

CBSE QUESTION PAPER

FINAL EXAMINATION 2008-09
CLASS - IX

SUBJECT - MATHEMATICS

Time : 3 hrs.

MM : 80

General Instructions:

1. All questions are compulsory.
2. The question paper consists of 30 questions divided into four sections A, B, C and D. Section A comprises of 10 questions of 1 mark each, Section B comprises of 5 questions of 2 marks each, Section C comprises of 10 questions of 3 marks each and section D contains 5 questions of 6 marks each.
3. There is no overall choice. However an internal choice has been provided in one question of 2 marks, 3 questions of 3 marks each and 2 questions of 6 marks each.
4. In question of construction, drawing should be neat and exactly as per the given measurements.
5. Use of calculators is not permitted.

Section - A

- Q1. Rationalise $\frac{1}{\sqrt{7} - \sqrt{6}}$
- Q2. Check whether $(x+1)$ is a factor of $x^4+x^3+x^2+x+1$.
- Q3. Give the value of abscissa for the point located on y - axis.
- Q4. Give the Geometric representation of $2x - 9$ as equation in one variable.
- Q5. Define square.
- Q6. Which of the number 2 & 3 are zeroes of polynomial $2x^2+7x-4$.
- Q7. What is formula for Total Surface area of cone?
- Q8. Find the value of $p(0)$, $p(-1)$ if.
 $P(t) = 2 + t + 2t^2 - t^3$
- Q9. The diameter of the moon is approximately $1/4^{\text{th}}$ of the diameter of the earth. Find ratio of their Surface areas.
- Q10. State any one of the Euclid's postulate.

Section - B

- Q11. Represent $\sqrt{5}$ on the number line?
- Q12. Name quadrant or axis on which the following points lie.
(i) $(0, -4)$ (ii) $(-2, -3)$ (iii) $(2, 3)$ (iv) $(-2, 4)$
- Q13. Find 'a' so that $x=1$, $y=1$ is a solution of the Linear equation
 $9ax + 12ay = 63$
- Q14. The points scored by a Kabbadi team in a series of matches are as follows
17, 27, 7, 27, 15, 5, 14, 8, 10, 24, 48, 10, 8, 7; 18, 28
find the median and mode of the data?
- Q15. In the given fig. if lines XY and MN intersect at O. If $\angle POY = 90^\circ$ and $a : b = 2 : 3$

Q20. Construct a ΔXYZ in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and $XY + YZ + ZX = 11$ cm.

Q21. 1000 families with 2 children were selected random and the following data were recorded.

No. of boys in family	0	1	2
No. of families	140	560	300

If a family is chosen at random find the probability that it has

- (i) one boy
- (ii) atleast one boy
- (iii) No boy

Q22. A solid cube of side 12cm is cut into 8 cubes of equal volume. What will be the side of new cube. Also find the ratio between their surface areas?

Q23. Draw graph of equation $y - 3x = 9$ and name the point where it meets x - axis

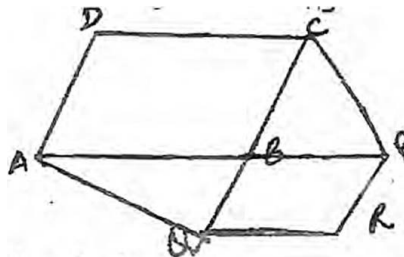
OR

Here is a linear equation that converts fahrenheit to Celsius $F = \left(\frac{9}{5}\right)C + 32$

- (i) If the temperature is 30°C what is the temperature in Fahrenheit?
- (ii) If the temperature is 0°C , what is temperature in Fahrenheit and if the temperature is 0°F . What is temperature in Celsius?
- (iii) Is there a temperature which is numerically the same in both Fahrenheit and Celsius? If yes, find it?

Q24. A wall of length 10m was to be built across an open ground. The height of the wall is 4m and thickness of the wall is 24cm. If this wall is to be built up with bricks whose dimensions are 24cm x 12 x 8cm. How many bricks will be required.

Q25. The side AB of $\parallel\text{gm}$ ABCD is produced to any point P. A line through A and \parallel to CP meets CB produced at Q and then $\parallel\text{gm}$ PBQR is completed. Show that $\text{ar}ABCD = \text{ar}PBQR$.



Q26. (i) Without actually calculating cubes find

$$(-12)^3 + (7)^3 + (5)^3$$

(ii) Verify that

$$x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x+y+z) [(x-y)^2 + (y-z)^2 + (z-x)^2]$$

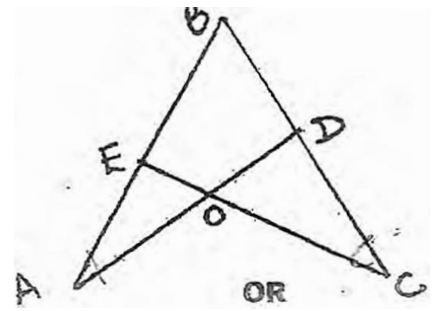
OR

(i) Find k if $x - 1$ is a factor of $p(x) = 2x^2 + kx + \sqrt{2}$

(ii) Without actually dividing find the remainder when $x^{51} + 51$ is divided by $x+1$.

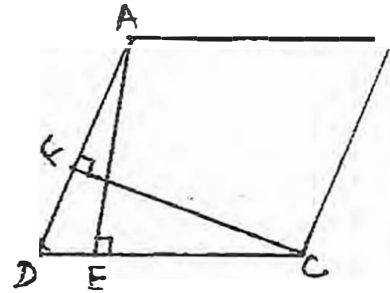
(iii) Factorise $27x^3 + y^3 + z^3 - 9xyz$

- Q27. Prove 2 triangles are congruent under A-S-A criteria and Hence show that if in the fig. given below $\angle A = \angle C$, & $AB = BC$. Prove that $\triangle ABD \cong \triangle CBE$



OR

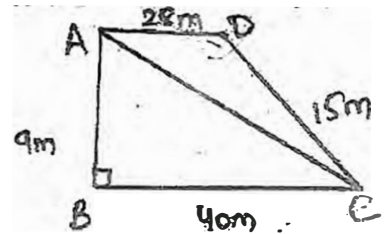
Prove that parallelograms on the same base and between same parallels are equal in area. Using above theorem prove that if ABCD is a parallelogram, $AE \perp DC$, $CF \perp AD$. If $AB = 16\text{cm}$, $AE = 8\text{cm}$ and $CF = 10\text{cm}$, find AD.



- Q28. (a) A chord of circle is equal to radius of circle. Find angle subtended by the chord at a point on the minor arc and also at a point on major arc.

(b) If non - parallel sides of a trapezium are equal, prove that it is cyclic.

- Q29. (a) Students of a school staged a rally for cleanliness campaign. They walked through the lane in 2 groups. One group walked through AB, BC and CA, while other through AC, CD & DA. Then, they cleaned the area enclosed, within their lanes. If $AB=9\text{m}$, $BC = 40\text{m}$, $CD = 15\text{m}$, $DA = 28\text{m}$ & $\angle B = 90^\circ$. Which group cleaned more area? And by how much?



- (b) Find area of a Δ , two sides of which are 8cm and 11 cm and perimeter is 32 cm.

Q30. The following are rents of 40 shops: 38, 42, 49, 37, 82, 37, 75, 6, 54, 9, 4, 46, 75, 63, 44, 74, 36, 69, 54, 48, 74, 47, 52, 57, 62, 67, 72, 77, 8, 1, 31, 38, 43, 75, 67, 77, 47, 64, 84, 81.

- (i) Tabulate the data by grouping them in intervals of width by 10. (2)
 (ii) Draw a histogram (3)
 (iii) What is the mode of data. (1)