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Second Term Test - Grade 09 - 2024

Mathematics

Time : 2 hours
& 30 minutes

Name / Index No. :

Part I

- Answer all 20 questions on this paper itself.
- Correct answer for each question carries 2 marks.

If the price of 4 pens is Rs.100, find the price of 7 such pens.

02. Find the general term of the number pattern 3, 5, 7, 9,

03. The radius of an atom is 1×10^{-8} cm. Express this number in general form.

04. Find the capacity of a cuboid shaped tank of length, breadth and height are 4m, 1.5m, 1m respectively, in litres.

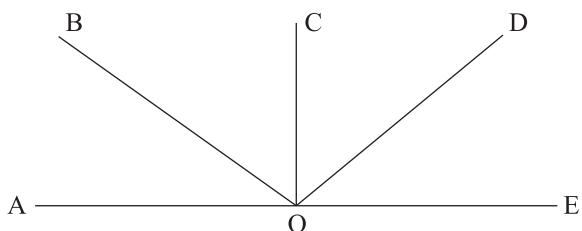
05. Convert 1001_{two} into a decimal number.

06. When a number is rounded off to the nearest 10, the answer is 90. Write the largest whole number that number can be.

07. The point O is on the straight line AE.

$$\angle AOB = \angle COD \text{ and } \angle BOC = \angle DOE.$$

Find the value of $\angle BOD$



08. When the keys of a calculator are pressed in the following order, write down the answer that can be seen on the screen.

ON → 5 → ÷ → 5 → 0 → SHIFT → % → = → []

09. Write the coordinates of the intersection point of the straight lines $x = 2$ and $y = -1$

10. Simplify $\left(\frac{x^2}{x}\right)^2$

11. Round off the number 32.52

- (i) to the nearest first decimal place.
- (ii) to the nearest whole number.

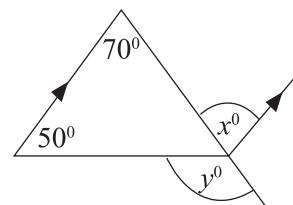
12. It is required to find the mid point P between the points A and B. By using the knowledge on loci, mark the point P in a rough sketch, by using a geometrical construction.



13. The radius of a wheel of a toy car is 14cm. Find the distance travelled by the car when the wheels rotates one round. $(\pi = \frac{22}{7})$

14. If $m = 2$, $x = -3$ and $c = 8$, in the formula $y = mx + c$, find the value of y'

15. According to the information given in the diagram,
Find the value of x^0 and y^0



16. Factorize
 $ax - 3a + 2x - 6$

17. When the exchange rate of an American Dollar is 153 Sri Lankan rupees, find the salary of a worker in Sri Lankan rupees, if his salary is 800 American Dollars.

18. Find the value using the knowledge of factors.

$$102^2 - 2^2$$

19. A person paid 4% commission when buying a house. If the commission he paid is Rs. 84000, find the price at which he bought the house.

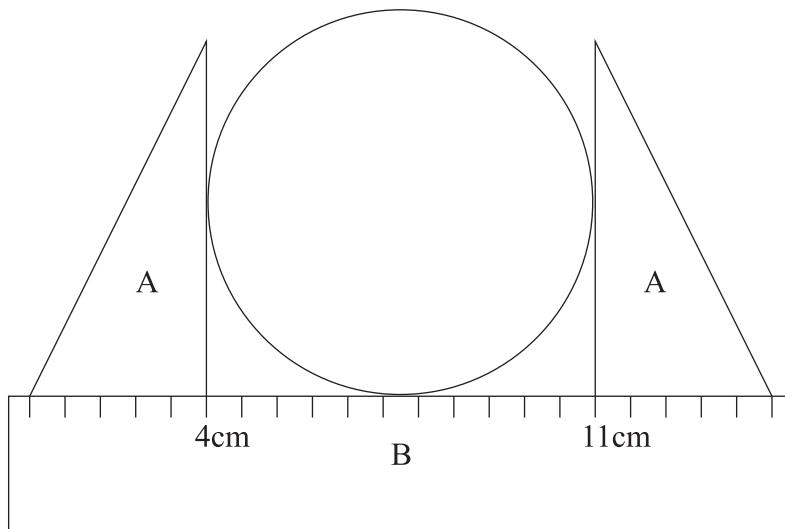
20. Mark the correct statements with '✓' and the incorrect statements with '✗'.

- (i) The graphs in the form $y = mx$ always pass through the point $(0, 0)$ - ()
- (ii) If the radius of a circle is r and the diameter is d , the relationship between d and r is given by $d = \frac{r}{2}$ - ()
- (iii) When 2521 is rounded off to the nearest 1000, the answer is 3000 - ()

Part II

- Answer the first question and 04 other questions.
- First question carries 16 marks and other questions carry 11 marks each.

01. (a) Recall the activity done to find the diameter of a circle, in the lesson 'Circumference of a circle'. An activity a student engaged in, to find the diameter of a metal plate is shown below.



(i) Name the instruments A and B. (2 marks)

(ii) What is the diameter of the metal plate? (1 mark)

(iii) When this metal plate is rolled three rounds on the surface of a table, find the distance it travels. (2 marks)

(b) A plane figure which consists of a right angled triangle and a semi circle is given below.

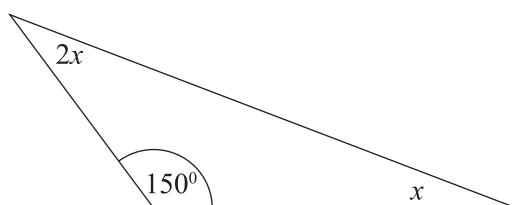
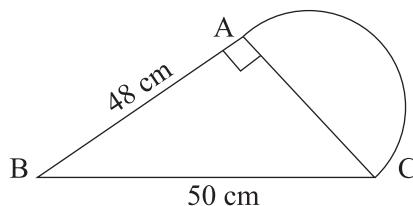
(i) Write down the Pythagorean relation for a right angled triangle. (2 marks)

(ii) Find the length of the straight line AC. (2 marks)

(iii) Find the arc length AC (2 marks)

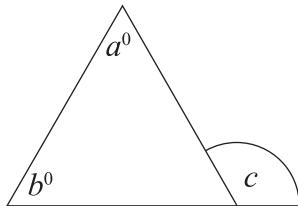
(iv) Find the perimeter of the plane figure. (1 mark)

(c) (i) Find the value of x (2 marks)



(ii) Write the relationship among the angles a , b , and c .

Hence find the value of a if $b^0 = 60^0$, and $c = 140^0$



(2 marks)

02. (a) A vendor buys a shirt at the price of Rs. 2000, and he sells it at the price of Rs. 2700, on outright payment.

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

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

(iii) When selling the shirt, if the payment is done outright a discount of 10% is offered to the customer. Find the marked price of the shirt. (3 marks)

(b) (i) Find $\frac{1}{8}$ of 2 kg of sugar in grammes. (2 marks)

(ii) $\frac{1}{2}$ of the number of pens Nethmi has are blue. $\frac{1}{3}$ are black, while the other pens are red.

If she has 4 red pens find the total number of pens Nethmi has. (3 marks)

03. An incomplete table prepared to draw the graph of the function $y = 2x + 1$ is given below.

x	-4	-2	0	2	4
y	-7	1	9

(i) Complete the table. (2 marks)

(ii) Draw the graph of the function $y = 2x + 1$, by using a suitable scale for x and y axes. (4 marks)

(iii) If the point $(3, K)$ lies on the above graph, find the value of K using the graph. (2 marks)

(iv) Write the equation of the line which is parallel to the above straight line and which passes through the origin. (2 marks)

(v) Write a similarity of the two lines $y = 2x + 1$ and, $2y = -3x + 2$ (1 mark)

04. (a) (i) If $a = \frac{2}{3}$ and $b = 2$ find the value of $6a - 2b$ (2 marks)

(ii) Expand the product of the binomial expressions $(x - 4)(x + 2)$ and simplify. (2 marks)

(b) Factorize.

(i) $4x^2 - 9$ (2 marks)

(ii) $x^2 + 2x - 15$ (2 marks)

(c) (i) Write x^{-2} with positive index. (1 mark)

(ii) Simplify $\frac{x^2 \times x^4}{x^5}$ (2 marks)

05. (a) A daughter's age is 8 years less than half of her mother's age. If the daughter's age is 10 years.

(i) Build up an equation by taking mother's age as 'x' years. (2 marks)

(ii) Solve the equation and find mother's age. (2 marks)

(b) Solve the pair of simultaneous equations and find the values of a and b .

$$a + 3b = 5$$

$$2a - 3b = 1$$

(4 marks)

(c) (i) Make 'a' the subject in the formula.

$$b = \frac{ax + c}{a}$$

(3 marks)

06. Use only a straight edge with cm / mm scale and a pair of compasses to do the following constructions. Show the construction lines very clearly.

(i) Construct the straight line segment $AB = 9$ cm

(1 mark)

(ii) Construct 45° at B such that AB is an arm of the angle.

(2 marks)

(iii) Mark the point C such that $\hat{ABC} = 45^\circ$ and $BC = 6$ cm and complete the triangle ABC .

(2 marks)

(b) (i) Construct the locus of points equidistant to the points B and C and name the point where it meets AB as X .

(3 marks)

(ii) Construct a perpendicular from X to AC and name the point where it meets AC as T .

(3 marks)

07. (a) Fill in the blanks using the most appropriate word by using the knowledge of geometrical theorems you learned.

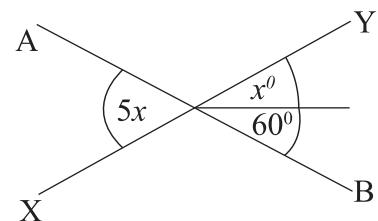
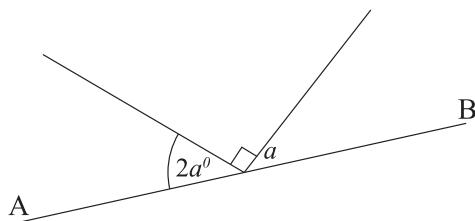
(i) The angles formed by intersecting two straight lines are equal.

(1 mark)

(ii) The sum of a pair of formed when a pair of parallel lines are intersected by a transversal is equal to

(2 marks)

(b) According to the information given in the diagrams, find the magnitude of the angles denoted by algebraic symbols.



(i) AB is a straight line. Find the value of a
(2 marks)

(ii) AB and XY are straight lines. Find the value x°
(2 marks)

(iii)

Find the value of x and y .

(4 marks)