



PRACTICE TEST - 2020

Grade 11

Mathematics I

Two hours

Index Number :

Certified Correct

Signature of Invigilator

Important:

- This question paper consists of **8 pages**.
- Write your **Index Number** correctly in the appropriate places **on this page** and on the **page three**.
- Answer **all** questions on **this question paper itself**.
- Use the space provided under each question for working and writing the answer.
- Indicate the **relevant steps** and the **correct units** in answering the questions.
- Marks are awarded as follows:
In part A
 2 marks for each question
In part B
 10 marks for each question

For marking Examiners' Use Only		
Part	Question	Marks
A	1 – 25	
B	1	
	2	
	3	
	4	
	5	
Total		
..... First Examiner	 Code Number
..... Second Examiner	 Code Number
..... Arithmetic Checker	 Code Number
..... Chief Examiner	 Code Number

321

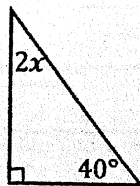
Part A

Answer all the questions on this paper itself.

- 1) The annual assessed value of a house is Rs. 80 000. The annual rate percentage is 8%. Find the annual rate amount.

- 2) How many days need to complete a certain work which is completed by 8 men in 9 days by using 6 men?

- 3) Find "x"



- 4) The solution of the quadratic equation $x^2 - t = 0$ are -4 and 4 . Hence find "t"

- 5) Fill spaces.

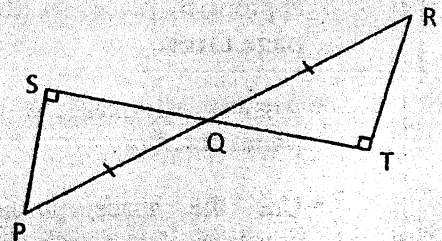
In $PQS \Delta$ and $QTR \Delta$

$PQ = QR$ (Data)

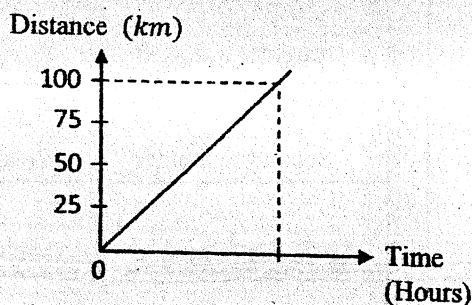
$\hat{P}SQ = \hat{Q}TR$ (Data)

$\hat{P}QS = \hat{R}QT$ (_____)

$PQS \Delta \equiv QTR \Delta$ (_____)



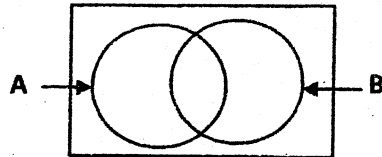
- 6) Find the total time taken by a vehicle to travel a total distance at the speed of 25 km/h



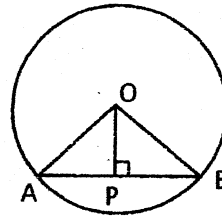
- 7) Write $2 = 10^{0.3010}$ in logarithmic form.

8) Simplify,
 $\frac{1}{3x} + \frac{2}{15x}$

9) Shade $A \cup B$



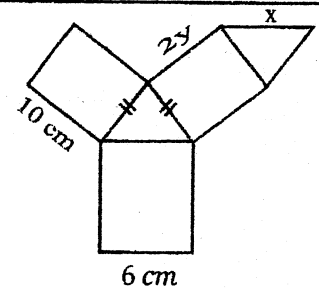
10) AB is a chord of a circle of centre O .
 $\angle AOB = 90^\circ$, $AB = 16 \text{ cm}$. Find OP .



11) The given figure is a sketch which is used to make a triangular prism. Accordingly, find the length of x and y .

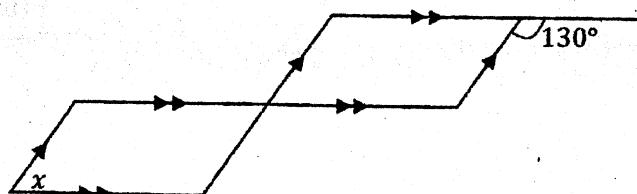
$x = \dots\dots\dots$

$y = \dots\dots\dots$



12) The result of $A : B : C : S : W$ for Mathematics in O/L exam out of 60 students in a certain school in the ratio was 2 : 2 : 3 : 4 : 2. Find the central angle that should be represent for the result "C", when the result is illustrated in a pie chart.

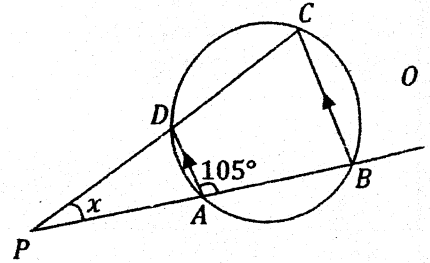
13) Find "x"



14) Find LCM of $6a^2b, 4ab^2$

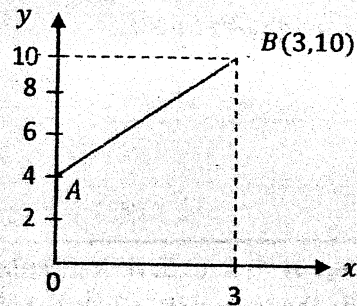
- 15) Find the common ratio of a geometric progression of which its first term is 7 and the fourth term is 56.

- 16) Find \widehat{APD}

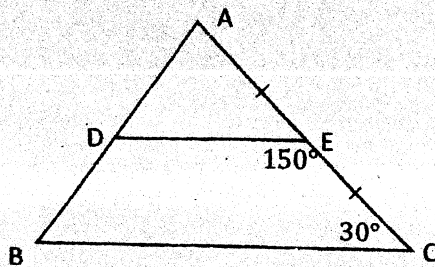


- 17) Out of 30 identical pens in a box, 4 are red in colour. The probability of a pen taken out at random being a black colour pen is $\frac{1}{5}$. If a pen is taken out at random find the probability of it not being black or red in colour.

- 18) Find gradient of the straight line AB.



- 19) In the diagram $AE = EC$, $\widehat{ACB} = 30^\circ$ and $\widehat{DEC} = 150^\circ$. Put a tick (\checkmark) in front of correct statements in the following table by considering only given data.



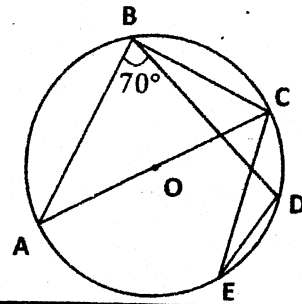
(i)	$AD = DB$	<input type="checkbox"/>
(ii)	$AB = AC$	<input type="checkbox"/>
(iii)	$BC = \frac{1}{2} ED$	<input type="checkbox"/>

- 20) If $[1 \ 2] \begin{bmatrix} 0 & -1 \\ 2 & 0 \end{bmatrix} = [x \ y]$ then find x and y .

$x =$ _____

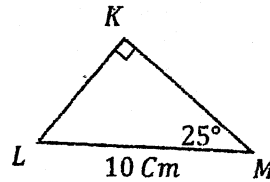
$y =$ _____

- 21) A, B, C, D and E are situated on a circle of centre O.
If $\hat{ABD} = 70^\circ$ find \hat{CED} .

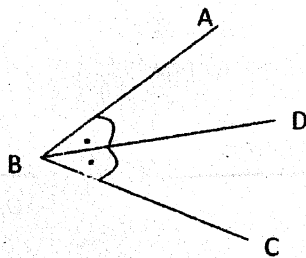


- 22) The volume of a right cylinder of base radius 14 cm is 3080 cm^3 . Find its height.
(The volume of a cylinder of radius r is $\pi r^2 h$, $\pi = \frac{22}{7}$)

- 23) If $\sin 25^\circ = 0.422$
 $\cos 25^\circ = 0.906$
 $\tan 25^\circ = 0.466$
Then find KM.



- 24) The locus of points equidistant from AB and BC is BD. Mark the point T, 3 cm away from AB and equidistant from AB and BC on the given diagram by using the knowledge of loci.



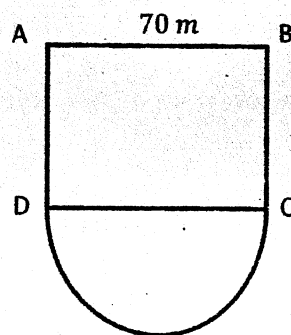
- 25) Without simplifying find $x - y$.
 $2x + 5y = 13$
 $5x - 12y = 8$

Part B

Answer all the questions on this paper itself.

- 1) (a) An item worth Rs. 80000 is imported by paying 60% custom duty.
- Find the custom duty tax that was charged.
 - Find the cost of it after paying the duty.
- (b) Rs. 50 000 was borrowed under the compound interest method at the rate of 10% per annum for 2 years.
- Find the interest for the first year.
 - Find the total amount that should be paid to settle the loan at the end of two years.
 - Due to the practical problem the loan couldn't be settled at the end of 2nd year. After that total amount of Rs. 72600 had to pay at the end of the third year and could free from the loan. Find the rate percentage charged for the 3rd year.

- 2) A flower garden consists of a rectangular part region of length 70 m and a semi-circular region attached to one side of it as shown in the given diagram.

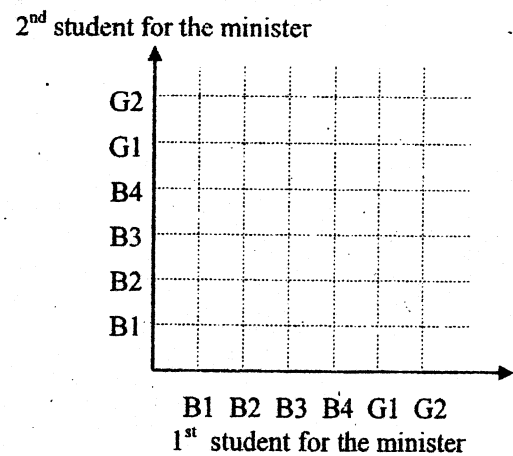


- Find the arc length of the semi-circular portion.
- If the perimeter of the garden is 350 m, find BC.
- Find area of the semi-circular part.
- A walking lane has been built attaching to the boundaries DA, AB and BC. The width of the lane is 1 m. If flow tiles $\left(\frac{1}{2} \times \frac{1}{2}\right) m^2$ have been laid on the lane, then find the total number of tiles used.

- 3) Mr. Sampath won a lottery draw and bought a land by expending $\frac{1}{3}$ of it and built a house by expending $\frac{7}{18}$.
- Find the total expenditure for buying the land and for building the house as a fraction.
 - He bought domestic furniture by expending $\frac{2}{3}$ of the rest. Find the fractional part that he expensed for it.
 - He deposited the remainder amount in his bank account. If he deposited Rs. 945 000, Find the total amount that he won from the lottery draw.

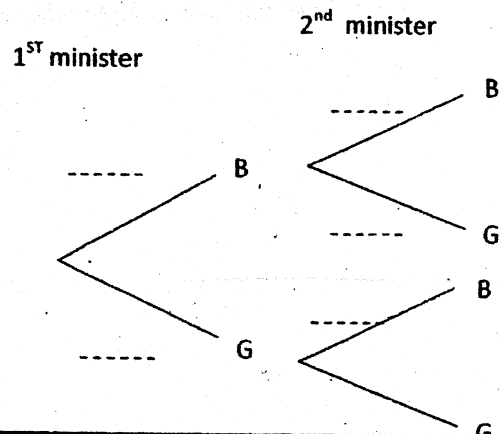
- 4) Two students as ministers are to be appointed for the student parliament in a certain school. Two students out of 4 boys and 2 girls should be selected at random.

- Represent the sample space of the appointing above two students in the following grid. (Boys have been marked as B_1, B_2, B_3, B_4 and girls as G_1, G_2)



- Mark the event of appointing at least one boy for the posts in the grid and write its probability.

- But the staff decided later to reject one boy from the former group and planned to appoint the two students as ministers out of the rest. The following represents an incomplete tree diagram to indicate above incident. Fill spaces with suitable probabilities in the tree diagram.



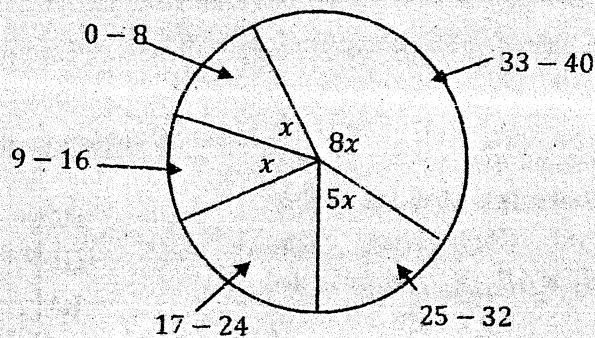
- (iv) Find the probability of **not** appointing at least one girl out of the two posts.

- 5) a) The number of days of leaves obtained by each employee in a certain staff is given in the following distribution.

6, 8, 12, 13, 4, 7, 13, 15, 18, 16, 3, 17, 15, 20, 14

Find the,

- (i) Median.
- (ii) Interquartile range of the number of leaves.
- b) A pie chart drawn to represent the marks obtained by students for a Science MCQ paper (marks given out of 50) is shown below.



There are 10 students who obtained marks in the range 17-24.

- (i) Find the total number of students.
- (ii) Find the centre angle representing " x ".
- (iii) Find the number of students in the range 33-40.

PRACTICE TEST - 2020

Grade 11	Mathematics - II	Time : 3 hrs
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- ⊙ Answer 5 questions from part A and 5 questions from part B.
- ⊙ Each question carries 10 marks.
- ⊙ The volume of a cylinder of base radius r and height h is $\pi r^2 h$
- ⊙ The volume of a sphere of radius r is $\frac{4}{3} \pi r^3$

Part A

01. An incomplete table of values satisfying to draw the graph of the function $y = (x - 1)^2 - 3$ is given below.

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

- i. Find y when $x = 1$
- ii. Draw the graph of the function representing 10 small divisions along x axis and y axis as the scale.
Using the graph,
- iii. Write the equation of the axis of symmetry..
- iv. Write range of values of x for which the function increases in the range $-2 < y < 1$.
- v. Find positive root of the function $(x - 1)^2 - 3 = 0$ and hence find $\sqrt{3}$ correct to the first decimal place.

02. Rs. 80 000 was invested to buy shares of a company which pays Rs. 4 per a share at Rs.20. After an year the dividend income received from the above company was paid to buy a computer worth Rs. 91 000 as the down payment. The outstanding balance amount of the computer was settled by paying in 15 equal monthly installments at the rate of 24% per annum according to the diminishing loan balance method. Find the value of an installment.

03. The total amount of money that Amila and Padma has is four times that of Padma. If Amila gives Rs. 100 to Padma then they will get equal amount of money.

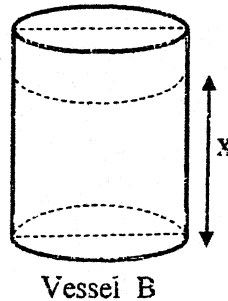
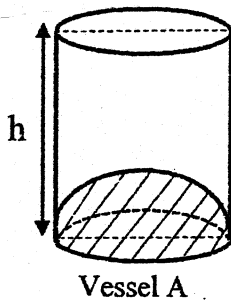
- i. Taking the amount of money that Amila has as ' x ' and that of Padma as ' y ', build two simultaneous equations
- ii. Solving them find the amount of money that each of Amila and Padma has separately.
- iii. Padma could buy ' m ' number of mangoes at Rs. 30 each and 3 guawas at Rs. 20 each. Build an inequality to represent above in terms of ' m ' and find the maximum number of mangoes that she could buy after solving it.

04. The time spent by Binadhith for computer games in each day of 30 days month is represented in the following table.

Time (minutes)	10-30	30-50	50-70	70-90	90-110	110-130	130-150
No. of days	2	4	6	8	5	4	1

- What is the time interval that Binadhith spent the most number of days in doing computer games ?
- Find the mean time that he allocated for games in a day.
- The elapse time that the studying time in the school per a day is 8 periods of 40 minutes each. Binadhith's mother claims that Binadhith spends more than twice of the above elapse time in computer games within a week. Do you agree with her? Explain giving reasons.

05.

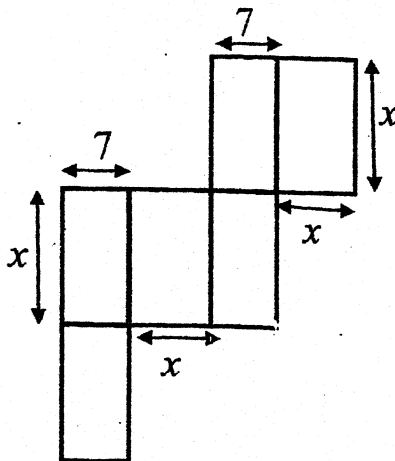


The vessel A is made attaching solid glass hemi-spherical part of radius "r" to the bottom. The height of it is "h" and soft drink is filled up to the over flowing level of it. Then the total volume of drink in the vessel A is completely transferred to the normal vessel B without any wastage. It is seen that the drink is filled up to the height of the level "x" in the vessel B due to the transferring.

Accordingly show that $2r = 3(h - x)$

If $r = 5.12$, $x = 8.07$ and $\pi = 3.14$ then using log tables find volume of drink in the vessel B nearest to the whole number.

06.



If the total surface area of the cuboid made by using the given net is 578cm^2 then show that x satisfies $x^2 + 14x - 289 = 0$ and also find the value of x, correct to the first decimal place. ($\sqrt{2} = 1.41$)

Part B

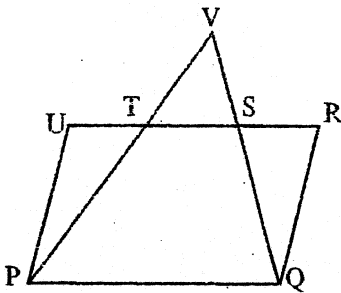
07. A certain Radio channel broadcast a quiz program. Each competitor who participates for it has to face for 18 questions. Rs. 500 is awarded for the first correct answer, Rs. 750 is awarded for the second correct answer and Rs. 1 000 is awarded for the third correct answer and so on. Accordingly the prices are lie in terms of an arithmetic progression
- Find the amount of money awarded for the 8th question using the relevant formulae.
 - Find the total amount of money that is awarded for a competitor who gives correct answers for first 12 questions.
 - If a competitor who fails to give correct answer for a particular question then he will be given half of the amount of money that he has already obtained until that question and expelled from the program. A certain competitor received only Rs. 16 875 due to the impossible of giving the correct answer for a certain question according to the above condition. Accordingly find the number of questions that the above competitor faced.

08. Using only a cm/mm scale, a straight edge and a pair of compass and representing all construction lines clearly,
- Draw a straight line segment $AB = 6\text{cm}$.
 - Construct the triangle such that $\hat{ABC} = 120^\circ$ and $BC = 7\text{cm}$.
 - Construct the circle such that it touches AB at B and also crosses C .
 - Construct a tangent AD to the above circle in (iii) from the point A .
 - Give reasons to why $\hat{BAD} = \hat{BCD}$.

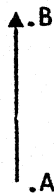
09.

In the diagram $UT = TS = SR$, If $UP = SQ$ and $PT = TV$, Show that,

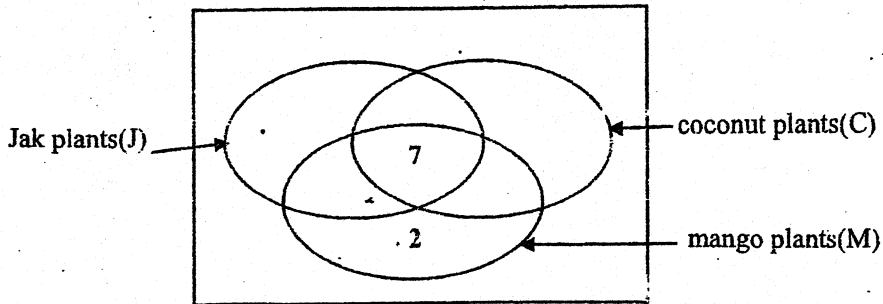
- $\triangle UTPV \cong \triangle TSVV$
- $TQRV$ is a parallelogram.
- $\frac{PQ}{UR} = \frac{2}{3}$
- The area of $TQVV =$ The area of $PQUV$



10. The main gate is situate at "A". From the main gate, from it,
- The main hall(C) is situated at the bearing of 050° and 120m apart.
 - The principal office(D) is situated at the bearing of 104° and 160m apart.
- Copy down the given sketch on to your answer script and mark the given data on it.
Using the trigonometric tables,
 - Find the perpendicular distance from Main hall(C) to the road AB.
 - Find \hat{ACD} .

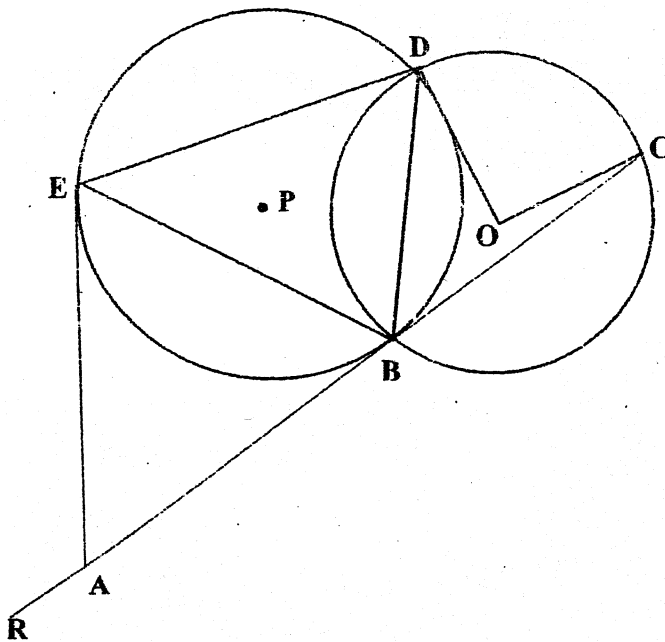


11. A certain farmers association called "Isuru" in a certain village contains 70 farmers. Out of them 42 farmers were given Jak plants. 15 farmers were given Mango and Jak plants. The number of farmers who were given only Jak plants is equal to twice the number of farmers who were given only Jak plants and Mango plants. Copy down the following Venn diagram on to your answer script and



- Find the number of members who were given only Jak plants and Coconut plants.
- The number of members who were given only Coconut plants is three times than the number of members who were given all the three types of plants. Hence find the number of members who were given Mango plants.
- Those to whom a Mango plant was given, a Jak plant also given. Accordingly draw the Ven diagram again indicating this data and insert the suitable numbers in relevant religions.
- Shade the region representing the number of farmers who were given only Jak plants and Coconut plants in the Ven diagram that you drew in above (iii).

12.



The tangent drawn to the circle of center P at B is ABC. The points C and D lie on the circle of center O. The point E lies on the circle of center P. If $BE = BD$, $AB = AE$ then show that $\angle COD = \angle RAE$.