

Name: _____ Section: _____

Roll no. _____

CRPF PUBLIC SCHOOL, ROHINI
FINAL EXAMINATION 2019-20
MATHEMATICS (SET- 1)
CLASS-IX

Time: 3 Hours

Maximum Marks: 80 marks

GENERAL INSTRUCTIONS:

1. The question paper consists of 40 questions divided into 4 sections, A, B, C and D. Section-A comprises of 20 questions of 1 mark each. Section-B comprises of 6 questions of 2 marks each. Section-C comprises of 8 questions of 3 marks each and Section-D comprises of 6 questions of 4 marks each.
2. There is no overall choice. However an internal choice has been provided in two questions of 2 marks, four questions of 3 marks, two questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.

SECTION-A

Choose the correct options:

Q1. Every rational number is

- a) A natural number b) an integer c) a real number d) a whole number

Q2. The coefficient of y in the expansion of $(5 - y)^2$ is

- a) 5 b) 10 c) -10 d) 1

Q3. Zero of the polynomial $p(x) = 2x + 3$ is

- a) -3 b) 0 c) $\frac{3}{2}$ d) $-\frac{3}{2}$

Q4. Any point on the x -axis is of the form

- a) (x,y) b) $(0,y)$ c) $(x,0)$ d) (x,x)

Q5. The equation of x -axis is

- a) $x=0$ b) $y=0$ c) $x+y=0$ d) $x+y=1$

Q6. The perpendicular distance of point $P(7,5)$ from y -axis is

- a) 5 b) 12 c) 7 d) 2

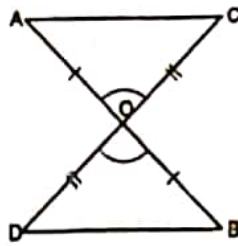
Q7. An exterior angle of a triangle is 105° and its two interior opposite angles are equal. Each of these equal angles is

- a) $37\frac{1}{2}^\circ$ b) $52\frac{1}{2}^\circ$ c) $72\frac{1}{2}^\circ$ d) 75°

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P. T. O.

Q8. Write the correspondence if the triangles are congruent



- a) $\triangle OAC \cong \triangle ODB$ b) $\triangle AOC \cong \triangle DOB$ c) $\triangle AOC \cong \triangle BOD$ d) none

Q9. The area of the figure formed by joining the mid points of the adjacent sides of a rhombus with diagonals 14 cm and 10 cm is

- a) 45cm^2 b) 70cm^2 c) 35cm^2 d) 40cm^2

Q10. The range of the data : 25,18, 20, 22, 16, 6, 17,15, 12, 30, 32, 10, 19, 8, 11, 20 is

- a) 10 b) 15 c) 18 d) 26

Fill in the blanks:

Q11. If a transversal line intersects two parallel lines then each pair of corresponding angles are _____.

Q12. In a right angled triangle, hypotenuse is the _____ side.

Q13. Triangle with equal bases and equal areas have equal corresponding _____.

Q14. The number of surfaces in a right circular cylinder is _____.

Q15. Class mark of the class interval 12-25 is _____

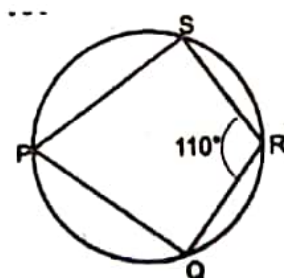
OR

Median of the distribution 2,3,4, 5, 6, 7 is _____.

Very short answers

Q16. Can the angles of a quadrilateral be $115^\circ, 85^\circ, 75^\circ, 80^\circ$? Give reason.

Q17. In figure, PQRS is a cyclic quadrilateral. If $\angle QRS = 110^\circ$, then find $\angle SPQ$.



Q18. Find the area of a trapezium whose parallel sides are 25cm and 13cm long and the distance between them is 8cm.

Q19. Find the ratio of the lateral surface area and total surface area of a cube.

Q20. A die is thrown . What is the probability of getting a multiple of 3 on the upper face?

OR

In tossing a coin 100 times head appears 56 times. What is the probability of head for the coin?

SECTION-B

Q21. Express $0.\overline{235}$ in $\frac{p}{q}$ form.

Q22. Find value of $\sqrt[3]{\frac{54}{250}}$.

Q23. If $f(z) = z^2 - 3\sqrt{2}z - 1$, find $f(3\sqrt{2})$.

OR

Find the value of k, if $y+3$ is a factor of $3y^2 + ky + 6$.

Q24. Write any two solutions of linear equation $3x+2y=9$.

Q25. If the point (3,4) lies on the graph of $3x=ay+7$, find the value of a.

Q26. Find the area of a triangle, two sides of which are 8cm & 11cm and perimeter is 32cm.

OR

If the area of an equilateral triangle is $81\sqrt{3} \text{ cm}^2$, find its perimeter.

SECTION-C

Q27. If $\frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$, find value of a & b.

OR

If $a^x = b^y = c^z$ and $b^2 = ac$. Prove that $y = \frac{2xz}{x+z}$.

Q28. Factorise: $125x^3 + 27y^3 + 8z^3 - 90xyz$.

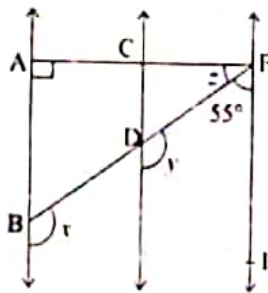
Q29. Prove that equal chords of a circle subtend equal angles at the centre.

Q30. Cards numbered 1, 2, 3,....., 100 are placed in a box and mixed thoroughly. One card is drawn . what is the probability that the card drawn is

- A prime number less than 30?
- A multiple of 5 and 7?
- A multiple of 5 or 7?

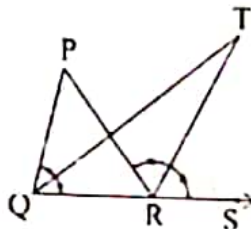
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Q31. In figure, $AB \parallel CD$ and $CD \parallel EF$. Also $EA \perp AB$. If $\angle BEF = 55^\circ$, find value of x, y & z .

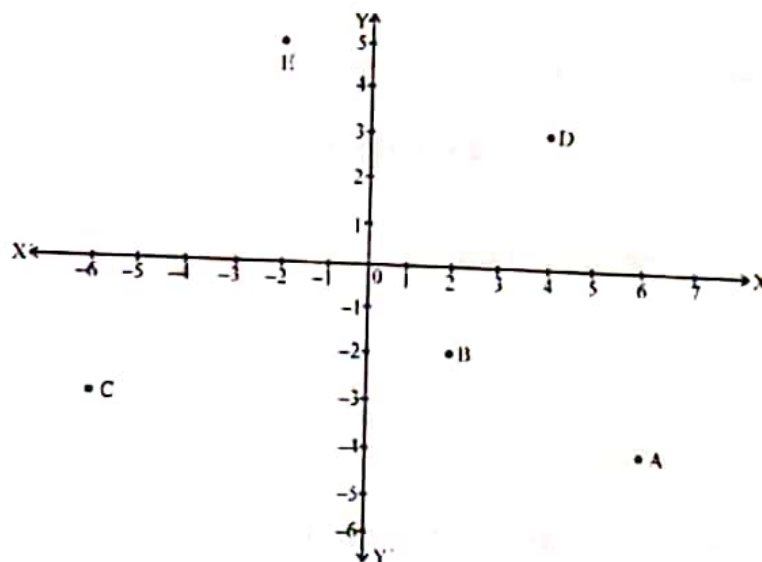


OR

In figure, the side QR of ΔPQR is produced to a point S. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T, then prove that $\angle QTR = \frac{1}{2} \angle QPR$



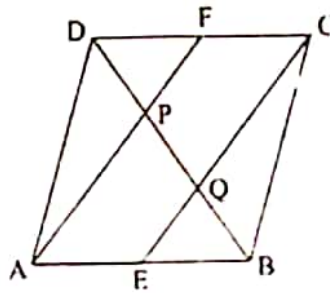
Q32. From the figure, answer the following:



- i) Coordinates of point C.
- ii) The point identified by the coordinates (6, -4).
- iii) Abscissa of the point E.
- iv) The quadrant in which point B lies.
- v) The perpendicular distance of point D from x-axis.
- vi) The ordinate of point B..

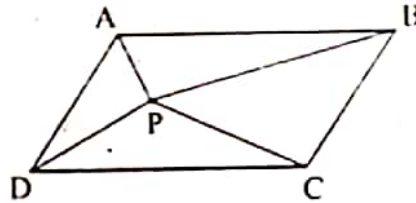
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Q33. In a parallelogram, E and F are the mid points of sides AB and CD respectively. Show that the line segments AF and EC trisect the diagonal BD.



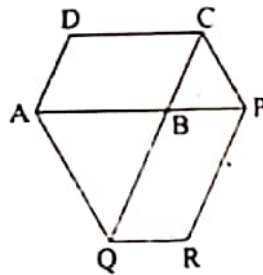
Q34. In figure, P is a point in the interior of a parallelogram ABCD. Show that

- i) $ar(APB) + ar(PCD) = \frac{1}{2} ar(ABCD)$
- ii) $ar(APD) + ar(PBC) = ar(APB) + ar(PCD)$



OR

The side AB of a parallelogram ABCD is produced to any point P. A line through A and parallel to CP meets CB produced at Q and then parallelogram PBQR is completed. Show that $ar(ABCD) = ar(PBQR)$.



SECTION-D

Q35. i) Without actually calculating the cubes, find the value of $(-12)^3 + (7)^3 + 5^3$.

ii) Verify that $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$.

Q36. Construct a ΔXYZ in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and $XY + YZ + ZX = 11 \text{ cm}$.

Q37. The sides of a triangular plot are in the ratio 3:5:7 and its perimeter is 300m. find its area.

OR

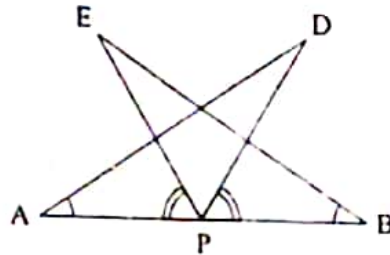
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A triangle and a parallelogram have same base and the same area. If the sides of the triangle are 26 cm, 28cm and 30 cm, and the parallelogram stands on the base 28cm, find the height of the parallelogram.

Q38. AB is a line segment and P is its mid-point, D and E are points on the same side of AB such that $\angle BAD = \angle ABE$ and $\angle EPA = \angle DPB$. Show that

i) $\Delta DAP \cong \Delta EBP$

ii) $AD=BE$

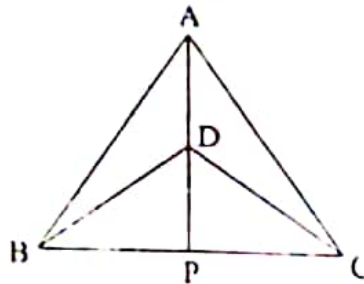


OR

ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at P, show that

i) $\Delta ABD \cong \Delta ACD$

ii) $\Delta ABP \cong \Delta ACP$



Q39. A hemispherical dome of a building needs to be painted. If the circumference of the base of the dome is 17.6m, find the cost of painting it, given the cost of painting is Rs.5 per 100 cm^2 .

OR

The pillars of a temple are cylindrically shaped. If each pillar has a circular base of radius 20cm and height 10 m, how much concrete mixture would be required to build 14 such pillars?

Q40. Draw frequency polygon for the following data:

Marks	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of candidates	2	5	6	4	8	10	5