WINTER BREAK HOMEWORK

CLASS 9 MATHS : SAMPLE PAPER NO 1

SUBJECT: MATHEMATICS **MAX. MARKS : 80**

CLASS : IX **DURATION : 3 HRS**

General Instruction:

(i) **All** questions are compulsory.
(ii) This question paper contains **30** questions divided into four Sections A, B, C and D.
(iii) **Section A** comprises of 6 questions of **1 mark** each. **Section B** comprises of 6 questions of **2 marks** each. **Section C** comprises of 10 questions of **3 marks** each and **Section D** comprises of 8 questions of **4 marks** each.
(iv) There is no overall choice. However, an internal choice has been provided in two questions in 1 mark each, two questions in 2 marks each, four questions of 3 marks each and three 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 6 carry 1 mark each)

1. Evaluate: $\frac{81}{36}x^2 - \frac{y^2}{25}$

2. Find the value of k, $(x - 1)$ is the factor of $x^2 + 9x - 5 + k$

3. Simplify: $\frac{9^{\frac{2}{3}}}{9^{\frac{1}{5}}}$

OR

Find the value of m if $343^m = \frac{49}{7^m}$

4. The coordinate of two points are $P(4,6)$ and $Q(-5,-7)$ then, find (abscissa of P) − (abscissa of Q).

5. If the length of three sides of a triangle is $25\ cm, 20\ cm$ and $15\ cm$, then find the area of the triangle.

OR

Find the class mark of the interval $100 - 110$.

6. If the length of the longest rod that can be placed in a room of dimensions $20m \times 20m \times 10m$.

Section B

(Questions 7 to 12 carry 2 marks each)

7. Find the simplest form of $0.\overline{78}$ in fraction.

OR

If $x = 9 - 4\sqrt{5}$, then $\left(x + \frac{1}{x}\right) = ?$

8. If each side of an isosceles triangle is $3\sqrt{2}\ cm$ and its base is $8\ cm$, then find the area of an isosceles triangle.

9. Find the mean of the first nine prime numbers.

10. Is $(x + 1)$ is a factor of the polynomial $x^{997} + x^{886} + x^{775} + x^{654} + x^{113} + 1$?

11. In supplementary angle, if first angle is $20°$ less than second angle, then the larger angle is equal to?

OR

If the four angles of a quadrilateral are in the ratio $3 : 5 : 6 : 10$. Find its smallest angle.

12. If the area of the circle is $841\pi\ cm^2$, then find the length of the longest chord of the circles.

Section C

(Questions 13 to 22 carry 3 marks each)

13. If $\frac{\sqrt{11}-1}{\sqrt{11}+1} = a - b\sqrt{11}$, then find the value of a and b.

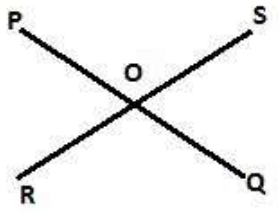
14. If $x^4 + \frac{1}{x^4} = 34\ (x > 1)$, then find the value of $x + \frac{1}{x}$.

15. In complementary angle, if one angle is three times of other angle, then find the larger angle.

OR

In given figure, lines PQ and RS intersect each other at point O. If $\angle POR : \angle ROQ$ is

$5 : 15$. Then, find the angle of $\angle SOQ$.



16. If the area of the triangle BGC is 28 square units and the centroid of the triangle is G. Then, find the area of the triangle ABC is equal to.

17. If each side of an equilateral triangle is $6\sqrt{3}\ cm$, then, find the altitude of an equilateral triangle.

18. The radius of the sphere is 7 cm. It is melted and drawn into a wire of radius 0.3 cm. Find the length of the wire.

19. If one diagonal of the rhombus is five times than other diagonal and also sum of two diagonals is 180 cm. Then, find the area of the rhombus.

OR

If one of the angles of the base is 15° less than angle of the vertex of an isosceles triangle, then find the angle at each base.

20. If one chord of the circle is given by $18.0\ cm$, then find the radius of this circle.

21. If the internal opposite angle is 51°, then find the external angle of a cyclic quadrilateral.

OR

Find the value of $\sqrt{15+10\sqrt{2}}+\sqrt{15-10\sqrt{2}}$

22. Find the median of the following data:

Class	3	6	9	12	15	18
Frequency	6	12	9	14	24	11

OR

If a number selected at random from the number $6, 7, \ldots\ldots, 50$, then find the probability of getting a prime number?

Section D

(Questions 23 to 30 carry 4 marks each)

23. If $x=\frac{\sqrt{7}+\sqrt{6}}{\sqrt{7}-\sqrt{6}}$ and $y=\frac{\sqrt{7}-\sqrt{6}}{\sqrt{7}+\sqrt{6}}$, find $x+y=?$

24. Find the remainder when the polynomial $P(x)=2x^3-5x^2+3x+7$ is divided by $(2x+1)$.

25. If $x+y+z=6$ and $x^2+y^2+z^2=18$, then find $x^3+y^3+z^3-3xyz$.

OR

When t^2-1 exactly divides the polynomial $P(t)=a_1t^4+a_2t^3+a_3t^2+a_4t+a_5$ then prove that $a_1+a_3+a_5=a_2+a_4=0$

26. If the measure of an angle is 60° and the perimeter of a rhombus is $48\ cm$, then find the area of the rhombus.

27. The volume of the cylinder is $750\pi cm^3$ and its height is $30\ cm$. Find radius and total surface area.

OR

If the sum of the parallel sides of a trapezium is 70 cm and area of the trapezium is 350 cm^2, then find the height of the trapezium.

28. From a point P, 40 cm away from the centre of a circle, a tangent PT of length 32 cm is drawn. Then, find the radius of the circle.

29. If the perimeter of an isosceles triangle is 64 cm and its equal sides are 20 cm. Then, find the area of an isosceles triangle.

OR

If a number is selected at random from the number $14, 15, 16, \ldots\ldots, 77$ then find the probability of the number is divisible by 7.

30. The mean of the following frequency distribution is 8. Then, find p.

Class	3	5	7	9	11	13
Frequency	6	8	15	p	8	4

WINTER BREAK HOME WORK

CLASS 9 MATHS : SAMPLE PAPER -2

SUBJECT: MATHEMATICS **MAX. MARKS : 80**

CLASS : IX **DURATION : 3 HRS**

General Instruction:

(i) **All** questions are compulsory.

(ii) This question paper contains **30** questions divided into four Sections A, B, C and D.

(iii) **Section A** comprises of 6 questions of **1 mark** each. **Section B** comprises of 6 questions of **2 marks** each. **Section C** comprises of 10 questions of **3 marks** each and **Section D** comprises of 8 questions of **4 marks** each.

(iv) There is no overall choice. However, an internal choice has been provided in two questions in 1 mark each, two questions in 2 marks each, four questions of 3 marks each and three 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 6 carry 1 mark each.

1. Find the total surface area of a hemisphere of radius 10 cm. (Use $\pi = 3.14$)

OR

Find the height of cone, if its slant height is 34 cm and base diameter is 32 cm.

2. If the point (3, 4) lies on the graph of the equation $3y = ax + 7$, find the value of a.

3. Simplify: $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$

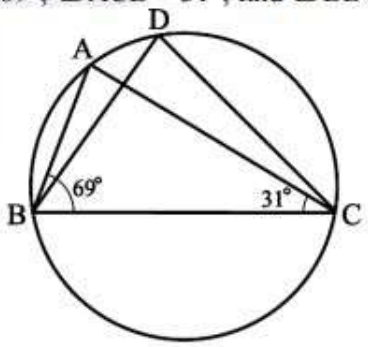
OR

Find the value of $\sqrt{3^{-2}}$.

4. In a bag, there are 100 bulbs out of which 30 are defective ones. A bulb is taken out of the bag at random. Find the probability of the selected bulb to be a good one.

5. If its perimeter of an equilateral triangle is 180 cm, what will be its area?

6. In the below figure, $\angle ABC = 69°$, $\angle ACB = 31°$, find $\angle BDC$.



SECTION – B

Questions 6 to 12 carry 2 marks each.

7. A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour. How much water will fall into the sea in a minute?

8. Find the value of $x^3 + y^3 + 15xy - 125$ if $x + y = 5$.

OR

Find the remainder when $4x^3 - 3x^2 + 4x - 2$ is divided by (i) $x - 1$ (ii) $x - 2$

9. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x.

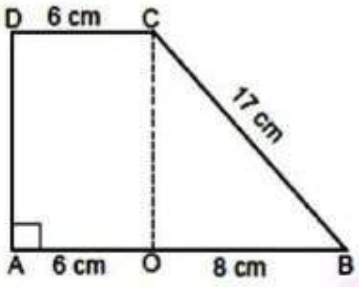
29, 32, 48, 50, x, x + 2, 72, 78, 84, 95

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

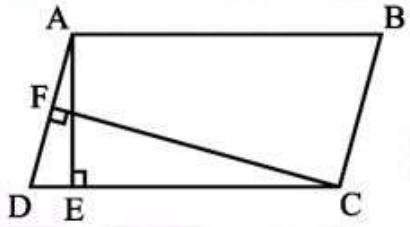
11. Find the area of a triangle two sides of which are 18cm and 10cm and the perimeter is 42cm.

OR

Calculate the area of trapezium as shown in the figure:



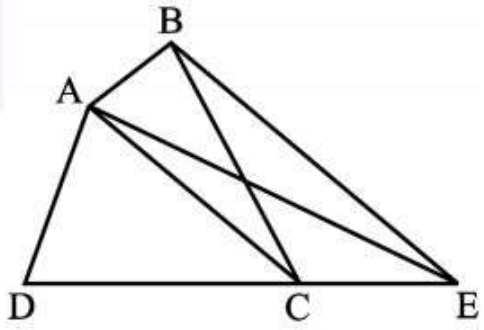
12. In the below figure, ABCD is a parallelogram, AE ⊥ DC and CF ⊥ AD. If AB = 16 cm, AE = 8 cm and CF = 10 cm, find AD.



SECTION – C

Questions 13 to 22 carry 3 marks each.

13. In the below figure, ABCD is a quadrilateral and BE || AC and also BE meets DC produced at E. Show that area of Δ ADE is equal to the area of the quadrilateral ABCD.



OR

Show that a median of a triangle divides it into two triangles of equal areas.

14. Factorise $x^3 - 23x^2 + 142x - 120$.

15. A die is rolled 300 times and following outcomes are recorded:

Outcome	1	2	3	4	5	6
Frequency	42	60	55	53	60	30

Find the probability of getting a number (i) more than 4 (ii) less than 3

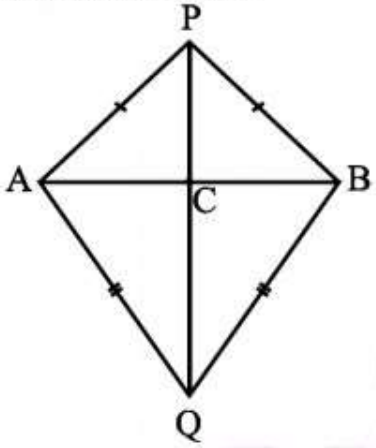
16. A floral design on a floor is made up of 16 tiles which are triangular, the sides of the triangle being 9 cm, 28 cm and 35 cm. Find the cost of polishing the tiles at the rate of 50p per cm^2.

17. If a point C lies between two points A and B such that AC = BC, then prove that $AC = \frac{1}{2}AB$.

Explain by drawing the figure.

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

19. AB is a line-segment. P and Q are points on opposite sides of AB such that each of them is equidistant from the points A and B (see below left figure). Show that the line PQ is the perpendicular bisector of AB.



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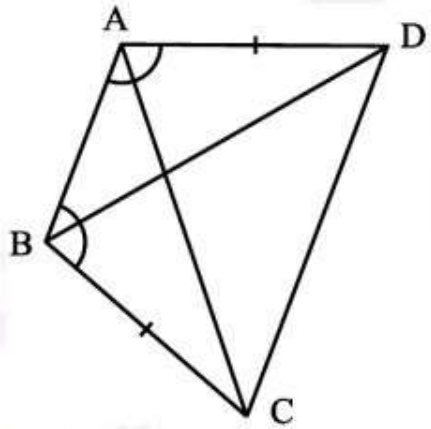
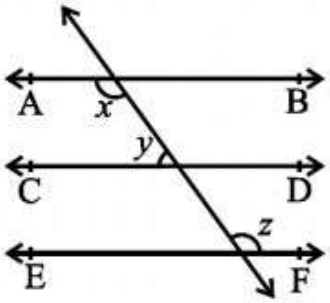
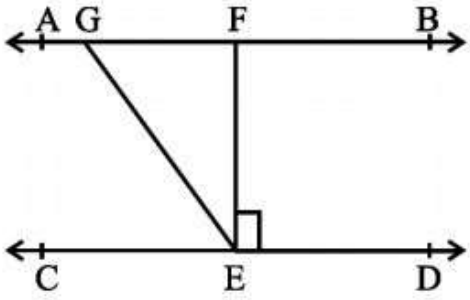


ABCD is a quadrilateral in which AD = BC and $\angle DAB = \angle CBA$ (see the above right sided figure). Prove that (i) $\Delta ABD \cong \Delta BAC$ (ii) BD = AC (iii) $\angle ABD = \angle BAC$.

20. In the below left figure, if AB || CD, CD || EF and y : z = 3 : 7, find x.





OR

In the above right sided figure, if AB || CD, EF ⊥ CD and GED = 126°, find $\angle AGE$, $\angle GEF$ and $\angle FGE$.

21. A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.

22. Find the value of a and b in $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

OR

Simplify $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} + \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ by rationalizing the denominator.

SECTION – D

Questions 23 to 30 carry 4 marks each.

23. Find the value of $\frac{4}{(216)^{\frac{-2}{3}}} + \frac{1}{(256)^{\frac{-3}{4}}} + \frac{2}{(243)^{\frac{-1}{5}}}$

24. A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs 498.96. If the cost of white-washing is Rs 2.00 per square metre, find the (i) inside surface area of the dome, (ii) volume of the air inside the dome.

OR

Monica has a piece of canvas whose area is 551 m^2. She uses it to have a conical tent made, with a base radius of 7 m. Assuming that all the stitching margins and the wastage incurred while cutting, amounts to approximately 1 m^2, find the volume of the tent that can be made with it.

25. Construct a triangle XYZ in which $\angle Y = 30°$, $\angle Z = 90°$ and XY + YZ + ZX = 11 cm.

26. Show that if the diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus.

OR

Prove that "The line-segment joining the mid-points of any two sides of a triangle is parallel to the third side and is half of it."

27. Plot the points A (4, 4) and (–4, 4) on a graph sheet. Join the lines OA, OB and BA. What figure do you obtain.

28. A man hired an auto for 5 km. The fare was 10 for first km and 3 for every subsequent km. He paid 50, to which the auto driver said that its not the correct amount. The actual fare is somewhat less than that the amount you have paid to me.

(i) Calculate the correct fare.

(ii) Which value is being promoted by the auto driver?

29. The following table gives the life times of 400 neon lamps:

Life time (in hours)	Number of Lamps
300 – 400	14
400 – 500	56
500 – 600	60
600 – 700	86
700 – 800	74
800 – 900	62
900 – 1000	48

(i) Represent the given information with the help of a histogram.

(ii) How many lamps have a life time of more than 700 hours?

30. If $x^3 + ax^2 + bx + 6$ has $(x - 2)$ as a factor and leaves a remainder 3 when divided by $(x - 3)$, find the values of a and b.

OR

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