KENDRIYA VIDYALAYA GACHIBOWLI, GPRA CAMPUS, HYD–32
SAMPLE PAPER 01 FOR PERIODIC TEST II EXAM (2019–20)

SUBJECT: MATHEMATICS(041)

BLUE PRINT FOR PERIODIC TEST – II: CLASS IX

Chapter	MCQ (1 mark)	VSA (1 mark)	SA – I (2 marks)	SA – II (3 marks)	LA (4 marks)	Total
Number System	1(1)	2(2)	2(1)	**3(1)***	4(1)	**12(6)**
Polynomials	2(2)	2(2)	2(1)	3(1)	**4(1)***	**13(7)**
Coordinate Geometry	2(2)	1(1)	--	3(1)	4(1)	**10(5)**
Linear Equation in two variables	1(1)	2(2)	**2(1)***	3(1)	4(1)	**12(6)**
Lines and Angles	2(2)	1(1)	**2(1)***	6(2)	--	**11(6)**
Triangles	1(1)	1(1)	2(1)	3(1)	**4(1)***	**11(5)**
Quadrilaterals	1(1)	1(1)	2(1)	**3(1)***	4(1)	**11(5)**
Total	**10(10)**	**10(10)**	**12(6)**	**24(8)**	**24(6)**	**80(40)**

MARKING SCHEME FOR PERIODIC TEST – II

SECTION	MARKS	NO. OF QUESTIONS	TOTAL
MCQ	1	10	10
VSA	1	10	10
SA – I	2	6	12
SA – II	3	8	24
LA	4	6	24
GRAND TOTAL			**80**

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SUBJECT: MATHEMATICS	**MAX. MARKS : 80**
CLASS : IX	**DURATION : 3 HRS**

General Instructions:
(i).   **All** questions are compulsory.
(ii).   This question paper contains 4**0** questions divided into four Sections A, B, C and D.
(iii). **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.
(iv).   There is no overall choice. However, an internal choice has been provided in two questions of 2 marks each, two questions of 3 marks each and two questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
(v).   Use of Calculators is not permitted

SECTION – A
Questions 1 to 20 carry 1 mark each.

1. Three angles of a quadrilateral are 75^0, 90^0 and 75^0. The fourth angle is
   (a) 90^0 (b) 95^0 (c) 105^0 (d) 120^0

2. In a triangle ABC, if $\angle A + \angle B = 65^0$ and $\angle B + \angle C = 140^0$, then the measure of $\angle B$ is
   (a) 40^0 (b) 25^0 c) 115^0 (d) 60^0

3. Two lines PQ and RS intersect at O. If $\angle POR = 50^0$, then value of $\angle ROQ$ is
   (a) 120^0 (b) 130^0 c) 90^0 (d) 150^0
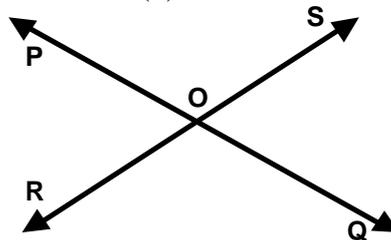
4. Two adjacent angles on a straight line are in the ratio 5 : 4. then the measure of each one of these angles are
   (a) 100^0 and 80^0 (b) 75^0 and 105^0 c) 90^0 and 90^0 (d) 60^0 and 120^0

5. If (2, 0) is a solution of the linear equation $2x + 3y = k$, then the value of k is
   (a) 4   (b) 6   (c) 5   (d) 2

6. The value of $125^{\frac{-1}{3}}$ is :
   (a) $\dfrac{1}{5}$ (b) $\dfrac{1}{25}$ (c) $\dfrac{1}{15}$ (d) $\dfrac{1}{125}$

7. The zero of $p(x) = 9x + 4$ is:
   (a) $\dfrac{4}{9}$ (b) $\dfrac{9}{4}$ (c) $\dfrac{-4}{9}$ (d) $\dfrac{-9}{4}$

8. If $x + 2$ is a factor of $x^3 + 2ax^2 + ax - 1$ then the value of a is:
   (a) $\dfrac{2}{3}$ (b) $\dfrac{3}{5}$ (c) $\dfrac{3}{2}$ (d) $\dfrac{1}{2}$

9. The coordinates of the point lying on the negative side of x-axis at a distance of 5 units from origin are

(a) (0, 5)   (b) (0, –5)   (c) (–5, 0)   (d) (5, 0)

10. The distance of the (4, –3) from x – axis is

(a) 3 units   (b) –3 units   (c) 4 units   (d) 5 units

11. Rationalize the denominator of $\dfrac{3 - \sqrt{2}}{3 + \sqrt{2}}$.

12. Find the value of $(81)^{0.16} \times (81)^{0.09}$.

13. Find the value of k, if $x = 2$, $y = 1$ is a solution of the equation $2x + 3y = k$.

14. Express $2x = 5y$ in the form $ax + by + c = 0$

15. One of the angles of a triangle is 50° and the other two angles are equal. Find the measure of each of the equal angles.

16. If $x + 6$ *is* a factor of $p(x) = x^3 + 3x^2 + 4x + k$, find the value of k.

17. In the given figure, p | | q. Find the value of x.
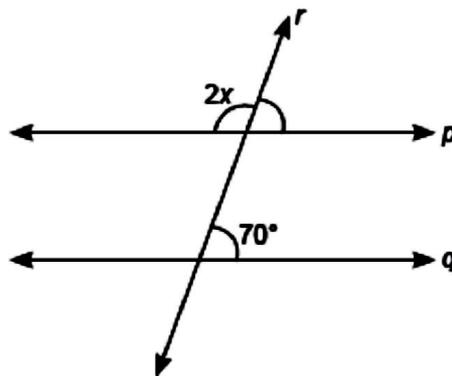
18. Without actually calculating the cubes, find the value of $(-12)^3 + (7)^3 + (5)^3$

19. Diagonals AC and BD of parallelogram ABCD intersect at O. If $\angle BOC = 90°$ and $\angle BDC = 50°$, find $\angle OAB$.

20. Write the coordinates of the point lying on x-axis and with x-coordinate 4.

SECTION – B
Questions 21 to 26 carry 2 marks each.

21. Show that 1.272727……. can be expressed in the form of $\dfrac{p}{q}$, where p and q are integers and $q \neq 0$.

22. Find the solution of the linear equation $x + 2y = 8$ which represents a point on (i) *x*-axis (ii) *y*-axis

OR

Find the value of a and b, if the line 6bx + ay = 24 passes through (2, 0) and (0, 2).

23. The angles of quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.

24. ΔABC is right angled in which ∠ A = 90° and AB = AC. Find ∠ B and ∠ C.

25. In the below figure, if AB ∥ CD, ∠APQ = 50° and ∠PRD = 127°, find *x* and *y*.

OR
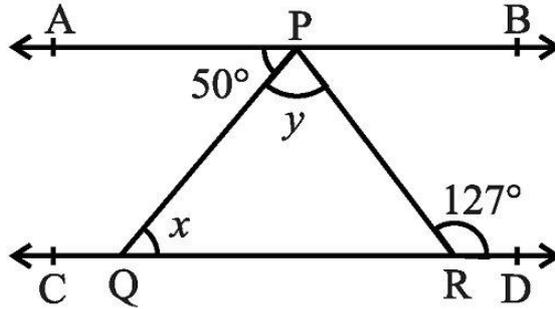
In the below figure, AB, CD and EF are three lines concurrent at O. Find the value of y.
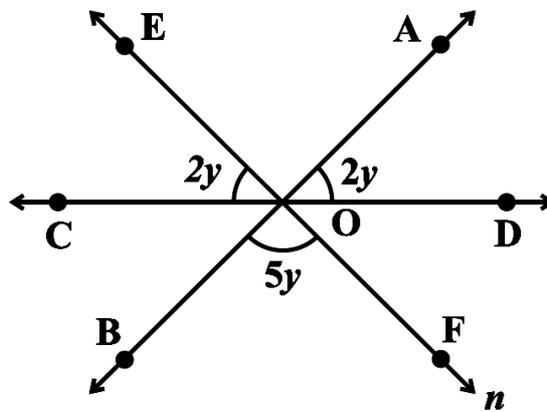
26. Factorise: $27x^3 - \dfrac{1}{216} - \dfrac{9}{2}x^2 + \dfrac{1}{4}x$

SECTION – C
Questions 27 to 34 carry 3 marks each.

27. Show that the diagonals of a square are equal and bisect each other at right angles.

OR

In the below figure, ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD. Show that (i) ΔAPB ≅ ΔCQD (ii) AP = CQ
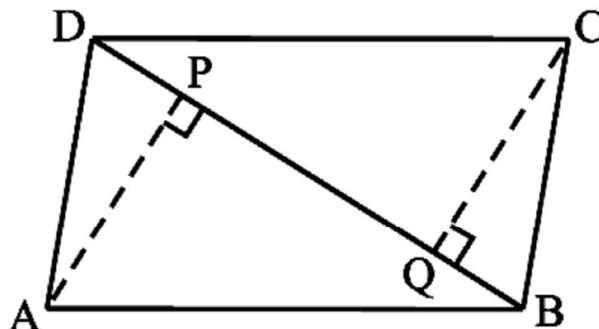
28. The Autorikshaw fare in a city is charged Rs 10 for the first kilometer and @ Rs 4 per kilometer for subsequent distance covered. Write the linear equation to express the above statement. Draw the graph of the linear equation.

29. From the figure, find the coordinates of A, B, C, D, E and F. Which of the points are mirror image in (i) x – axis   (ii) y – axis
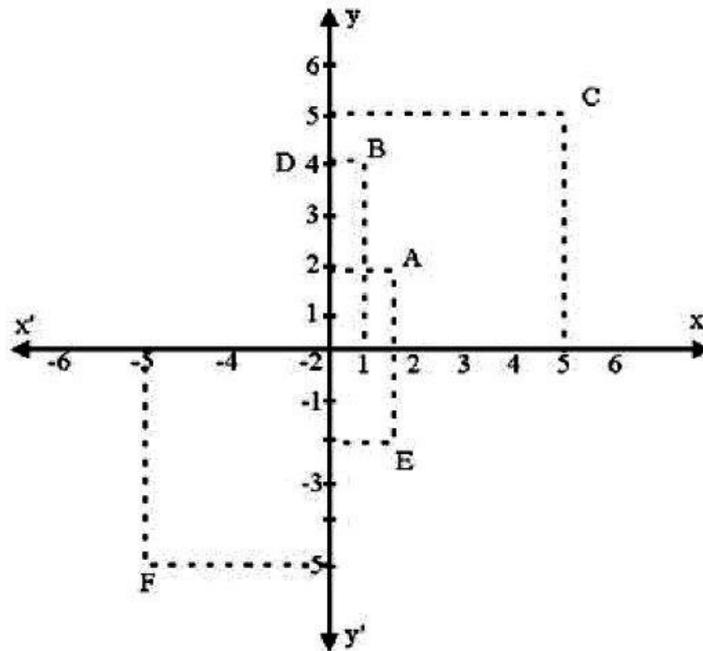
30. Line *l* is the bisector of an angle ∠A and B is any point on *l*. BP and BQ are perpendiculars from B to the arms of ∠A (see the below figure). Show that: (i) Δ APB ≅ ΔAQB (ii) BP = BQ or B is equidistant from the arms of ∠A.
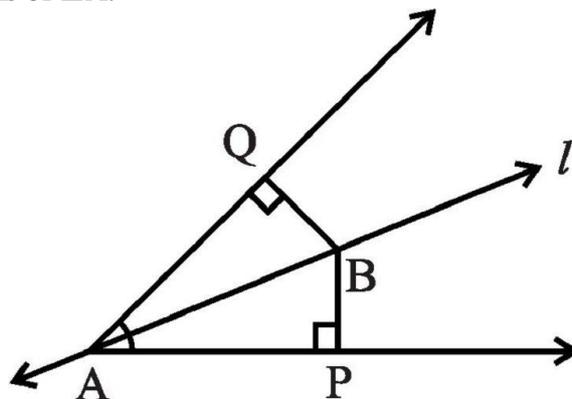
31. In the below figure, the side QR of Δ PQR is produced to a point S. If the bisectors of ∠PQR and ∠PRS meet at point T, then prove that $\angle QTR = \frac{1}{2} \angle QPR$.
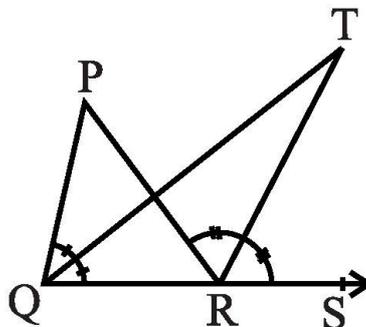
32. If $a + b + c = 5$ and $ab + bc + ca = 10$, then prove that $a^3 + b^3 + c^3 - 3abc = -25$.

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33. If x = $\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, find $x^2+\dfrac{1}{x^2}$

OR

If a and b are rational numbers and $\dfrac{7-4\sqrt{3}}{7+4\sqrt{3}} = a+b\sqrt{3}$, find the values of a and b.

34. In the above sided figure, if QT $\perp$ PR, $\angle$TQR = 40° and $\angle$SPR = 30°, find *x* and *y*.
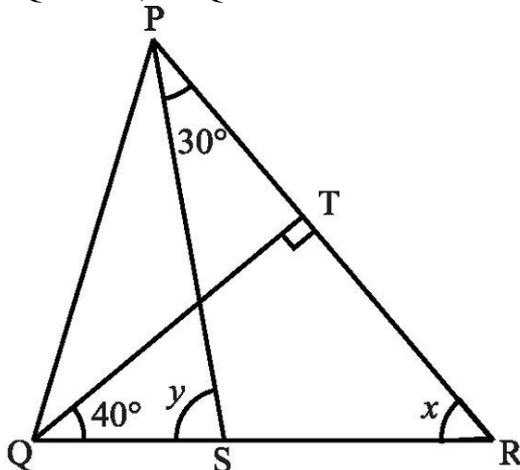
SECTION – D
Questions 35 to 40 carry 4 marks each.

35. Simplify $\dfrac{4+\sqrt{5}}{4-\sqrt{5}}+\dfrac{4-\sqrt{5}}{4+\sqrt{5}}$ by rationalizing the denominator.

36. Solve the equation $2x + 1 = x – 3$, and represent the solution(s) on
(i) the number line,   (ii) the Cartesian plane.

37. The polynomial f(x)= $x^4 – 2x^3 +3x^2 – ax + b$ when divided by (x – 1) and (x + 1) leaves the remainders 5 and 19 respectively. Find the values of a and b. Hence, find the remainder when f(x) is divided by (x – 3).

OR

Without actual division, prove that $2x^4 – 6x^3 +3x^2 +3x – 2$ is exactly divisible by $x^2 – 3x + 2$.

38. ABCD is a rectangle and P, Q, R and S are mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.

39. Plot the following points on a graph paper:

x	1	2	3	4	5
y	5	8	11	14	17

Join these points. What do you observe?

40. If in two right triangles, hypotenuse and one side of a triangle are equal to the hypotenuse and one side of other triangle, prove that the two triangles are congruent

OR

Prove that "The sum of any two sides of a triangle is always greater than the third side."