| ශ්‍රේණිය தரம் Grade | Grade 9 | **MATHEMATICS** | කාලය நேரம் Time | 2 Hours |

නම பெயர் Name ....   විභාග අංකය சுட்டிலக்கம் Index No. ....
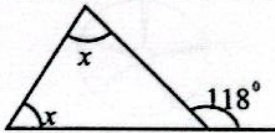
PART I

- ## Answer all the questions

1. If a train travelled 120 kilometres in one hour, find the distance travelled by the train in 45 minutes.

2. Round off Rs. 8.65 to the nearest rupee.

3. If $x = \frac{1}{4}$ and $y = 3$ find the value of $4x + 8y$

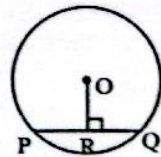4. Simplify. $\frac{3}{8} + \frac{3}{8}$ of $\frac{1}{3}$

5.

Find the value of x^0

6. The mass of a medicine pill is 60 mg. Find the mass of 100 such pills in grammes.
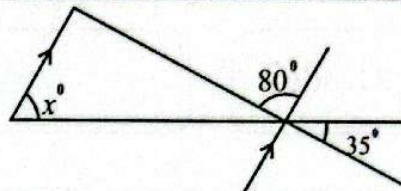
7. Solve. $2x - 8 = x + 1$

8. O is the centre of the circle given figure. such that R is the midpoint of PQ
   If OR = 3 cm and PQ = 8 cm find the radius of the circle.

9. Find the value $101_{two} + 111_{two}$

10. Factorize. $x(x+7) - 5x - 35$

11. Find the value of x^0

12. Simplify $2024 + 202.4 + 20.24$

13. In a sample of 200 seeds, 5% of the seeds will not be germinated. Indicate the order in which the keys of the calculator need to be pressed to find the amount.
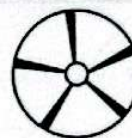
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14. Write 5.2×10^{-2} in general form.

15. Remove the brackets and simplify. $x(5-x) + x^2$

16. Find the value of $97^2 - 3^2$ using the knowledge of factors.

17. The radius of the wheel of a cart is 56 cm. Find the circumference of it.

18. Make 't' the subject of the formula $v = u + at$

19. Simplify $3x^2 \times 2x^{-1}$

20. A and B are two houses. It is required to dig a well equidistant from the two houses. Draw a rough sketch to indicate the location of the well.

B.

A.

PART B

- **Answer five questions only. Each question carries 12 marks.**

i. Chilli plants were planted in a cultivation area as follows. The first row consists of 6 plants and every each other row consists four plants more than the previous row.

  i. Write the number of plants in first 3 rows.   (2 marks)

  ii. Write the common difference of the above pattern.   (1 mark)

  iii. Write the general term of the number pattern.   (2 marks)

  iv. Which row consists 62 plants?   (3 marks)

  v. How many plants are there in the 20th row ?   (2 marks)

  vi. If the chilli plants in the three rows 19, 20 and 21 were uprooted due toa disease, find the number of plants uprooted. (use the answer in v)   (2 marks)

                                                                   12 marks

2. (a) Simplify $\left(\frac{7}{8} - \frac{1}{4}\right) \div 1\frac{1}{4}$ (3 marks)

  (b) A seller bought an electric oven for Rs. 8000 and marked its selling price as Rs. 9200 to sell.

    i. Find the profit he expected.   (1 mark)

    ii. Find the profit percentage he expected   (2 marks)

    iii. What was the selling price of the oven if a discount of 5% was given?   (3 marks)

    iv. The seller marked the price of another electric oven at Rs.11 500 to make a profit of 15%. For how much did he buy the electric oven?   (3 marks)

                                                                     12 marks

3. (a) Roses are planted in a rectangular flower bed of length a and breadth b

    i. Draw the figure and mark the given measurements.   (1 mark)

    ii. Another 3 more types of flowers are intended to grow in the rose flower bed above, by increasing the length in 3 m long and the breadth in 2 m as shown in the figure.

Rose	Orchid
Anthurium	Jesmine

      Insert the information in your figure and find and write the area of each type of flower beds separately.   (4 marks)

    iii. Find the area of the flower bed by writing the area of the new expanded flower bed as a product of two binomial expressions.

      Write the relationship between the sum of the areas in (ii) and the answer in (iii)   (3 marks)

  (b) Solve the simultaneous equations $3x - 2y = 11$

                                               $x + 2y = 9$ (4 marks)

                                                                     12 marks

4.   (i) Construct a straight-line segment of length 8 cm and name it as AB   (2 marks)

    (ii) Construct a perpendicular to AB at A.   (2 marks)

    (iii) Mark the point C on the perpendicular bisector such that AC= 5 cm. Construct the triangle ABC.   (2 marks)

    (iv) Construct the locus of the points equidistant from A and B and name the point of intersection of it and AC as P.   (2 marks)

(v) Construct a circle by taking the centre as P and radius as PC (2 marks)
(vi) Calculate the area of the triangle ABC you constructed above. (2 marks)

[12 marks]

5. (a) ABC is an equilateral triangle and BCDE is a rectangle. Copy and complete the steps to show $A\hat{B}E = A\hat{C}D$

$A\hat{B}C = \ldots\ldots\ldots\ldots$(angles of an equilateral triangle)

$\ldots\ldots\ldots\ldots = B\hat{C}D$ $(\ldots\ldots\ldots\ldots\ldots\ldots\ldots)$

$A\hat{B}C + \ldots\ldots\ldots\ldots = \ldots\ldots\ldots\ldots + B\hat{C}D$

$\ldots\ldots\ldots\ldots = \ldots\ldots\ldots\ldots$ //

(5 marks)

(b) According to the data in the given figure,

   i.   Find $F\hat{D}E$ (2 marks)
   ii. Show that BC // FD   (2 marks)
   iii. If DB is the locus of the points equidistant from DC and DF. find the value of $C\hat{B}D$ (3 maarks)
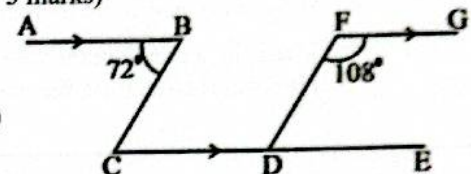
[12 marks]

6.

x	-2	-2	-1	0	1	2	3
y	-5	-1	-3	-1	1	....	5

   i.   Draw a suitable cartesian plane and mark all the points without A.
      Draw the graph of the straight line.   (4 marks)

   ii. Write the coordinate of the point A by using the graph.   (1 marks)

   iii. Find the intercept (c) of the graph.   (2 marks)

   iv. If the gradient of the graph (m) is 2, Write the equation of the graph of the form $y = mx + c$ using the values of m and c above.   (2 marks)

   v. Displace all the points in the graph you have drawn above by 2 units and mark them on the above cartesian plane and join them. Write a special feature in these two straight lines.   (3 marks)

[12 marks]

7. The inside length, width and height of a cuboid shaped water tank in 'Uadagama' village is 4m, 3m and 2m respectively. When this tank is completely filled, it is just enough to supply the water required for 40 houses in the 'Udagama' village for a day.

   i.   Find the inside volume of the water tank.   (2 marks)

   ii. Find the capacity of the tank in litres   (1 mark)

   iii. If the water consumption is equal in every house in the village, how much is the average daily water consumption of a house in litres?   (2 marks)

   iv. If Rs. 25 is charged for one unit of water, how much will be the water charge for a house for a month of 30 days? (1000 l = 1 unit)   (3 marks)

   v. If the tank is filled with 3600l of water in 12 minutes from a water supply pipe,
      (a) Find the amount of water filled in 25 minutes.   (2 marks)
      (b) Find the time taken by the water pipe to fill $3m^3$ (2 marks)