

DEVAMATHA CMI PUBLIC SCHOOL

MID TERM EXAMINATION 2017-2018

Std. IX

MATHEMATICS (041)

Time : 3 h.

Marks : 80

General Instructions :

1. All questions are compulsory.

Section - A

(6x1=6)

1. What is the value of $(5)^3 + (-7)^3 + (2)^3$?
2. If two interior angles on the same side of a transversal intersecting two parallel lines are in ratio 2:3, then what is the measure of larger angle ?
3. There is a point A on X-axis which is 6 units away from origin. Then what is the ordinate of A ?
4. If $a+b=1$, then find the value of $a^3 + b^3 + 3ab$
5. The value of $(4 + 3\sqrt{2})(4 - 3\sqrt{2})$ is :
6. If any triangle ABC, $\angle A > \angle B$, and $\angle B > \angle C$. Then the smallest side is :

Section - B

(6x2=12)

7. Write any two postulates from Euclid's Geometry.
8. Find the value of x if

$$\left(\frac{6}{5}\right)^{2x} \left(\frac{6}{5}\right)^x = \frac{125}{216}$$
9. Prove that through a given point we can draw only one perpendicular to a given line.
10. If ABCD is a parallelogram, then prove that $\angle ABD = \angle CDB$.
11. Factorise $x^4 - 625$
12. Find the product of the following
 - i) $(5 + \sqrt{5})(2 + \sqrt{2})$
 - ii) $(2 + \sqrt{3})(3 - \sqrt{2})$

Section - C

(10x3=30)

13. Show how $\sqrt{5}$ can be represented on a number line. Write steps of construction also.
14. The sides of a triangular plot are in the ratio of 3:5:7 and its perimeter is 300m. Find its area.

15. If $\frac{\overline{03} + 1}{\overline{03} - 1} = a + b \overline{03}$, find the value of a and b.

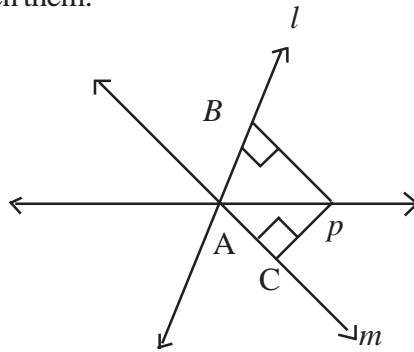
16. If two lines intersect each other, then prove that the vertically opposite angles are equal.

17. Factorise the following :

i) $27 y^3 + 125 z^3$

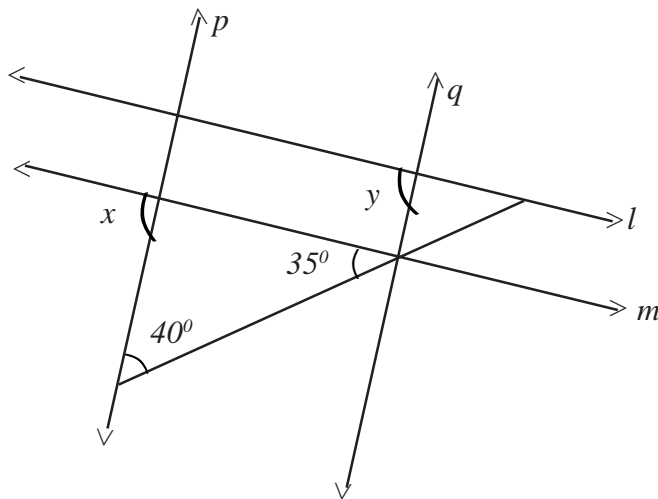
ii) $64 m^3 - 343 n^3$

18. P is a point equidistant from two lines l and m intersecting at the point A. Show that the line AP bisects the angle between them.

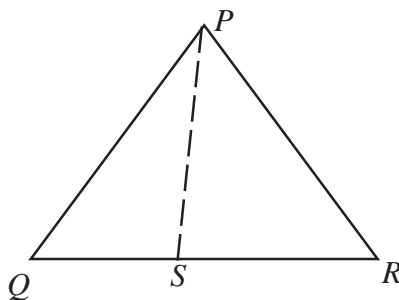


19. Express $\overline{0.68}$ in the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$.

20. In the given figure, find the values of x and y if $l \parallel m$ and $p \parallel q$.

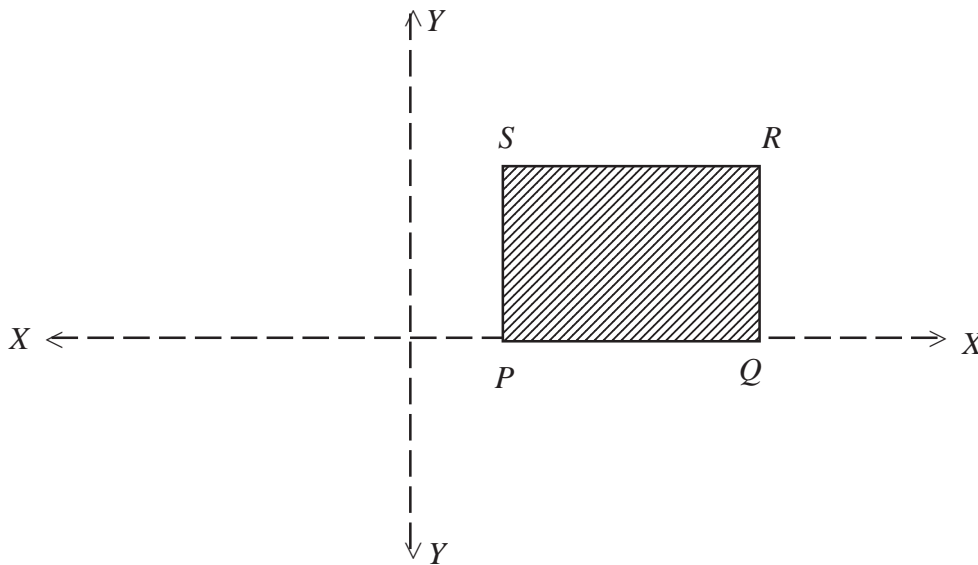


21. In the given figure $PR > PQ$ and PS bisects $\angle QPR$. Prove that $\angle PSR > \angle PSQ$.



22. Given PQRS is a square in the Cartesian plane. Answer the following questions :

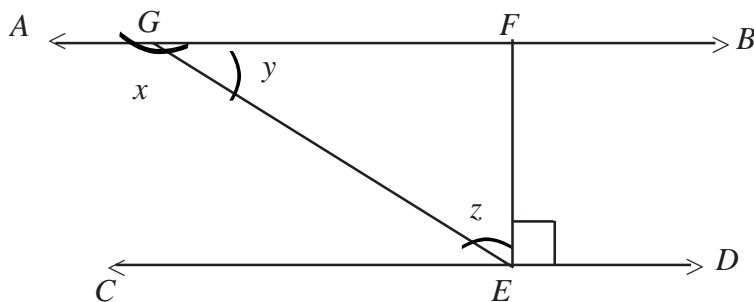
- i) Find the co-ordinates of R and S.
- ii) What is the area of PQRS?



Section - D

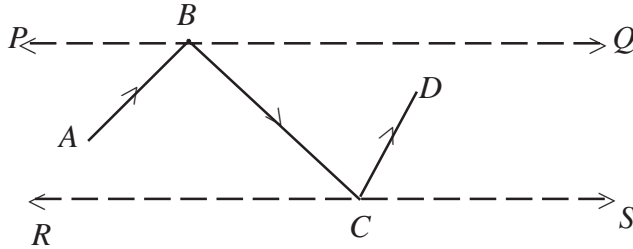
(8x4=32)

- 23. Prove that the angles opposite to equal sides of an Isosceless triangle are equal.
- 24. Give possible expressions for the length and breadth of the rectangle whose area is given by $4a^2 + 4a - 3$.
- 25. In the given figure $AB \parallel CD$, $EF \perp CD$ and $\angle GED = 126^\circ$. Find x , y , z and $x + y + z$.



- 26. Evaluate the following using suitable Identity :
 - i) $(104)^3$
 - ii) $(104)^2$
- 27. If the polynomials $(2x^3 + kx^2 + 3x - 5)$ and $(x^3 + x^2 - 2x + 2k)$ leaves the same remainder when divided by $(x - 3)$, then find the value of k .

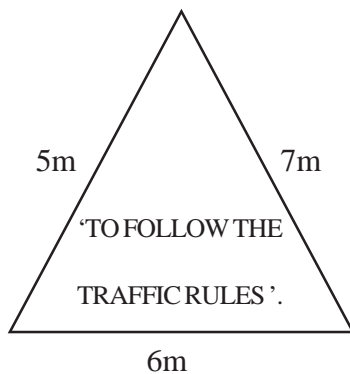
28. In the given figure PQ and RS are two mirrors placed parallel to each other. An incident ray AB strikes the mirror PQ at B, the reflected ray moves along the path BC and strikes the mirror RS at C and again reflects back along CD. Prove that $AB \parallel CD$.



29. Plot the following points in a Cartesian Plane. And answer the following questions.

U (-4, 5), V (0,3), W (-6, 0), T (2,4)

- What is the abscissa of the point W ?
 - The point U lies in which quadrant ?
30. A side wall of a Budha Park painted in black colour with a message 'TO FOLLOW THE TRAFFIC RULES '. If the sides of the wall are 5m, 6m and 7m, then solve the following questions.



- Find the area of the wall.
- Which Mathematics concept is used to solve the above question ?
- What message does the phrase 'TO FOLLOW THE TRAFFIC RULES '. give to the society.

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