Roll no. 27

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FIRST TERM EXAMINATION, 2017-18

CLASS-IX

MATHEMATICS

Time allowed : 3 hours *M.M. : 80*

General Instructions :

- ***All questions ore compulsory.***
- ***The questions paper consists of 31 questions divided into four sections.***
- ***Sections—A, B, C and D. Section A comprises of 4 questions of 1 mark each, Section B comprises of 12 questions of 2 marks each. Section C comprises of 8 questions of 3 marks each and Section D comprises of 7 questions of 4 marks each.***
- ***Use of calculator is not permitted.***

SECTION–A (1 mark)

1. A point both of whose coordinates are negative will be in :

(a) Ist quadrant
(b) IInd quadrant
(c) IIIrd quadrant
(d) IVth quadrant

(−,+) | +,+
(−,−) | (+,−)

2. Difference of two complementary angles is 40°. The angles are :

(a) 65°, 35°
(b) 70°, 30°
(c) 25°, 65°
(d) 70°, 110°

Sum = 90°
difference = 40°

3. The sum of rational and irrational number is :

(a) Rational
(b) Irrational
(c) Both rational and irrational
(d) None

4. Value of $(125)^{-1/3}$ is :

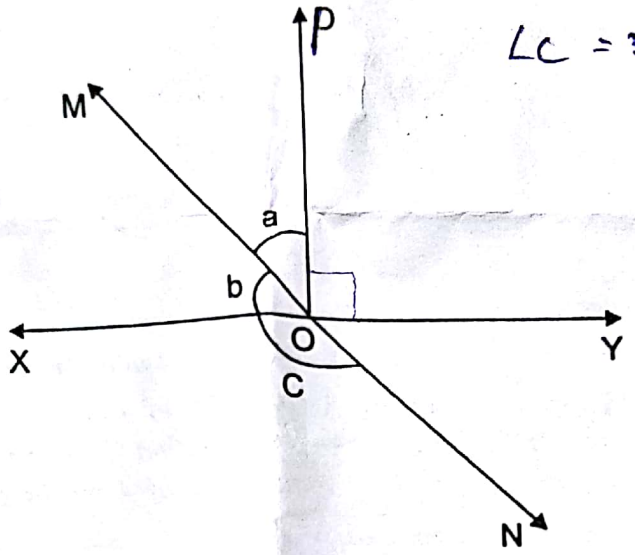
(a) 1/5
(b) 5
(c) −5
(d) None

$\left(\frac{1}{5}\right)^3$ $\left(\frac{1}{5^3}\right)^{\frac{1}{3}}$

PTO

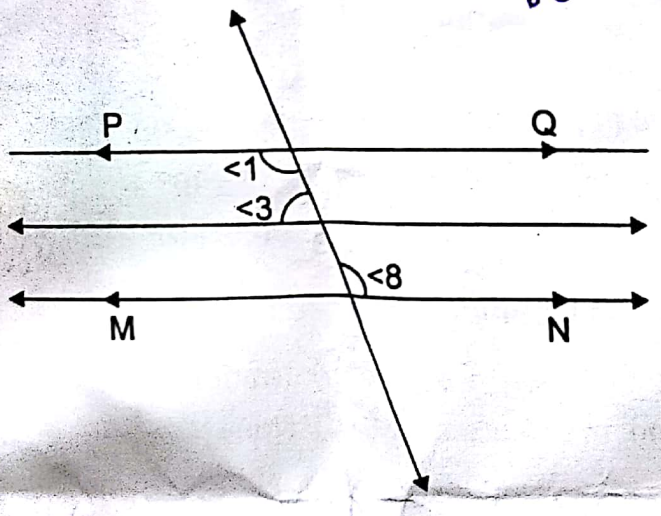
SECTION–B (2 marks each)

5. In the figure line XY and MN intersect at O. If $\angle BOY = 90°$ and $a : b = 2 : 3$ find $\angle C$.



6. A traffic signal board indicating school ahead is an equilateral triangle with side a. Find area of signal board using Heron's formula. If perimetre is 180 cm. What will be area of signal board ?

7. *In given figure* $PQ \parallel MN$ of ratio of measures of <3 and <8 is 4 : 5 find measures of <3 and <8.



8. If point C lices between two points A and B such that $AC = BC$ then prove that $AC = \frac{AB}{2}$.

9. In which quadrant or on which axis do each of the points (–2, 4), (3, –1), (–1, 0) and (1, 2) lie.

10. Write four solutions of the equation $x = 4y$.

11. If $a + b + c = 0$, show that $a^3 + b^3 + c^3 = 3abc$.

12. Write any two Euclid's axioms.

13. Simplify $(999)^3$. Using suitable identity. 997003002

14. Rationalize $\frac{1}{(\sqrt{7} - \sqrt{6})}$. $\sqrt{7} + \sqrt{6}$

15. Write the coordinates of a point using left of the Y-axis, and X-axis at a distance of 6 units. (-6, 0)

16. Find area of triangle of dimensions 13 cm, 14 cm, 15 cm.

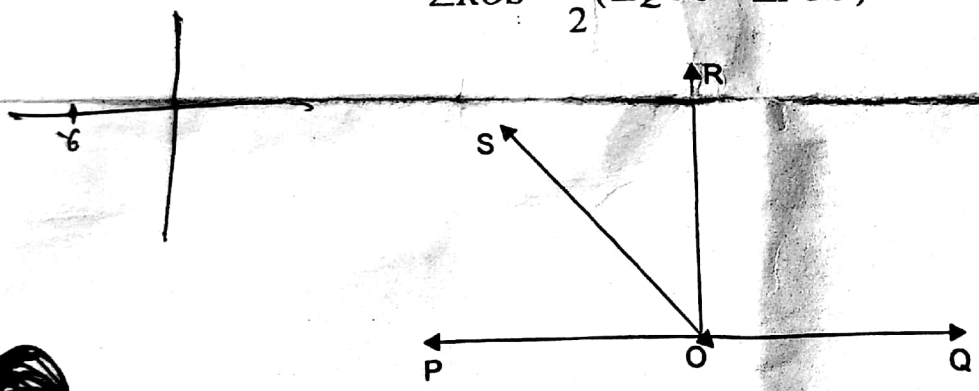
SECTION–C (3 marks)

17. Represent $\sqrt{9.3}$ on the number line.

18. Show that the sum of all angles of triangle is 180°.

19. In given figure, POQ is a line. Ray $OR \perp PQ$, OS is another ray lying between rays OP and OR. Prove that

$$\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$$



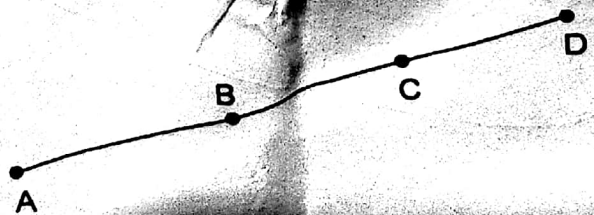
20. Form the equations of two lines passing through (2, 14). How many more such lines are there and why ? Infinite.

21. If isosceles triangle has perimetre 30 cm and each of equal side is 12 cm find is area. 9√15 cm²

22. Find value of a if $(1 - 2x)$ is factor of polynomial

$$2x^4 - ax^3 + 4x^2 + 2x + 1.$$ a = 25

23. If $AC = BD$, prove that $AB = CD$.



24. Line l is the bisector of $\angle A$ and B is any point on it. If BP and BQ are perpendiculars from B to arms of $\angle A$. Show $\Delta APB \cong \Delta AQB$.

SECTION–D (4 marks)

25. Simplify :

$$\frac{4+\sqrt{5}}{4-\sqrt{5}} + \frac{4-\sqrt{5}}{4+\sqrt{5}}$$

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26. Show that in a right angled triangle, hypotenuse is longest side.

27. ABC is isosceles triangle with $AB = AC$. Draw AP perpendicular to BC and show that $\angle B = \angle C$.

28. Factorize :

$$x^3 + 13x^2 + 32x + 20.$$

$(x+10)(x+2)$

29. The taxi fare in a city is as follows : For first kilometre the fare is Rs. 8 and for the subsequent distance cf is Rs. 5 per km. Taking the distance covered as x km and total fare as Rs. y, write a linear equation for this information and draw its graph.

30. An umbrella is made by stitching 10 triangular pieces of cloth of two different colours, each piece measuring 20 cm. 50 cm. 50 cm are how much cloth of each colours required for *umbrella.*

31. *If a transversal intersects two lines such that bisectors of corresponding angles are parallel, then prove that the two lines are parallel.*