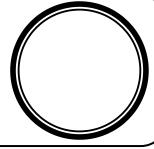




யா/ ஹாட்லிக் கல்லூரி, பருத்தித்துறை.  
J/ Hartley College, Point Pedro.



முதலாம் தவணைப் பரீட்சை – 2019 – தரம் 10  
First Term Examination – 2019– Grade 10

கணிதம் I, II  
Mathematics I, II

32

E

I, II

மூன்று மணித்தியாலம்  
Three Hours

கட்டிடம்  
Index No

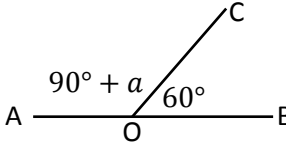
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**Mathematics**

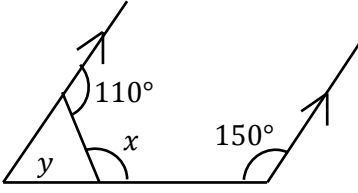
**Part – I**

**Answer all the questions.**

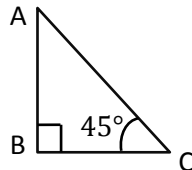
1. If  $\sqrt{2} = 1.414$ , find the value of  $\sqrt{200}$ .
2. If  $x = 3^2 \times 5^3$ , and  $y = 5 \times 7^2$ . Find the value of  $\sqrt{xy}$  ?
3.  $4x + 3y = 8$ ,  $5x + 2y = 10$  without solving the equations and find the value of  $(x - y)$
4. If  $a:b = 1:3$  find the value of  $\frac{a+2b}{b}$
5. Find the value of  $37^2 + 26 \times 37 + 13^2$ , by use square of binomial expression knowledge.

6.  If AB is a straight line  
Find the value of  $a$

7. 3 oranges can be bought for the amount spent for 4 mangoes. 2 Apples can be bought for the amount spent for 5 oranges. How many mangoes can be bought for the amount spent for 3 Apples?

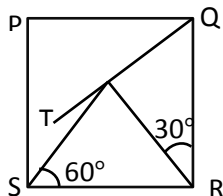
8.  Based on the information  
Given in figure find the values of  $x$  and  $y$

9. Make  $x$  as the subject of equation  $x + y = t(x + y)$

10.  In the given right angled triangle.  
Find the ratio of  $AB:BC:AC$

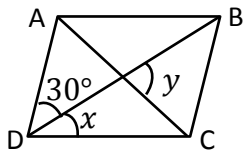
11. If  $2^x = 15$ , and  $2^y = 3$  find the value of  $2^{x-y}$

12.



PQRS is a square. According to the information given in figure.  
Find the magnitude of  $\angle PQT$ .

13.

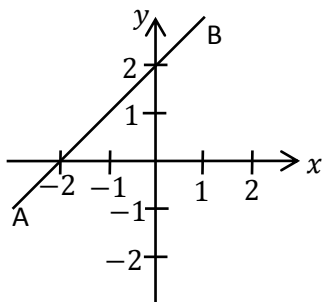


Based on the information given in rhombus ABCD.  
Find the value of  $x$  and  $y$

14. The difference between an interior angle and an exterior angle of certain. Regular polygon is  $100^\circ$ . If an interior angle of that polygon as a obtuse angle, find the number of the sides of that polygon.

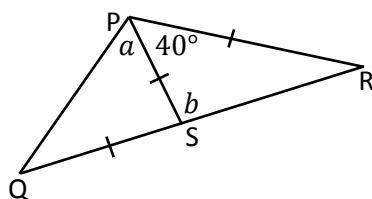
15. The mean marks of 5 subjects of a student is 62. Find the total marks of other 4 subjects to get the mean marks of 9 subjects as 75.

16.



Find the equation of the straight line which passes through  $(2, -2)$  and parallel to AB

17.



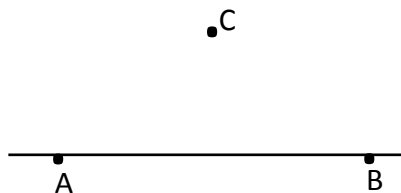
In given figure if  $PS = QS = PR$   
Find the value of  $a$  and  $b$

18. Simplify

$$2^{-2} + 3^{-1}$$

19. Eight men completed  $\frac{3}{4}$  of a certain work in three days. How many days it will take to complete the remaining work.

20.



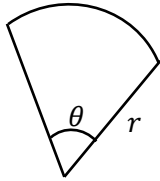
AB is a straight road, and C is an electric post 2m away from the road. Draw the location of the points P and Q which lie 4m from the road and 3m from the electric post.

## Part – II

**Answer six (6) questions only.**

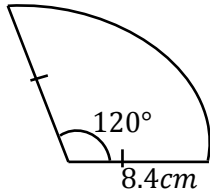
01.

a.



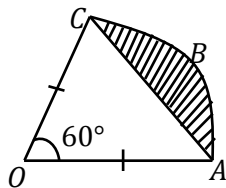
- i. Find the perimeter of the sector in terms of  $\theta$ ,  $r$  and  $\pi$
- ii. Find the area of the sector in terms of  $\theta$ ,  $r$  and  $\pi$

b.



- i. Find the perimeter of the given sector.
- ii. Find the area of the given sector. (Take  $\pi = \frac{22}{7}$ )

c.



OABC is a sector which has radius 'r' and angle of sector is  $60^\circ$  if the perimeter of the shaded portion is 43cm.

- i. Find the value of r.
- ii. Find the area of sector OABC. (Take  $\pi = \frac{22}{7}$ )

**(2 + 4 + 4)**

02.

- a. Simplify  $5.6 - 0.4 \times 1.75$
- b. A man sold  $\frac{1}{3}$  of his vegetables first day. He sold  $\frac{2}{3}$  of the remaining on second day.
  - i. What fraction of the total vegetable the person who sold on second day.
  - ii. On the second day, the remaining vegetable is 18Kg find the total weight of the vegetable on initial.

**(3 + 2 + 2 + 3)**

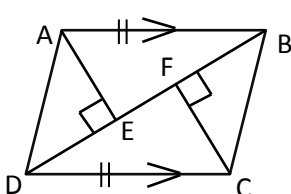
03. Do the following constructions using the cm / mm ruler and the compass only. Show the constructions line clearly.

- i. Construct a triangle ABC in which  $AB = 8\text{cm}$ ,  $\angle B = 90^\circ$  and  $BC = 5\text{cm}$ .
- ii. Construct the angle bisector of  $\angle B$  and mark the point X, where the bisector intersects side AC.
- iii. Construct the circle which centre is X and radius XB.
- iv. Show that length of AC is  $\sqrt{89}\text{cm}$  by use Pythagoras relation.
- v. Measure length AC and find the value of  $\sqrt{89}$  in first decimal.

**(5 × 2 = 10 Marks)**

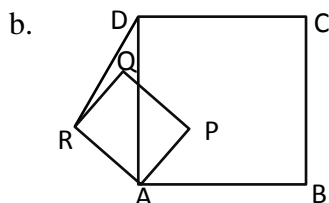
04.

a.



Based on the information given in diagram,

- i. Prove that  $\triangle ABE \cong \triangle DCF$
- ii. Prove that  $\triangle ADE \cong \triangle BCF$
- iii. Prove that  $BE = DF$



In the figure ABCD  
And APQR are squares.  
Prove that  $BP = DR$

(2 + 2 + 2 + 4)

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

$x$	0	1	2	3
$y$	1	3		7

- Find the value of  $y$ , when  $x = 2$ .
- Using a suitable scale draw the graph of the function  $y = 2x + 1$
- Write the co-ordinate of intercept point of the graph.
- Find the intercept of the graph.
- Find the equation of the straight line which passes through  $(0, -2)$  and parallel to above graph.

(5 × 2 = 10 Marks)

06.

a. Solve

$$2x + y = 7$$

$$4x + y = 11$$

b. The following table represents the information related to distribution of books in a school library.

Class interval	Mid value ( $x$ )	No. of days ( $f$ )	$f \cdot x$
0 – 10		06	
10 – 20	15	12	180
20 – 30		20	
30 – 40		12	
40 – 50		08	
50 – 60		02	

- Complete the mid-point column.
- Complete the  $f \times x$  column
- Calculate the mean of the number of books in a day to the closest whole number.

(3 + 2 + 2 + 3)

07.

a. A man sold a machine for Rs. 36 000 which he bought for Rs. 30 000.

- Find the profit / loss percent.
- This machine was sold at a profit of 30%. Find the marked price.
- When selling that machine, the man gives 10% discount of the above marked price. Find the selling price.

(2 + 2 + 2)

b. Ravi got a loan Rs. 80 000 at the rate of 18% per annual simple interest.

- Find the interest for one year to that loan.
- Show that he should pay more than Rs. 94 000 to settled from the loan after 12 months.

(2 + 2)