

SECOND TERM TEST – 2019 JULY

MATHEMATICS - I

Time : 2 hours

Name :

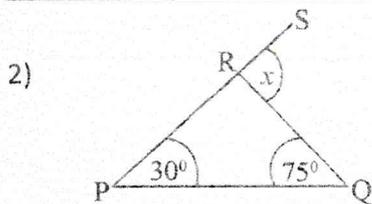
Caution :

- Part I – A : Answer all the equations. 2 marks are given to each equation
- Part I – B : Answer all the questions. 10 marks are given to each question

Part I - A

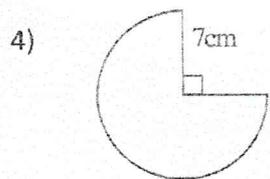
- Answer to all the questions

1) Solve. $5 - \frac{3x}{7} = 2$



In the triangle PQR, the side PR is produced to S.
 $\hat{P} = 30^\circ$ and $\hat{Q} = 75^\circ$. Find the value of x .

3) Find the value of $\sqrt{48}$ if $\sqrt{3} = 1.732$.

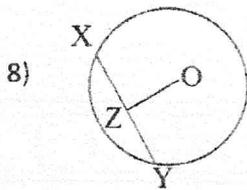


Find the arc length of the given sector.

5) $\frac{7}{10}$ th of certain money is Rs. 7000. Find that money?

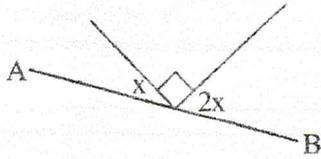
6) Find the L.C.M. of $(1 + 3y)^2$ and $1 - 9y^2$

7) The first term in an arithmetic progression is 5 and tenth term of it is 32. Find the common difference of it



XY is a chord of the given circle with the center O. Z is the mid-point of XY. If $OZ = 3\text{cm}$ and the radius of the circle is 5cm , find the length of the chord XY.

9)

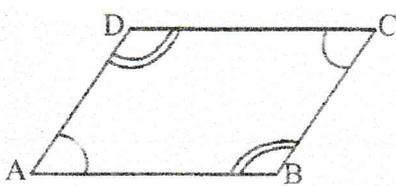


AB is a straight line. Find the value of x

10) Find the value of $x + y$ without solving the equations, $5x - y = 1$ and $x + 7y = 11$

11) Nimal bought an item worth Rs. 6000 with 5% discount. At what price did he buy that item?

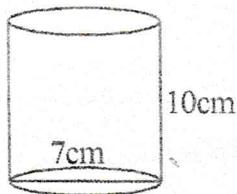
12)



Kumudu says that quadrilateral ABCD is a parallelogram. Do you agree with her? Write reason to your answer.

13) Find the largest possible integer that satisfies the inequality $4x - 3 < 9$

14)

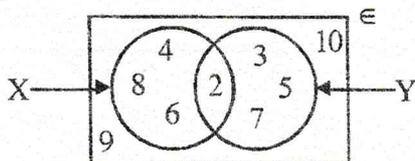


Find the volume of the cylinder.

15) Simplify

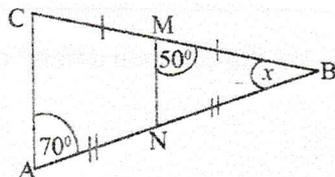
$$\frac{7c}{2ab^2} \div \frac{21c^2}{8a^2b}$$

16)



Find the set $X \cap Y'$

17)



In the triangle ABC, M is the mid-point of side BC and N is the mid-point of side AB. If $\angle BMN = 50^\circ$, find the value of x.

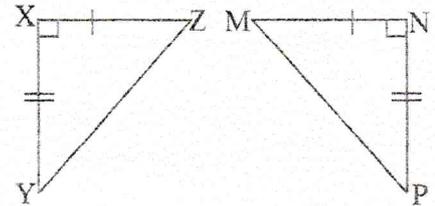
18) The mean mass of 6 parcels in a box is 10kg. If a new parcel of mass 3kg is put to the box, find the mean mass of 7 parcels.

19) Write $\log_3 81 = 4$, in index form.

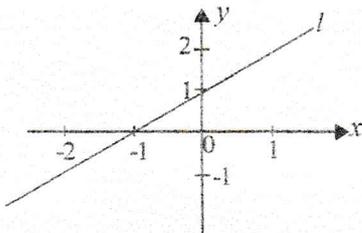
20) Factorize $x^2 - 5x - 14$

21) Express $\sqrt{72}$ as a surd.

22) Are below triangles congruent? If so, state the case of congruency.

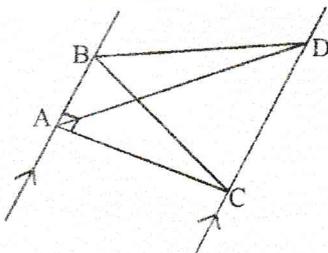


23)



Find the equation of the straight line which is parallel to the straight line l and passes through the origin.

24)



In the figure, $AB \parallel CD$. If $AB = 8\text{cm}$ and the area of $\triangle ABD$ is 24cm^2 , find the length of AC .

25) AB is a straight line of length 8cm. It is necessary to mark a point P , 6cm away from point A and equidistant to points A and B . Show that there are two such points in a rough sketch.



Grade 11 Mathematics
Part I - B

- Answer all the questions

1) Kulani planted ornamental flowers in her garden. She planted roses in $\frac{1}{2}$ of the garden. She planted Anthurium in $\frac{1}{3}$ rd of rest and she planted Boganwila in the rest part. She planted Boganwila in 4 perches.

- (i) What fraction of the whole garden was planting roses?
- (ii) What fraction of the whole garden was balance after used to plant Anthurium?
- (iii) What fraction of the whole garden was used to plant Boganwila?
- (iv) Find the amount of the garden used to plant roses.

2) (a) A provincial council is charged 6% of the annual assed value of a house as rates. If the annual assed value of the house is Rs. 50 000,

- (i) Find the amount of rates has to be paid for a year.
- (ii) Find the amount of rates has to be paid for a quarter.

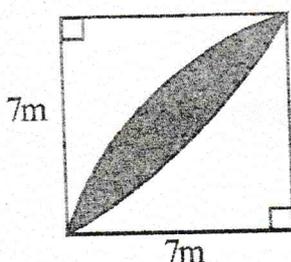
(b) There was food stock sufficient to 80 soldiers for 10 days in an army camp. After 4 days, 20 soldiers left from the camp.

- (i) For how many days the remain food stock sufficient for rest of soldiers?

After another 2 days, 10 soldiers left from the camp and 40 new soldiers came to the camp.

- (ii) For how many days the remain food stock sufficient for soldiers in the camp?

3)



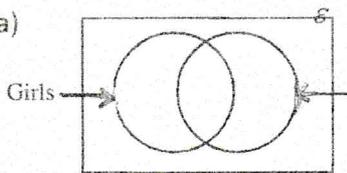
This diagram shows a part of a home garden. The shaded portion is filled with white quartz and grasses are grown in the rest of portion.

(i) Find the area of the whole portion.

(ii) Find the area of the portion filled with white quartz.

(iii) It is decided to fix bulbs along the boundary of portion filled with white quartz. The gap between two bulbs is 2.2m. Find how many bulbs are necessary for that

4) (a)



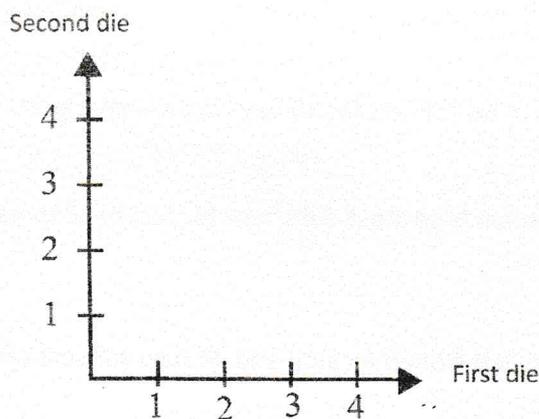
Student who wear shoes

In a rainy day, there were 35 students in a class. Out of them, 19 are girls. Number of boys who didn't wear shoes were 5. Number of girls who wear shoes was 16.

(i) Complete above Venn diagram by inserting the relevant data.

(ii) How many girls were there who didn't wear shoes?

(b) Two unbiased tetrahedral dice numbered from 1 to 4 are tossed simultaneously. Show all the possible outcomes in the grid given below.



(i) If A is the event of obtaining sum of the numbers on two dice is 4, show it on the grid.

(ii) Find $P(A)$.

(iii) If B is the event of obtaining same numbers on both dice, show it on the grid.

(iv) Find $P(B)$.

- 5) The following table shows the masses of 38 iron balls. (In here, class interval 0 – 10 is greater than 0 and less than or equal 10)

Class interval (Mass of iron balls – g)	Number of iron balls (Frequency)	Cumulative frequency
0 – 10	?	2
10 – 20	4	6
20 – 30		10
30 – 40	12	
40 – 50	12	34
50 – 60	4	38

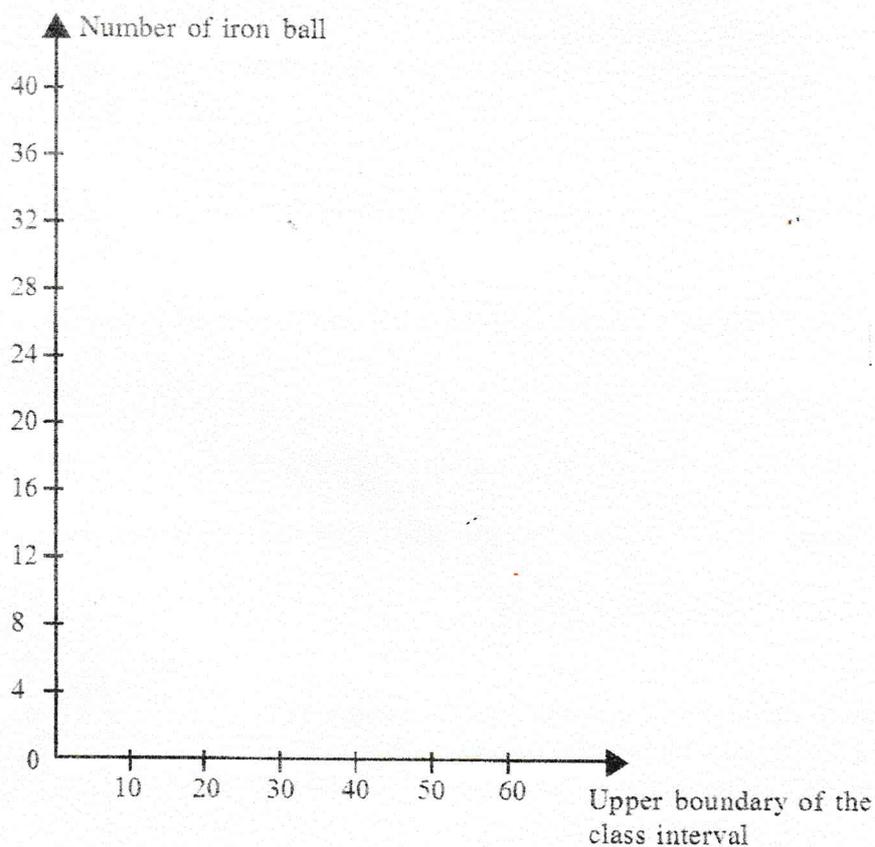
- (i) Fill in the blanks in above table.
- (ii) According to the information in the table, draw the cumulative frequency curve.

Using the cumulative frequency curve,

- (iii) Find the median mass of an iron ball

- (iv) Find Q_1 and Q_3

- (v) Find the interquartile range.



SECOND TERM TEST – 2019 JULY

MATHEMATICS - II

Time : 3 hours

Name :

Caution :

- Select 5 questions from part A and 5 questions from part B and answer to 10 questions
- 10 marks are given to each question
- The surface area of a sphere is $4\pi r^2$ and the volume is $\frac{4}{3}\pi r^3$ with the radius r . The volume of a cylinder is $\pi r^2 h$ with the base radius r , the height h .

Part II - A

- Answer 5 questions only.

- 1) a) A television set priced at Rs. 50 000 for outright purchase can be bought by making a down payment of Rs. 10 000 and paying the rest in 10 equal monthly installments. If a 18% annual interest rate is charged on the loan where the interest is calculated on the reducing balance, find the amount of a monthly installment.
- b) The market price of a share of a certain company is Rs. 25. Anil invested Rs. 50 000 to buy shares. The company pays annual dividends of Rs. 5 per share.
- How many shares did he buy?
 - Find his annual dividends income.
- 2) An incomplete table of values prepared to draw the graph of the function $y = -(x + 1)^2 + 3$ is given below.

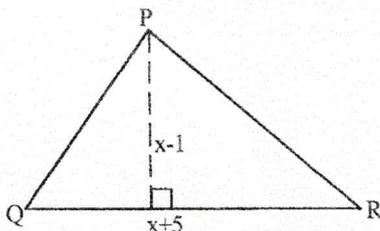
x	-4	-3	-2	-1	0	1	2
y	-6	-1	2		2	-1	-6

- Fill in the blank in the table.
- By taking 10 small divisions along the x axis and y axis to be one unit as the scale, draw the graph of the function in the graph paper.

Using your graph,

- Write the maximum value.
- Write the equation of the axis of symmetry.
- Write the range of x when the function is positive.
- Find the roots of $(x + 1)^2 = 3$

3) a)

The area of the triangle PQR is 15cm^2 .

- Show that $x^2 + 4x - 35 = 0$
- Solve it and find the perpendicular height.

b) Solve.

$$\frac{4}{x} - \frac{3}{y} = 1$$

and

$$\frac{5}{x} + \frac{6}{y} = -15$$

4) (i) Simplify. $\frac{2x - 2}{x^2 - 1} \div \frac{4(x^2 + 2x - 3)}{(x + 1)(x + 3)}$

(ii) Simplify. $\log_2 32 \div \log_2 4$

(iii) Solve. $3^{x+1} \times 81 = 27$

5) The following table gives the information about the sales of the number of apples by a trader in 50 days.

Number of apples	20-24	25-29	30-34	35-39	40-44	45-49	50-54
Number of days	3	6	12	4	10	8	7

- (i) Write the modal class of the above distribution.
- (ii) Taking the mid value of the modal class as the assumed mean, find the mean number of apples sale in a day to the nearest whole number.
- (iii) Using that value, estimate the number of apples selling in next two months.
- 6) a) The distance between two cities A and B is 100km. Madura starts at city A and travels 30km towards city B with a uniform speed of 60kmh^{-1} and reaches P place.
- (i) Find time spent by Madura to travel 30km.
- (ii) Radita starts at city B and travels towards city A with a uniform speed and meets Madura at P place. If he spends twice the time that Madura spends, find his uniform speed.
- b) Below describes how three students stand on the playground.
Ravidu stands 200m due east to Akindu. Charith stands 500m and the bearing of 215° of Ravidu.
- (i) Draw a scale diagram to represent the locations of Akindu, Ravidu and Charith, using the scale of 50m from 1cm.
- (ii) Write the bearing of place where Charith stands from the place where Akindu stands.
- (iii) Find the actual distance between places that Akindu and Charith stand.

Grade 11 Mathematics
Part II - B

- Answer 5 questions only.

7) a) 4, 7, 10, 13, ...

- Which type of progression is above progression?
- Find 20th term of it.
- Find the sum of the first 20 terms.

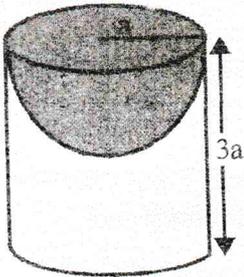
b) In a geometric progression, 3rd term is 27 and 6th term is 729.

- Find the common ratio and the first term of it.
- Find the sum of first 5 terms of it.

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

- Construct the triangle ABC such that $AB = 5\text{cm}$, $\hat{BAC} = 45^\circ$ and $\hat{ABC} = 120^\circ$.
- Construct a perpendicular to produced side AB from C and name its foot as D.
- Construct a circle such that center of it lies on BC and passes through point D.
- Measure and write the radius of the circle.

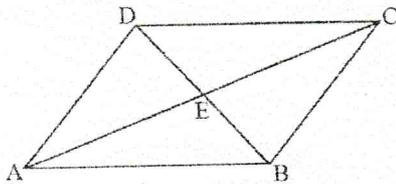
9)



A vase is made by digging a hemispherical shape portion of radius a from a cylindrical shape wooden log. The radius of log is a and height of it is $3a$.

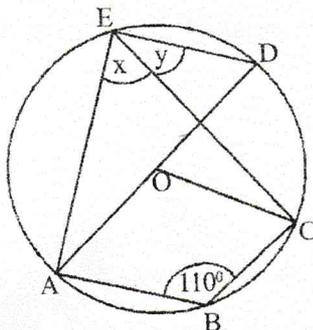
- If varnish is applied only inside the hole, find the area where varnish is applied.
- Show that the volume of wood in the vase is $\frac{7}{3}\pi a^3$.
- Find the volume of wood in the vase if $a = 8\text{cm}$ by using logarithmic tables.

10) a)



In the quadrilateral ABCD, $AB \parallel DC$. AC and BC lines are intersected at E such that $BE = ED$. Show that ABCD is a parallelogram.

b)

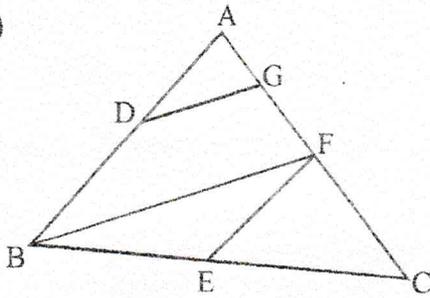


The center of the given circle is O. According to the given data in the figure,

- Find the value of x .
- Find the value of y .

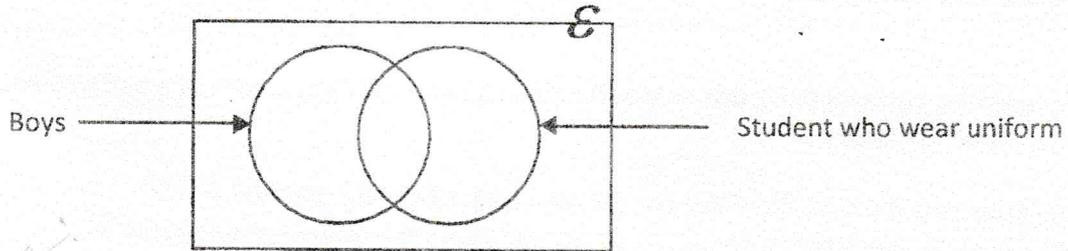
11) a) State the converse of the Midpoint theorem.

b)



In the triangle ABC, D is midpoint of AB and E is midpoint of BC. A parallel line is drawn through D to BF meets AC at G and a parallel line is drawn through E to AB meets AC at F. Show that $GF = \frac{1}{4} AC$.

12) a)



Above Venn diagram shows the details about 33 students who participated to a meeting. 25 students wore school uniform and out of them 10 were boys. Girls who did not wear school uniform were 3.

- (i) Copy above Venn diagram in your answer sheet, insert details mentioned above in it.
- (ii) How many boys were there who didn't wear school uniform?

b) In a bag, there are 5 red beads and 4 green beads. A bead is taken out randomly, colour of it is recorded and without replace another bead is taken out and colour of it is recorded.

- (i) Show above data in a tree diagram.
- (ii) Find the probability that both the beads are in same colour.