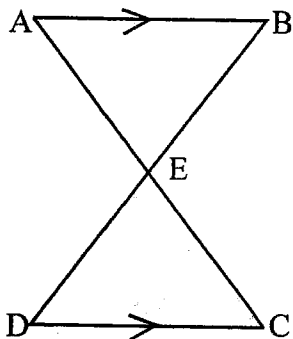
21. Write the gradient of the linear graph which passes through the points $(0, 1)$ and $(-2, -3)$.

22. In the following Venn diagram, shade the region presented by $A' \cap B$



23. Except the properties of a parallelogram, mention 2 extra properties of a rhombus.

24. In the figure, $AB \parallel DC$ and $AB = DC$. The lines AC and BD intersect at E . Write the case of congruency of the triangles ABE and DCE by marking the data on the figure.



25. If the mean of the given data is 5, find the value of x
 $8, 2, x, 2, 8, 4$

Part B

* Answer all the questions on the paper itself.

01. (a) Simplify.

$$\left(3\frac{1}{2} + \frac{2}{3}\right) \text{ of } \frac{2}{5}$$

(3 marks)

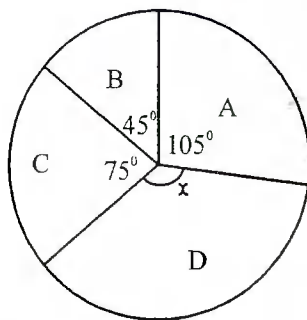
(b) Thamali's father gave some amount of money to her. She spent $\frac{2}{3}$ of it to buy books and $\frac{3}{4}$ of the remaining was spent for the expenses in the hostel. After that, she had Rs. 1200 in her hand.

(i) What fraction of money remained, from the amount of money given by father, after spending for books? (1 mark)

(ii) Find the amount of money spent for the expenses in the hostel. (2 marks)

(iii) Find the total amount of money she got from her father. (4 marks)

02. The following pie chart shows the information of subject streams of advanced level students of a certain school. According to the pie chart, answer the questions given below.



A - Art
B - Science
C - Commerce
D - Technology

(i) Find the magnitude of the angle 'x' which is relevant to the stream of technology. (3 marks)

198 = 198

(ii) From which subject stream is the highest number of students represented ? (2 marks)

(iii) What is the subject stream which represents the least number of students ? (2 marks)

(iv) If the number of A/L students represented by the science stream is 15, find the total number of A/L students in the school. (3 marks)

03. A person borrows Rs. 50 000 as a loan from a certain financial company which charges 12% annual simple interest rate. After 2 years he gets relieved from the loan by paying the total amount with the interest.

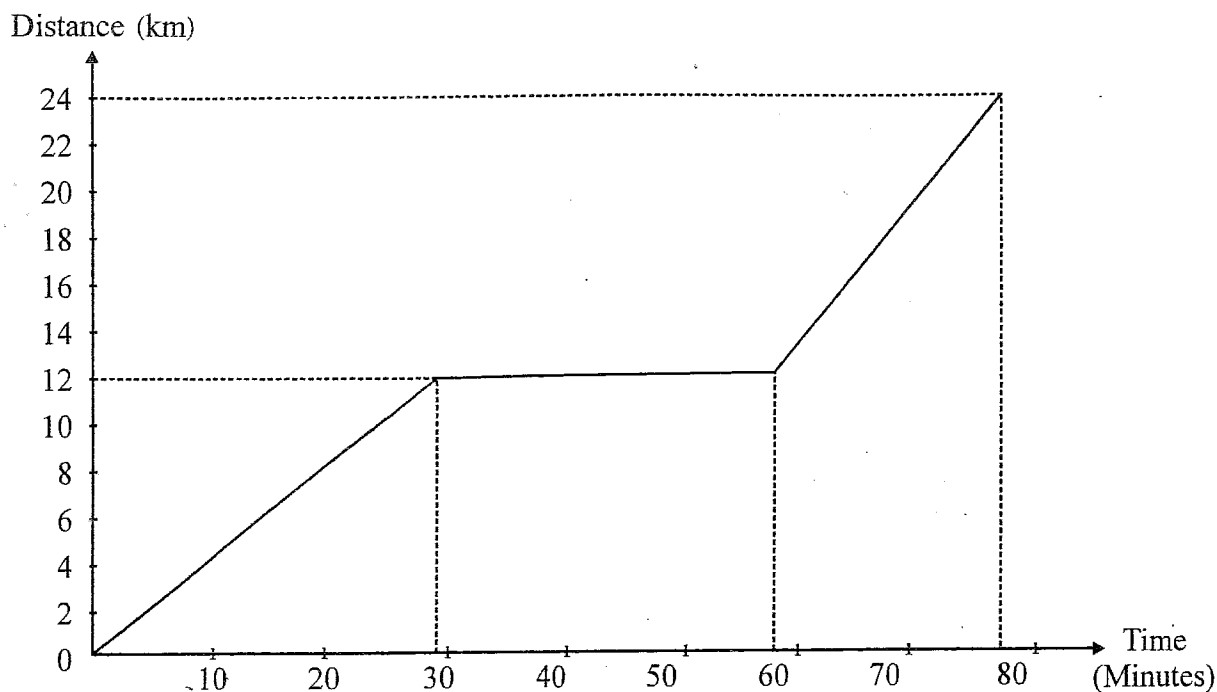
(i) Calculate the interest that should be paid for one year. (2 marks)

(ii) What is the total amount of money that should be paid to get relieved from the loan ? (2 marks)

(iii) To get relieved from the loan , he sold a spare part of a computer that he owned for Rs. 52 000 by keeping a profit of 25%. Find the buying price of that part. (3 marks)

(iv) What is the remaining amount of money he needed to pay the total amount of the loan ? (3 marks)

04. Tharindu went to the playground on his motor bicycle and after staying some time there he returned home. The following distance - time graph shows the motion of Tharindu.



By using the graph,

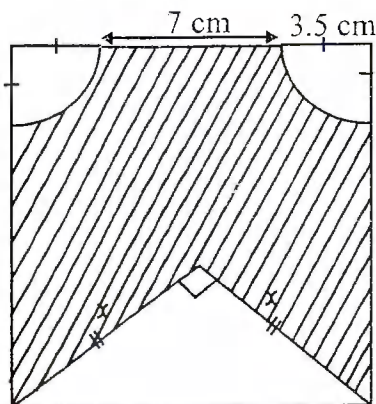
(i) Find the distance from home to the playground in km. (2 marks)

(ii) Find the speed that Thanrindu travelled to the playground. (3 marks)

(iii) How long did he stay in the playground? (2 marks)

(iv) Calculate the speed of the return journey. (3 marks)

05. The following figure shows a rough sketch of a block which is used for a decoration. For that, 2 sectors with a radius of 3.5 cm and a right angled triangular portion should be removed by cutting from a square shaped piece of cloth.



- (i) Find the total area of the 2 sectors. (2 marks)
- (ii) If the length of one side of the right angled triangle is x , then find the magnitude of x . (3 marks)
- (iii) Find the total area of the cloth which is removed. (3 marks)
- (iv) Find the area of the shaded portion. (2 marks)



EDUCATION ZONE - NEGOMBO

SECOND TERM EVALUATION - 2017

Mathematics II

GRADE 10

INDEX NO - : 100538

TIME - 03 HOURS

Instructions :

- * Answer 10 questions selecting 5 questions from Part A and 5 questions from Part B.
- * Each question carries 10 marks.

Part - A

- * Answer only 5 questions.

01. An incomplete table consisting of x and y values to draw the graph $y = x^2 - 5$ is given below.

x	-3	-2	-1	0	1	2	3
y	4	-1	-4	-4	-1	4

- (a) (i) Find the value of y when $x = 0$ (1 mark)
- (ii) By taking the scale as 10 small divisions as one unit along the x -axis and the y -axis, draw the graph for the above function. (3 marks)
- (b) By using the above graph,
- (i) Find the minimum value of the function. (2 marks)
- (ii) Write the equation of axis of symmetry. (2 marks)
- (iii) Find the roots of the equation $x^2 - 5 = 0$ (2 marks)

02. The masses of some pumpkins to the nearest kilogram in a lot are given in the following table.

Mass (kg)	1 - 3	4 - 6	7 - 9	10 - 12	13 - 15	16 - 18	19 - 21
Number of pumpkins (Frequency)	2	3	8	10	4	2	1

- (i) How many pumpkins are there in the lot? (1 mark)
- (ii) What is the class interval which contains the mode? (1 mark)
- (iii) By completing the column fx , find the mean mass of a pumpkin, to the nearest kg. (6 marks)

(iv) If the price of 1kg of pumpkin is Rs. 25 in that day, find the total amount of money that can be earned by selling the lot of pumpkins. (2 marks)

- ✓ 03. Kamal rents a business place which is owned by him for a monthly rent of Rs. 15 000. 12% of the annual rental earnings is spent for the maintenance of the place and another Rs. 3 400 is spent for annual assessment taxes (rates).

- (i) Find the total amount gained in one year as the rent. (2 marks)
- (ii) Find the amount of money spent for one year, for maintenance. (2 marks)
- (iii) If the annual rate (Assessment tax) is 5% , find the annual assessed value of the business place. (3 marks)
- (iv) Find the amount of money that remains in Kamal's hand at the end of one year. (3 marks)

- ✓ 04. (a) If the bearing of B from A is 075° , find the bearing of A from B. (2 marks)
- (b) The top of a tower which is located on the ground is observed at a point "A" on the ground with an angle of elevation of 45° . When the top of the tower is observed after moving 20m away from the tower at a point "B" on the ground, the angle of elevation of the top is 30° .

- (i) Represent the above information on a rough figure. (2 marks)
- (ii) By representing 5m from 1 cm, draw a scale diagram. (4 marks)
- (iii) By using the scale diagram, find the real height of the tower. (2 marks)

- ✓ 05. ✓ (a) (i) Factorise : $2a^2 - 18$ (2 marks)
- (ii) Solve : $\frac{x+3}{x-2} + \frac{x-1}{x-2} = 5$ (3 marks)

- (b) The price of a slime apple (Beli) is one rupee more than the price of one wood apple. 3 slime apples and 4 wood apples can be bought for Rs. 45.

- (i) By taking the price of one slime apple as Rs. x and the price of one wood apple as Rs y , construct a pair of simultaneous equation. (2 marks)

- (ii) By solving the above simultaneous equations, find the price of one slime apple and the price of one wood apple, separately. (3 marks)

- ✓ 06. (a) Solve : $\frac{4}{(a-3)} - \frac{1}{(3-a)}$ (2 marks)

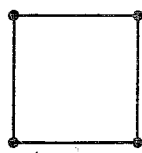
- (b) A rectangle becomes a square when the length of the rectangle is reduced by 3 cm and the breadth of the rectangle is increased by 1 cm. The area of the rectangle is 21 cm^2 .

- (i) By taking the length of one side of the square as x cm, write the length and the breadth of the rectangle in terms of x . (show them using a rough figure.) (2 marks)
- (ii) Show that the area is satisfied by the equation $x^2 + 2x - 24 = 0$ (2 marks)
- (iii) By solving the equation $x^2 + 2x - 24 = 0$, find the length of one side of the square. (4 marks)

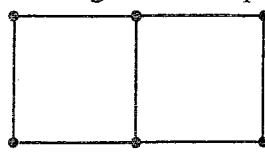
Part B

Answer only 5 questions.

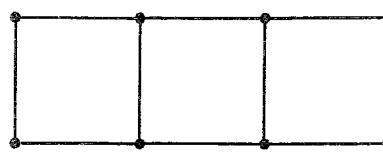
07. The first 3 patterns of a pattern created by using match sticks, by a grade 9 student called Sameera, for an activity of creating a number patterns are given below.



1st situation



2nd situation



3rd situation

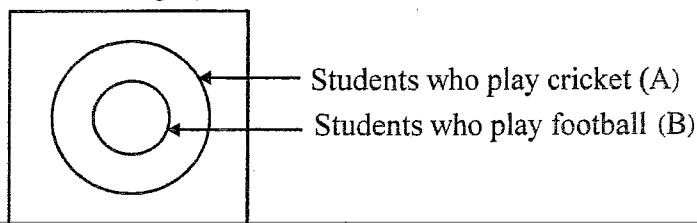
- (i) How many more match sticks are needed in the 2nd situation than in the 1st situation ? (1 mark)
- (ii) Write down the number of match sticks used in each situation separately in order. (2 marks)
- (iii) Show that the number of match sticks needed to make n^{th} situation is $3n + 1$. (2 marks)
- (iv) How many match sticks are needed to make the 7th situation ? (2 marks)
- (v) Which situation can be made by using 55 match sticks ? (3 marks)

08. By using the straight edge with the scale cm/mm and a compass and showing the line clearly, carry out the following construction.

- (i) Construct the triangle PQR, where $PQ = 8\text{cm}$, $QR = 6\text{cm}$ and $\angle PQR = 90^\circ$. (3 marks)
- (ii) Construct the perpendicular bisectors of the lines PQ and QR. (2 marks)
- (iii) Mark the point of intersection of the above perpendiculars as "O". (1 mark)
- (iv) Construct the circle with the radius OP and the centre "O". (1 mark)
- (v) Measure the length of the radius of the circle. Write a relationship among the sides PQ, QR and PR. (3 marks)

09. (i) The volume of a cuboid is V. Its length, breadth, and the height are a, b and c respectively. Write an expression for the volume "V" in terms of a, b and c. (1 mark)
- (ii) The length, breadth and the height of a cuboid shaped tank are 6.5 m, 2.25 m and 4.2 m respectively. Express the volume of the water in the above tank by using the expression above. (1 mark)
- (iii) Find the volume of water in the tank to nearest whole number by using the logarithmic tables. (6 marks)
- (iv) If 500l of water is used within one day, from the tank, for how many days is the water in the tank enough? (2 marks)

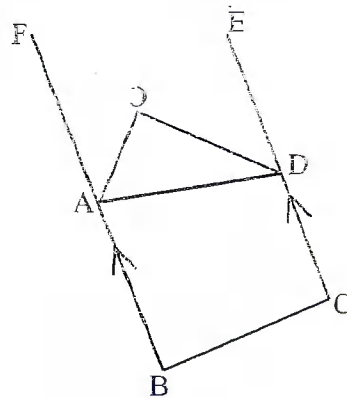
10. The following Venn diagram represents the information of 75 boys in grade 10, who play cricket and football. Out of them, 60 play cricket while 35 students play football.



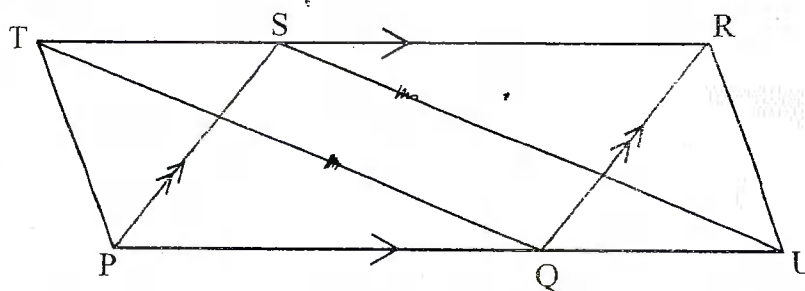
- (i) Write the relation of A and B in set notation. (2 marks)
 (ii) Include the above data in the Venn diagram. (4 marks)
 (iii) How many boys are there in grade 10, who do not play cricket? (1 mark)
 (iv) How many boys play cricket only? (1 mark)
 (v) Find the probability of a random boy who does not play football? (2 marks)

11. The sides AB and DC of the quadrilateral ABCD are parallel to each other. The angle bisectors of the angles FAD and ADE meet at "O". Prove that AOD is a right angle.

(10 marks)



12. ✓



PQRS is a parallelogram. SPT and QRU are two equilateral triangles drawn on the lines SP and QR. Prove that $\triangle TPQ \equiv \triangle SRU$

By using it, show that $TQ = SU$

(10 marks)