

MATHEMATICS
SAMPLE QUESTION PAPER
CLASS IX
(SUMMATIVE ASSESSMENT - II)

TIME : 3 hours - 3½ hours

Maximum Marks : 80

General Instructions :

1. All questions are compulsory.
2. The question paper consists of 34 questions divided into 4 sections, section A, B, C, and D.
3. Section A contains 12 multiple choice type questions, first 8 of which carries 1 mark each and the next 4 carries two marks each. Section B contains 7 questions of 2 marks each, section C contains 10 questions of 3 marks each and section D contains 5 questions of 4 marks each.
4. Use of calculators is not permitted.

SECTION-A

Question number 1 to 8 are of 1 marks each and from 9 to 12 are of 2 marks each. Each question is provided with 4 choices out of which only one is correct. Choose the correct one.

Q 1. Between two rational numbers, there is / are

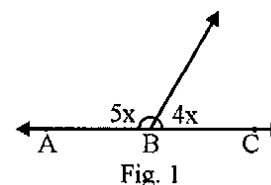
- (a) infinite number of rational numbers
- (b) one and only one rational number
- (c) no rational number
- (d) no irrational number

Q2. Which of the following is a polynomial in one variable?

- (A) $\sqrt{2-x^2} + 3x$
- (B) $\sqrt{2}x + 9$
- (C) $x^2 + x^{-2}$
- (D) $x^5 + y^8 + 9$

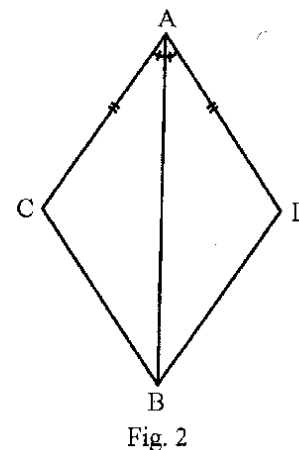
Q3. In Fig. 1, the value of x is

- (A) 80°
- (B) 20°
- (C) 40°
- (D) 60°



Q4. In Fig. 2, the congruence rule used in proving $\triangle ACB \cong \triangle ADB$ is

- (A) ASA
- (B) SAS
- (C) AAS
- (D) RHS



Q5. The sides of a quadrilateral are extended in order to form exterior angles. The sum of these exterior angles is

- (A) 180°
- (B) 270°
- (C) 90°
- (D) 360°

Q6. ABCD is a rhombus with $\angle ABC = 40^\circ$. The measure of $\angle ACD$ is

- (A) 90° (B) 20°
(C) 40° (D) 70°

Q7. The distance of a chord of length 16cm from the centre of the circle of radius 10cm is

- (A) 6cm (B) 8cm
(C) 10cm (D) 12cm

Q8. The area of an equilateral triangle of side 10cm is

- (A) $25\sqrt{3} \text{ cm}^2$ (B) $50\sqrt{3} \text{ cm}^2$
(C) $75\sqrt{3} \text{ cm}^2$ (D) $100\sqrt{3} \text{ cm}^2$

Q9. $\frac{1}{\sqrt{8-\sqrt{32}}}$ is equal to

- (A) $\sqrt{2}$ (B) $-\sqrt{2}$
(C) $\frac{1}{\sqrt{2}}$ (D) $\frac{-1}{\sqrt{2}}$

Q10. The value of $p\left(\frac{1}{2}\right)$ for $p(z) = z^4 - z^2 + z$ is

- (A) $\frac{7}{16}$ (B) $\frac{5}{16}$
(C) $\frac{3}{16}$ (D) $\frac{1}{16}$

Q11. In Fig. 3, if $AB \parallel CF$, $CD \parallel FE$ then the value of x is

- (A) 40°
(B) 65°
(C) 75°
(D) 105°

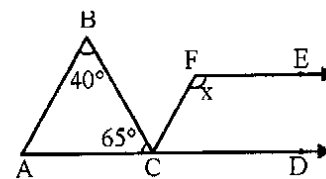


Fig. 3

Q12. In Fig. 4, BCPQ and BCDA are two parallelograms on the same base BC.

The value of $(x+y)$ is

- (A) 130°
- (B) 140°
- (C) 115°
- (D) 120°

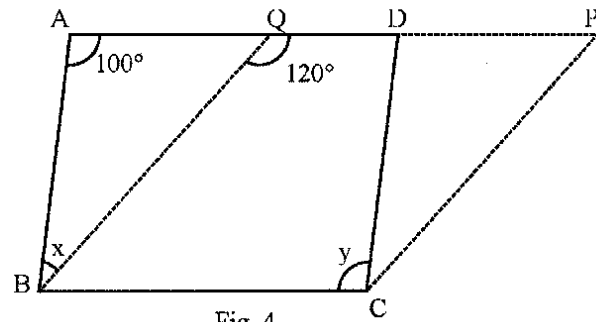


Fig. 4

SECTION-B

Question number 13 to 19 carry 2 marks each.

Q13. Without actually calculating the cubes, find the value of $55^3 - 25^3 - 30^3$

Q14. In Fig. 5, $OA \perp OD$, $OC \perp OB$,

$OD = OA$ and $OC = OB$

Prove that $AB = CD$

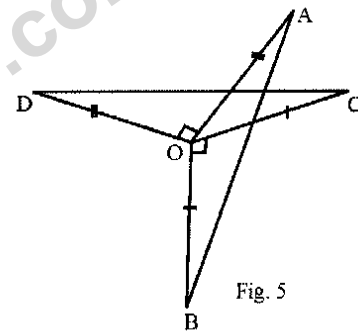


Fig. 5

Q15. In Fig. 6, ABCD is a parallelogram in which X and Y are the mid-points of the sides DC and AB respectively.

Prove that AXCY is a parallelogram.

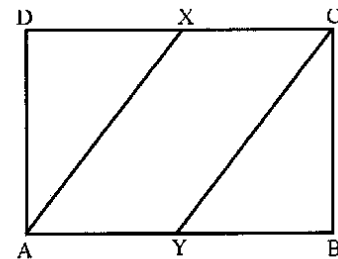


Fig. 6

Q16. In Fig. 7, RS is a diameter of the circle.

NM is parallel to RS and

$\angle MRS = 29^\circ$. Find $\angle RNM$.

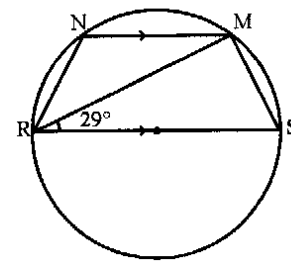


Fig. 7

- Q17. The total surface area of a cube is 486cm^2 . Find its volume.
- Q18. The mean of 100 observations is 50. If the observation 50 is replaced by 150, what will be the resulting mean?
- Q19. The median of the following observations arranged in ascending order is 24. Find the value of x .
11, 12, 14, 18, $x+2$, $x+4$, 30, 32, 35, 41

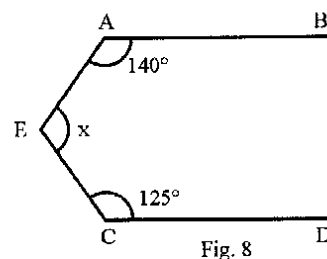
SECTION C

Question numbers 20-29 carry 3 marks each.

Q20. If $a=1-\sqrt{2}$, find the value of $\left(a - \frac{1}{a}\right)^3$

Q21. Factorise $3-12(a-b)^2$

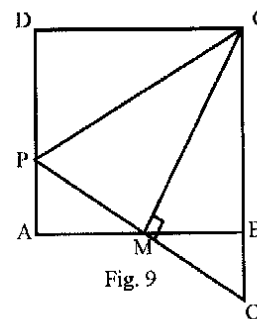
Q22. In Fig.8, $AB \parallel CD$. Find x .



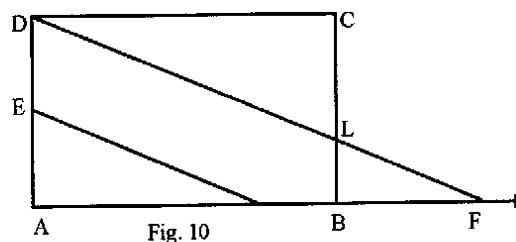
Q23. In Fig.9, ABCD is a square. M is the mid-point of AB and $PQ \perp CM$ meets AD at P and CB produced at Q.

Prove that

- (i) $\triangle PAM \cong \triangle QBM$
- (ii) $CP=CQ$



Q24. In Fig.10, ABCD is a parallelogram in which E is the mid-point of AD. $DF \parallel EB$, meeting AB produced in F and BC at L. Prove that $DF=2DL$



- Q25. In Fig. 11, there are two concentric circles with centre O.
AD is a chord of larger circle intersecting the smaller circle at B and C. Prove that $AB=CD$.

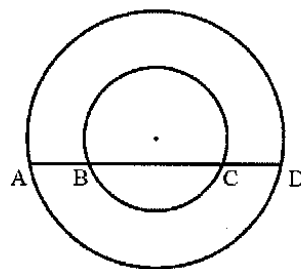


Fig. 11

- Q26. In Fig. 12, C and D are two points on the circumference of the semicircle described on AB as diameter.
If $\angle BAD=70^\circ$ and $\angle DBC = 30^\circ$. Find $\angle BCD$ and $\angle BDC$.

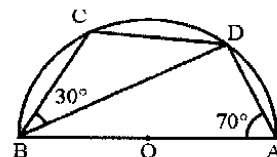


Fig. 12

- Q27. The difference between the outside and inside surfaces of a cylindrical pipe 14cm in length is 44cm^2 . Find the thickness of the pipe.
- Q28. A sphere, a cylinder and a cone have the same radii. The height of the cylinder and the cone is equal to the diameter of the sphere. Find ratio of their respective volumes.
- Q29. The distribution of expenditure of a family on food items is given in the following bar chart.
Read the bar chart and answer the following questions:
- Q1. What is the percentage of excess expenditure on wheat than that on pulses?
- Q2. What is the total percentage expenditure on pulses and ghee?

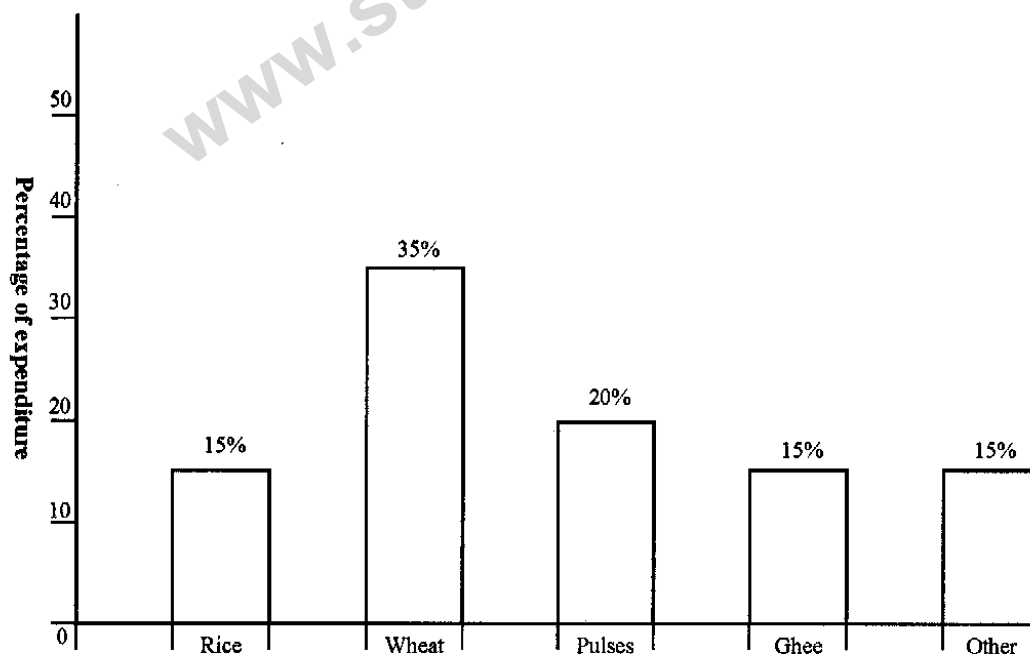


Fig. 13

Section D

Question numbers 30 to 34 carry 4 marks each.

Q30. Prove that a diagonal of a parallelogram divides it into two congruent triangles.

Q31. Following table gives the distribution of the marks obtained by the students of a class.

Marks	0-15	15-30	30-45	45-60	60-75	75-90
Number of students	5	12	28	30	35	13

Represent the data by a frequency polygon.

Q32. Factorise $(a^2-2a)^2 - 23(a^2-2a) + 120$

Q33. In Fig 14, two circles with centres at A and B intersect each other at points P and Q. Prove that the line joining the centres (AB) bisects the common chord (PQ) at right angles.

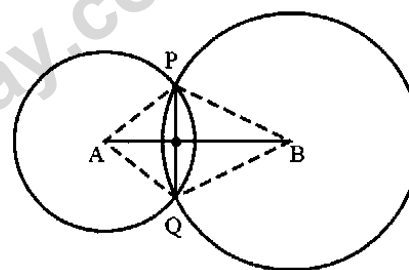


Fig. 14

Q34. The radius and height of a cylinder are in the ratio 2:3. If the volume of the cylinder is 1617 cm^3 , find the radius of base of the cylinder.