



**Royal College - Colombo 07**  
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**Grade 10 –First Term Evaluation – March 2020**

Time : 2 hours  
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**පළමු වාර ඇගයීම - 2020 මාර්තු - 10 ශ්‍රේණිය**

**Mathematics – I**  
**ගණිතය - I**

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Name /Index No :- .....

Certified Correct.

.....  
Signature of Invigilator

**Important:**

- ❖ This paper consists of 8 pages.
- ❖ Write your **Index Number** correctly in the appropriate places on this page and on page three.
- ❖ Answer all questions on this paper itself.
- ❖ Use the space provided under each question for working and writing the answer.
- ❖ It is necessary to indicate the relevant steps and the correct units in answering the questions.
- ❖ Marks will be awarded as follows.  
Two marks each for questions 1 - 25 in part **A**.  
Ten marks each for questions in part **B**.
- ❖ A blank paper can be obtained for rough work from the supervisor on your request.

**For Marking Examiner's use only**

Question Numbers		Marks
<b>A</b>	1 - 25	
<b>B</b>	1	
	2	
	3	
	4	
	5	
<b>Total</b>		

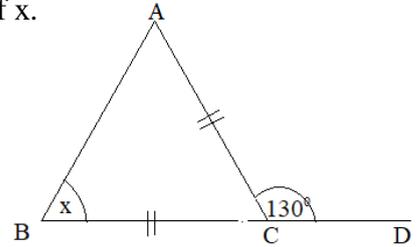
**PART A**

Answer **all** questions on the **paper** itself.

(01) If the speed of a vehicle is  $72 \text{ kmh}^{-1}$ , find the distance travelled within  $2 \frac{1}{2}$  hours.

(02) Find the perimeter of a sector of radius 21 cm and central angle is  $60^\circ$ .

(03) In the given figure  $AC = BC$  and BC produced D, find the value of x.

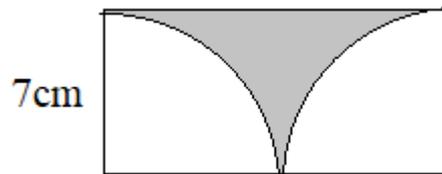


(04) If B receives Rs. 375 when a money is divided between A and B in the ratio of 5:3, find the amount divided.

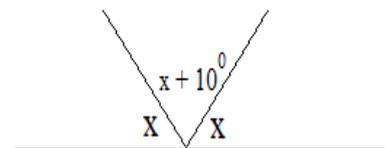
(05) Solve  $3 - 2x = x - 6$

(06) Simplify  $\frac{5}{12} - \frac{4}{12} \left( \frac{1}{2} - \frac{1}{4} \right)$

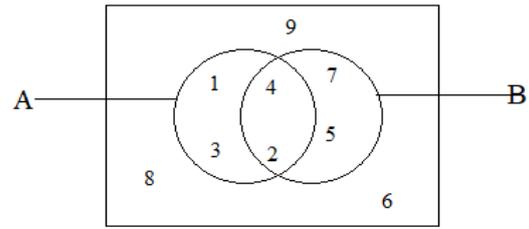
(07) Find the area of the shaded portion.



(08) According to the given information, find the value of x.



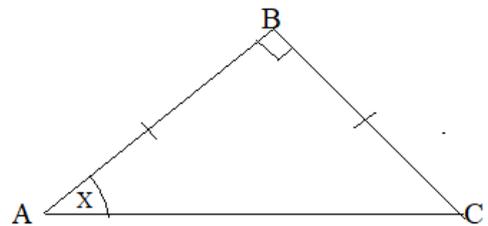
(09) List out the elements of  $A'$



(10) Simplify  $\frac{m}{3} - \frac{m-1}{3}$

(11) If the area of a circle of radius  $r$  is  $17 \text{ cm}^2$ , find the area of a circle of radius  $3r$ .

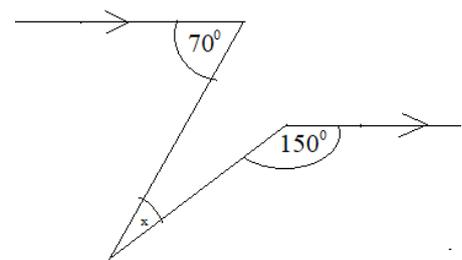
(12) According to the information given, find the value of  $x$ .



(13) Write the  $n^{\text{th}}$  term of the number pattern 18, 15, 12, .....

(14) Find the value of  $x$ , when  $2x - 3 = y$  and  $x + 2 = y$ .

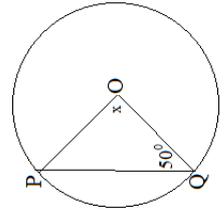
(15) According to the information given in the diagram, find the value of  $x$ .



(16) Find the median of the given data 18,5,22,16,32,4,10,40.

(17) In a bag there are 3 red and 2 blue identical beads. If a bead is taken out randomly find the probability of being a red bead.

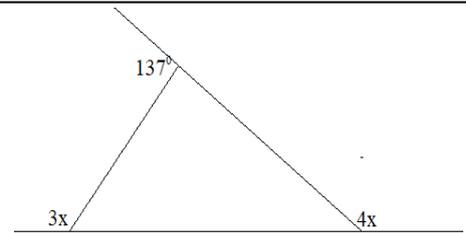
(18) PQ is a chord of a circle with centre O. If  $\widehat{OQP} = 50^\circ$ , find the value of  $\widehat{POQ}$



(19) The height of a cuboid shaped container with square base of side length 50 cm is 1 m. Find the capacity of the container in liters.

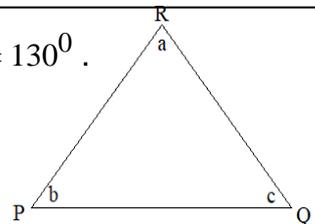
(20) Factor  $m^2 - 2m + 1$

(21) Using the information given in the figure, Find the value of x.

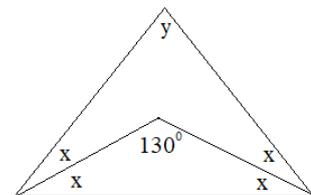


(22) Make u as the subject of the formula  $s = ut + \frac{1}{2}gt$

(23) In the triangle PQR find the value of a, when  $a + b = 120^\circ$  and  $b + c = 130^\circ$ .



(24) Find the value of y using the information given in the figure.



(25) Find the value of (a + b) when  $a^2 + b^2 = 26$  and  $ab = -19$ .

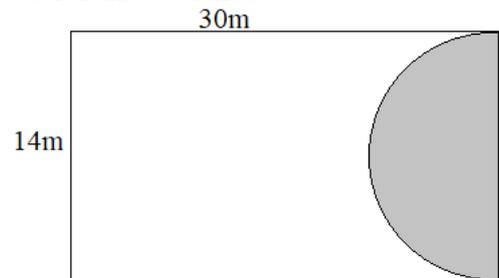
**PART B**

**Answer all questions on this paper itself.**

(01) A seller bought some oranges.  $\frac{2}{7}$  of them rotten and thrown away.  $\frac{3}{5}$  of the remaining were sold for Rs. 40 each and the rest was sold for Rs. 50 each.

- i. Write the number of oranges which was sold at Rs. 40 as the fraction of total oranges.
- ii. If 24 oranges sold for Rs.50 each, find the total number of oranges which the trader bought.
- iii. Find the total amount received by selling all the oranges.
- iv. Write the ratio between the number of oranges which were rotten and number of oranges sold at Rs. 50 in the simplest form.

(02) A rectangular theater with the length 30 m and breadth 14 m is shown in the diagram. The semi circular part is the stage and the remaining area is separated for the audience.



- i. Find the total area of the theater.
- ii. If a iron pipe is fixed around the circular part of the stage, find the length of the pipe needed for it.
- iii. If a floor mat is laid to cover the circular stage, find the area of the floor mat.

iv. If  $6\ 400\text{ cm}^2$  area is needed for a seat in the audience, how many seats can be placed in the area for the audience.

(03) Three friends Anil, Bimal and Charuka started a business. They invested money between Anil and Bimal in the ratio 9:8, and between Anil and Charuka in the ratio 3:2.

- i. Find the ratio of Anil to Bimal to Charuka.
- ii. The difference of money invested by Anil & Charuka is Rs. 54 000, find the total amount of money invested by three of them to the business.
- iii. At the end of the year, the profit from the business was Rs. 46 000, find separately the amount received by each of them.
- iii. Find the profit percentage received by Bimal of his investment.

(04) There are nine identical cards numbered from 1 to 9 in a bag. A card is taken from the bag randomly and the number is recorded.

- i. Write the sample space of all possible events.
- ii. Find  $n(s)$
- iii. Find the probability of getting an even number.
- iv. Find the probability of getting a triangular number.
- v. Find the probability of getting a composite number.
- vi. Find the probability of not getting a square number.

(05) The following data represents the number of coconut plucked from the trees in a garden.

28, 25, 16, 8, 21, 14, 20, 18, 32, 9, 32, 12, 39, 22, 32, 40, 31, 45, 36,41

i. Find the range of the distribution.

ii. Represent this data in a stem and leaf diagram.

iii. Find the mode of this data.

iv. Find the median of this data.

v. Express the number of trees which have plucked more than 20 coconust as the percentage of the total number of trees.



# Royal College - Colombo 07

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Grade 10 – First Term Evaluation – March 2020

පළමු වාර ඇගයීම -2020 මාර්තු -10 ශ්‍රේණිය

Time: 3 hours

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E

II

## Mathematics - II

ගණිතය - II

Name: - ..... Class: -..... Index no: .....

### Important

- Answer 10 questions selecting **five** questions from part **A** and **five** questions from part **B**.
- Write the relevant steps and the correct units in answering the questions.
- Each question carries 10 marks.
- The volume of a cuboid with square base of side length  $x$  and the height  $h$  is  $x^2h$ .

### Part - A

Answer **five** questions **only**.

(01) Mr. Ramesh is a businessman. He buys a bicycle and marked the price to get a profit of 40%. When selling, he gets help from a broker and a commission of 3% is given and the customer is given a discount of 10%. Mr. Ramesh got Rs. 18,333 from this business. Calculate the profit percentage of Mr. Ramesh.

(02) An incomplete table of values prepared to draw the graph of the function  $y = 3x - 4$  is given below.

x	-2	-1	0	1	2
y	.....	.....	-4	.....	2

- Find the missing values and indicate the way you obtained them.
- Draw the graph of the above function.
- Draw the graph of the function  $y = -x$  in the same Cartesian plane.
- Find the solutions of the two simultaneous equations  $3x - y = 4$  and  $x + y = 0$ , using the graph drawn above.

- (03)
- Expand  $(x - y)^2$  and simplify.
  - By using the above expansion, find the value of  $93^2$ .
  - The area of a rectangle is given as  $2x^2 + 7x - 15$ . Express its length and breadth in terms of  $x$ .
  - Find the value of  $(m + n)$  when  $m^2 + n^2 = 18$  and  $mn = 23$ .

(04) The number of books issued within 30 days from a certain library is given below.

24	21	35	36	40	22	15	30	32	31
29	34	24	33	16	34	37	29	36	27
42	31	40	28	27	22	33	34	37	38

- i) Find the range of this data.
- ii) Prepare a frequency table with 6 class intervals taken as 15 – 19, 20 – 24.....etc.  
Using the above frequency table
- iii) Find the modal class.
- iv) Find the median class.
- v) Express the number of days which have issued more than 30 books as a percentage of the total number of days.

(05) a) Kasun is at point A. He observes a flag post at C, at a bearing of  $080^{\circ}$ . Thisari is at point B. It is located 250 m east of A. She observes the flag post at a bearing of  $340^{\circ}$ .

- i) Show this information in a rough sketch.
- ii) Draw a scale diagram using the scale 1:5 000.
- iii) Using the scale diagram, find the distance to the flag post from the point A to the nearest meter.

b) The distance to the city Q is 18 km from the city P. What is the distance between these two cities in a map, drawn to a scale of 1:200,000.

- (06)
- i) Make “f” as the subject of the formula  $V = u + ft$ .
  - ii) Find the value of  $111^2 - 8 \times 111 - 33$  using the knowledge of factors.
  - iii) Ruwan has ‘x’ amount of money. Nishantha has ‘y’ amount of money. Both of them have Rs. 600. If Ruwan gives Rs. 50 to Nishantha, he will have twice the amount which Ruwan has got. Find the amounts of money having each of them.

**Part - B**  
( Answer five questions only.)

(07) Kamal is cutting pieces of metal bar to make a gate. The length of the first piece is  $24\text{ cm}$  and all the other pieces are  $9\text{ cm}$  longer than the previous piece. Kamal bought  $5\text{ m}$  length metal bars for this purpose.

- i) Write the length of the first four pieces as a number pattern.
- ii) Find the general term( $n^{\text{th}}$  term) of that number pattern.
- iii) Find the length of the  $20^{\text{th}}$  piece.
- iv) When Kamal cut a piece from a fresh metal bar the remaining length of the piece is  $8\text{ cm}$ . Which piece is it?
- v) Show that Kamal cannot cut the  $55^{\text{th}}$  piece using a single metal bar.

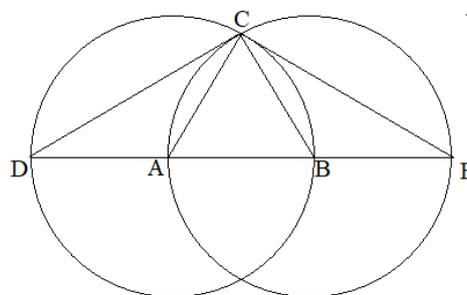
(08) In the following constructions, use a straight edge with cm/mm scale and a pair of compasses only. Show your construction lines clearly

- i) Construct the triangle ABC which  $AB = 6.5\text{ cm}$ ,  $AC = 5\text{ cm}$  and  $\widehat{BAC} = 105^{\circ}$
- ii) Complete the parallelogram ABCD using the triangle ABC.
- iii) Construct a perpendicular to the produced BA from the point D and name its foot as E.
- iv) Construct the circle which AB is the diameter.

(09) ABC is a triangle. BC is produced to D. The angle bisectors of  $\widehat{ABC}$  and  $\widehat{ACD}$  intersect at Q. Prove that  $\widehat{BQC} = \frac{1}{2}\widehat{BAC}$

(10) The following figure shows two circles of same radii of centres 'A' and 'B'.

- i) Show that ABC is an equilateral triangle.
- ii) Show that  $CD = CE$ .
- iii) Find the magnitude of  $\widehat{ACD}$ .
- iv) Find the magnitude of the angle  $\widehat{DCE}$ .



(11) The length, breadth and height of a cuboid shape tank are  $2\text{ m}$ ,  $1.5\text{ m}$ , and  $1\text{ m}$  respectively. Water is filled to a height of  $75\text{ cm}$ .

- i) Calculate the capacity of the tank in litres.
- ii) Calculate the volume of water in litres.
- iii) The height of a small cuboid tank of a square base which the side length is ' $x\text{ cm}$ ', is  $20\text{ cm}$ . Water in the large tank is removed to this small cuboid shaped tank. After filling it completely, the water level in the larger tank decreased by ' $h\text{ cm}$ '. Show that the side length of the base of the small cuboid tank is  $\sqrt{1500h}\text{ cm}$ .

(12) Answer the following questions using the Venn diagram.

- i) A
- ii) B
- iii)  $A'$
- iv)  $n(A \cup B)'$
- v)  $A \cup B$
- vi)  $A \cap B$

