බස්නාහිර පළාත්අධ්‍යාපන දෙපාර්තමේන්තුව බස්නාහිර පළාත්අධ්‍යාපන දෙපාර්තමේන්තුව බස්නාහිර පළාත්අධ්‍යාපන දෙපාර්තමේන්තුව
Nky;; khfhzfy;tpjpizf;fsk;   Nky;;
Western Provincial Education Department Wester
බස්නාහිර පළාත්අධ්‍යාපන දෙපාර්තමේන්තුව බස්නාහි
Nky;; khfhzfy;tpjpizf;fsk;   Nky;;
Western Provincial Education Department Wester
බස්නාහිර පළාත්අධ්‍යාපන දෙපාර්තමේන්තුව බස්නාහිර
Nky;; khfhzfy;tpjpizf;fsk; Nky;; khfhzfy;tpjpizf;fsk; Nky;; khfhzfy;tpjpizf;fsk;

බස්නාහිර පළාත්අධ්‍යාපන දෙපාර්තමේන්තුව
மேல்மாகாணகல்விதிணைக்களம்
Western Provincial Education Department

	පළමුවාරඇගයීම - 2018 முதலாவதுதவணைமதிப்பீடு - 2018 First Term Evaluation - 2018	
10ශ්‍රේණිය தரம் 10 Grade 10	ගණිතය I පත්‍රය கணிதவினாதாள் - 1 Mathematics Paper - I	පැයදෙකයි இரண்டுமணிநேரம் *Two Hours*

Name/ Index No: ....

....
Signature of Invigilator

Important:

- This paper consist of 8 pages

- Write your **index no** correctly in the appropriate place on the **page one** and **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 write relevant steps and correct units.

- Marks will be awarded follows : 02 marks each for questions 1 – 25 in part A 10 marks each for questions in part B.

For marking examiner's use only

	Question number	Marks
A	**1 - 25**	
B	**1**	
	2	
	3	
	4	
	5	
	Total	

…………………...
Marked by
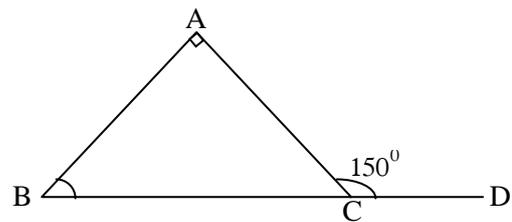
Part A

Answer all the questions on this paper itself.
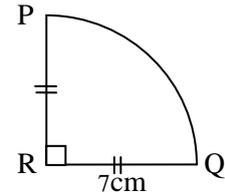
1) the most suitable value for $\sqrt{7}$ is,

    a)   2.5   b)   2.6   c)   2.7   d)   2.8

2) Factorize. $x^2 - 5x + 6$

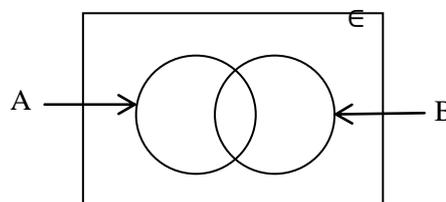3) According to the information given in the figure, find the value of $A\hat{B}C$

4) According to the information given in the figure, calculate the PQ arc length.

5) Express in logarithmic form.

$2^3 = 8$

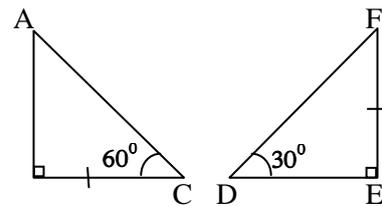6) Find the least common multiple of $2ab$ and $3a^2$.

7) Shade the region $(A \cup B)'$, in the given Venn diagram.

8) Simplify $\dfrac{1}{x} + \dfrac{2}{3x}$

9) Kamal loaned Rs. 40000 for 3% of monthly simple interest rate. How much will he receive as the interest after a month?

10) Are the two triangles shown in the figure congruent? If so state the case of congruent.

11) Write down two positive integers which satisfy the inequality, $x - 1 < 2$.

12) Number of bananas in 7 combs of bananas are given below. Find the median of it.
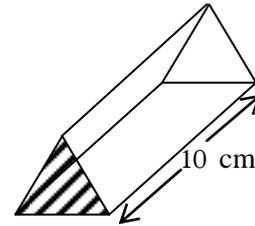
12, 08, 15, 09, 11, 13, 10

13) In a certain box there are 2 blue pens, 4 red pens and 3 black pens. What is the probability of the pen taken out randomly is being a red pen?

14) According to the information given in the figure, find the value of x.
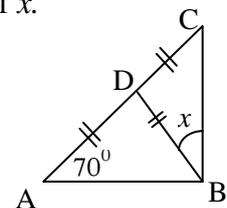
15) Solve. $\frac{x}{2} - 1 = 1$

16) Area of the shaded region of the prism is 40 cm^2 and the length of it is 10cm. Find the volume of the prism.

10 cm

17) 9 men can complete a work in 4 days. How many men are needed to complete the same work in 6 days?

18) if the following statements are true put ✓and if they are wrong put ✗in the given box.

|	
If two triangles are coincide, they are congruent.	
If two sides and the included angle of a triangle is equal to the two sides and any angle of another triangle, they are congruent.	

19) Find the area of the sector given in the figure.

45^0

14 cm
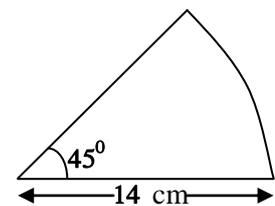
20) According to the information given in the figure, find the magnitude of B$\widehat{A}$C.

A

B

30^0 C

40^0 E

30^0

D
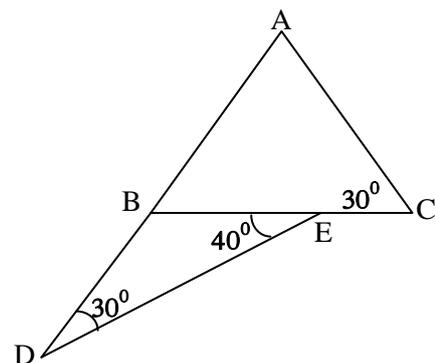
21) When observing from A, angle of depression of C is 40^0. Show this information on the given diagram. (Ignore the height of the observer)

A
|
|
|
B_____C
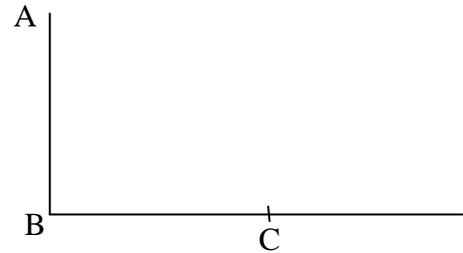
22) ABC is a triangular shaped land. A lamp post is needed to be fixed on BC, equidistant to AB and AC. Mark the location of the lamp post (D) on the diagram.

C

A_____B
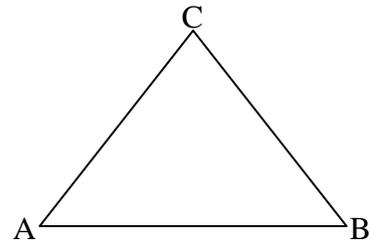
23) A ladder is leaned to a wall as shown in the figure. The distance between the foot of the ladder and the wall is 3m. Find the length of the ladder.

4m

ladder

3m
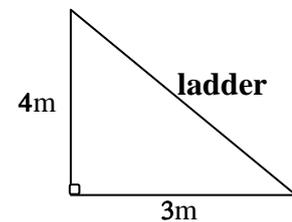
24) According to the information given in the figure, find the gradient of AB straight line.

y

B (2,4)

A (0,2)

x
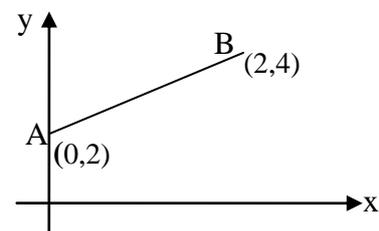
25) According to the given information, if AE = 6cm, find the length of AB.

A

110^0 6cm

E 35⁰ D

B C

Part B

Answer all the questions on this paper itself.

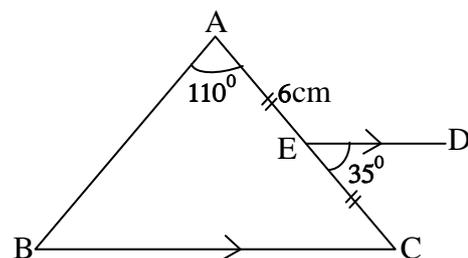01) From a stock of clothing materials which were bought to saw shirts and shorts,$\frac{3}{7}$ was used to saw shirts.

    i. What fraction of the stock is remaining after sawing the shirts?

    ∗ $\frac{1}{4}$ of the remaining is used to saw shorts.

    ii. What fraction of the whole stock is used to saw shorts?

    iii. What fraction of the whole stock is remaining, after sawing the shirts and the shorts?

    iv. If the remaining stock of material is 6m, find the total length of the material bought.

    v. If 1m of the material costs Rs. 200, find the value of the stock of clothing material bought.

02) ABCD is a rectangular shaped land.

    i. Find the area of the land.
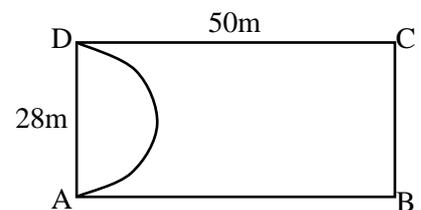
    ii. According to the figure, flower is planted on the semi-circular portion with the diameter AD. Find the perimeter of the flower bed.

    iii. A right angle triangular shaped pond with the area 70m^2 is needed to be build inside the land, by taking BC and CD as borders. the base of the triangle should be BC. Draw the sketch of the pond with the relevant measurements on the diagram.

    iv. Find the area of the remaining portion of land after reserving for the flower bed and for the pond.

04)   In a vehicle manufacturing company, 15 men canmanufacture a motor car in 9 days.

i.   Find the number of man days needed to manufacture a motor car.

After working three days 5 men from the above 15 has taken sick leave.

ii.   Find the magnitude of work done in first three days.

iii.   How many more days are needed for the remaining 10 men to complete the work?

iv.   If the labor cost per day for a worker who works on manufacturing motor car is Rs. 3 500, find the difference between the salary earned by a worker who has taken leave and the salary earned by a worker who hasn't taken leave.

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04) ε = {Whole numbers from 1 to 9 }
       A = {Prime numbers between 0 and 10 }
       B = {Odd numbers between 0 and 10 }
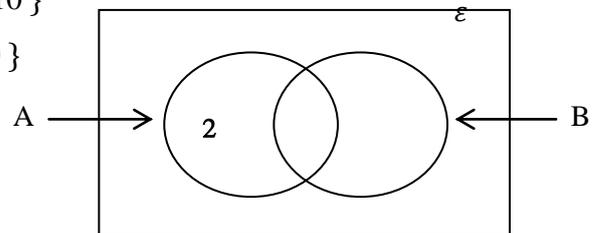
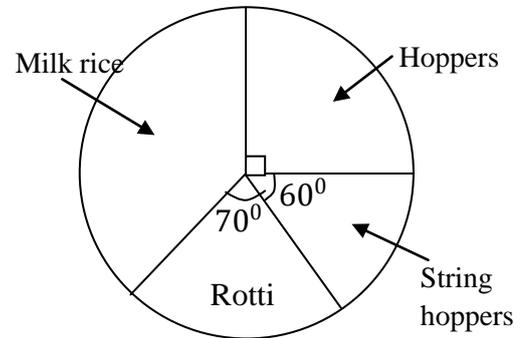i.   Write the elements of the set ε

ii.   Write the elements of the set A.

iii.   Write the elements of the set B.

iv.   Represent the above information on the Venn diagram.

v. Find $n(A), n(A')$ and $n(\varepsilon)$. Hence write the relationship between $n(A), n(A')$ and $n(\varepsilon)$

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05) The following pie chart illustrate the information on the types of food a group of student preferred.

i. What fraction of the whole group prefer hoppers?

ii. If 45 students prefer hoppers, how many students were participated for the survey?

iii. Find the angle at the centre of the sector which denotes the students who prefer milk rice.

iv. How many students prefer milk rice?

v. If 5 students who has selected rotti changed their food item to milk rice, what is the relationship between the number of students who prefer rotti and the number of students who prefer string hoppers?

බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மேல் மாகாண கல்வி திணைக்களம்
Western Provincial Education Department

පළමු වාර ඇගයීම   – 2018
முதலாவது தவணை மதிப்பீடு – 2018
First Term Evaluation   - 2018

10 ශ්‍රේණිය தரம் 10 Grade 10	ගණිතය II පත්‍රය கணித வினாதாள் -II Mathematics Paper - II	පැය තුනයි மூன்று மணி நேரம *Three Hours*

Important:

- **Answer 10 questions by selecting 5 questions from part A and 5 questions from part B.**
- **Write relevant steps and correct units when answering the questions.**
- **Each question carries10 marks.**
- **Volume of the prism = Area of the cross section x height**

Part A
Answer five (05) questions only

01. An incomplete table of values used to draw the graph of the function $y = 3x + 2$ is given below.

x	-3	-2	0	1
y	-7	-4	2	……

    i.   Find the value of y, when $x = 1$.
    ii. Using a suitable scale draw the graph of the function $y = 3x + 2$
    iii. Write the gradient and the intercept of the graph $y = 3x + 2$
    iv. Draw the straight line which passes through the points (0, -3) and (1, 0) on the same Cartesian plane.
    iv. Write a special characteristic that you can observe from the above two straight lines by giving reasons.

02. The following table represents the information on the daily income of 80 employers who are working at a certain company. (1000-1200 means greater than or equal to 1000 and less than 1200)

    Copy down the table and answer the following questions.

        i.   What is the minimum daily income of a worker?

        ii. What range of the income does the most workers receive?

Daily income (Rs)	No of workers (f)	Mid value (x)	fx
1000 - 1200	9	–	–
1200 - 1400	12	–	–
1400 - 1600	14	–	–
1600 - 1800	20	–	–
1800 - 2000	15	–	–
2000 - 2200	10	–	–

iii. Using the above graph, calculate the mean daily income of a worker.

iv. Accordingly, if there are 22 working days in a certain month, find the total amount needed for monthly salary of the workers.

03. Piyal loaned out Rs. 20 000 from a financial institute for 12% of annual simple interest rate.

i. Find the interest that he should pay at the end of the year.

ii. Find the total amount that he should pay to settle the lone after 11$2years.

iii. He opened a fixed deposit in a certain bank from the money he loaned out without settling the loan. After 3 years he received a total amount of Rs. 30 800. Find the simple interest rate offered by the bank.

iv. If he settled the loan after receiving the money from the bank, find the amount remaining with him.

04) An observer who is on the top of a light house, observes a ship which is moving towards the light house at an angle of depression of 30^0 at the point P. After moving 40m towards the light house, at the point Q, he observes the ship with an angle of depression 60^0.

i. Name the instrument which can be used to measure the angle of elevation and the angle of depression. Represent the above information in a sketch, with relevant measurements.

ii. By taking 1cm to represent 20m, represent the above information in a scale diagram and find the height of the light house in meters.

05) (a) Simplify.

i. $(3 + x)(5 - x)$

ii. $(x + 3)^2$
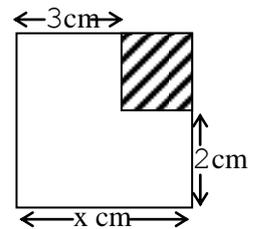
(b)

i. Figure shows a square with the length of a side x cm. A rectangular shaped portion with the length 3cm less than x and the breadth 2cm less than x, is removed from the square. Express the area of the rectangle in terms of $Ax^2 + Bx + C$.

ii. If $x = 5$cm, show that a rectangle which is equal to the area of the shaded portion and two squares can be cut out from the large square. Draw a sketch with relevant measurements to show it.

06) (a) Factorize the following algebraic expressions.
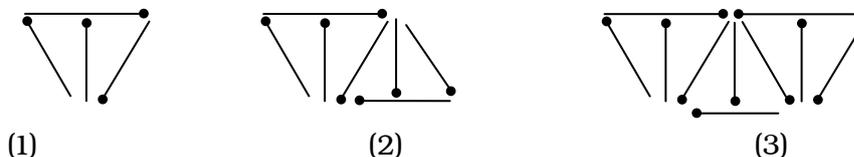
i. $100 - n^2$

ii. $5x^2 - 7x + 2$

(b) Find the value using the knowledge on factors.
$87^2 - 4 \times 87 - 21$

(c) Solve the following linear simultaneous equations.
$3x + y = 18$
$x + y = 8$

Part B

Answer five (05) questions only.

07) Figure shows the first stages of a pattern made using match sticks.

   (1)   (2)   (3)

  i. Draw the fourth stage of the pattern in your answer sheet and write the first four terms of it.

  ii. Write the nth term of the number pattern in terms of n.

  iii. Hence find the number of match sticks in the 50th stage.

  iv. Which stage of the pattern have 301 match sticks.

  v. Write the nth term of the number pattern 2, 5, 10, 17,………..

08) For the following constructions use only the straight edge with the scale mm/cm and the pair of compasses.
  i. Drawthe straight line AB = 8cm and construct the perpendicular bisector of it.
  ii. Name the intersection point of AB and the perpendicular bisector as C and mark the point D on the perpendicular bisector such that CD=3cm.
  iii. Join AD and find the length of it.
  iv. Name the theorem that you have used to find the AD length.
  v. Construct the angle bisector of $A\hat{C}D$and construct the CDEF square with the length of a side 3cm. the points E and F are situated on the angle bisector and the line AB respectively.

09) In the figure, ABCD is a rectangle. AC and BD diagonals meet at O. Copy the diagram on your answer sheet.
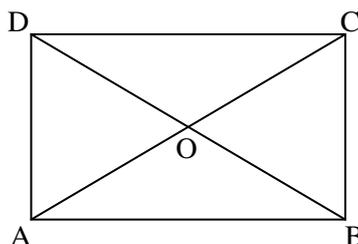
  i. Show that ABC Δ ≡ ABD Δ. Hence show that the diagonals AC and BD are equal in length.
  ii. The line drawn through O parallel to BC meets DC at X and AB at Y. Show that
   Area of BCXO trapezium = Area of BCOY trapezium

10) In the triangle ABC, AB = AC. DE is drawn through A, parallel to BC. Copy the angle in your answer sheet. By giving reasons,

   i. Show that $C\widehat{A}E = A\widehat{B}C$

   ii. If $B\widehat{A}C = x$, find the value of $A\widehat{B}C$ in terms of x.

   iii. Find the value of $D\widehat{A}B$ in terms of x.

   iv. If $C\widehat{A}E = 70^0$, find the value of x.
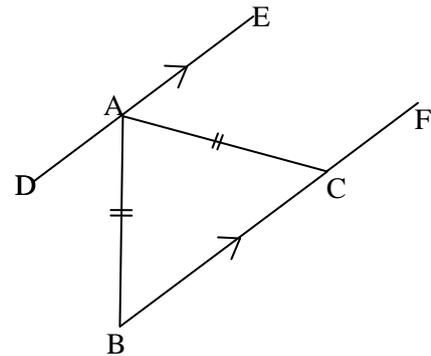
11) Figure shows a 50cm long solid metal prism with a right angle triangular cross section.

   i. According to the information given, find the value of x.

   ii. Find the volume of the prism.

   iii. This prism is melted and a cuboid is made with the length 12cm, breadth 9cm and the height h. Find the height of the cuboid.

   iv. $675cm^3$ of metal is added to the volume of metal collected by melting the prism and a cube is made with the whole volume of metal. Find the maximum length of the side of the cube.
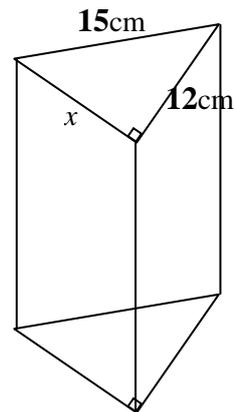
12) A box contains identical pack of cards in which the letters of the word MATHEMATICS written on it. No letter is repeated in any card.

   i. Write the sample space of the event, obtaining a card randomly from the box.
   ii. Write the probability of obtaining the letter A.
   iii. If X denotes the event, obtaining a letter from the box which belongs to the set " the letters of the word CAT"
      a. What is n(X)?
      b. Find p(X).
      c. Write down the elements of $X^{/}$.