

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

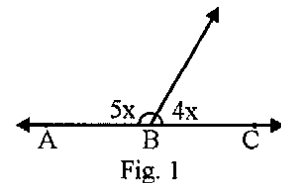
- (a) infinite number of rational numbers
- (b) one and only one rational number
- (c) no rational number
- (d) no irrational number

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

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

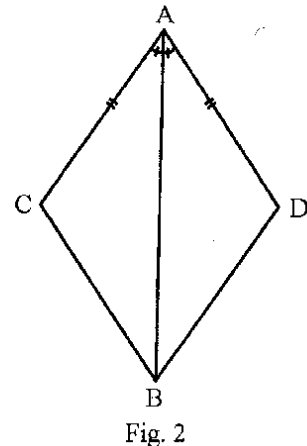
Q3. In Fig. 1, the value of x is

- (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°

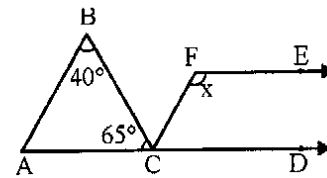


Fig. 3

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°

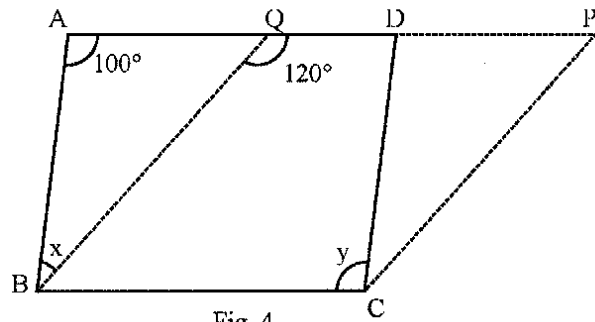


Fig. 4

SECTION-B

Question number 13 to 19 carry 2 marks each.

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

Q.14. In Fig. 5, $OA \perp OD$, $OC \perp OB$,

$OD=OA$ and $OC=OB$

Prove that $AB=CD$

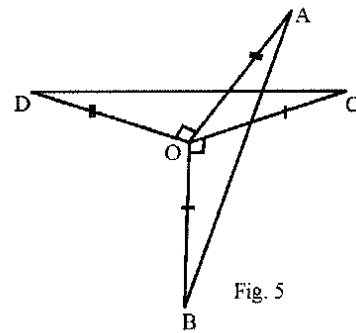


Fig. 5

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.

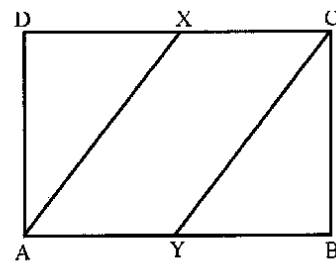


Fig. 6

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

NM is parallel to RS and

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

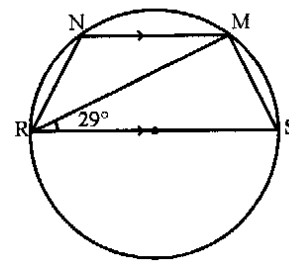


Fig. 7

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

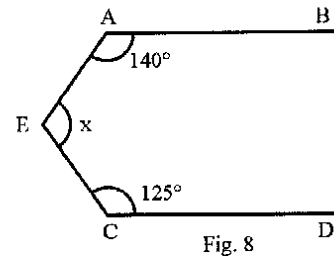
SECTION C

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 .

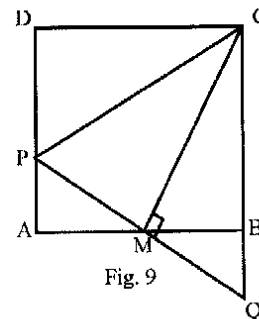


Q23. In Fig.9, ABCD is a square. M is the mid-point of AB and $PQ \perp CM$ meets AD at P and CB produced at Q.

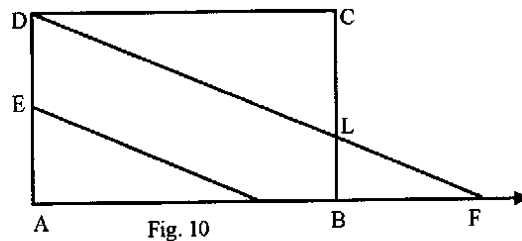
Prove that

(i) $\Delta PAM \cong \Delta QBM$

(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 $AB=CD$.

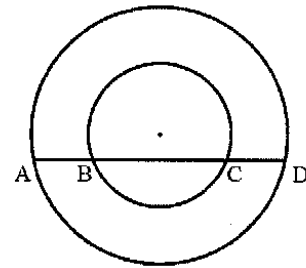


Fig. 11

- 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 $\angle BDC$.

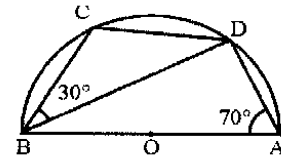
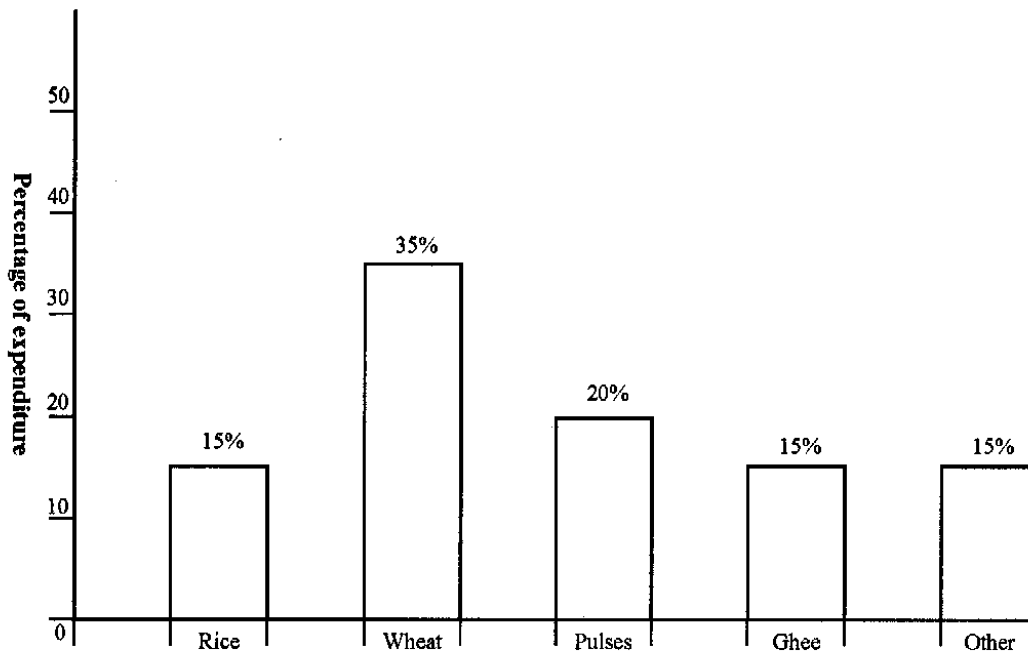


Fig. 12

- 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?



Food Item

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.

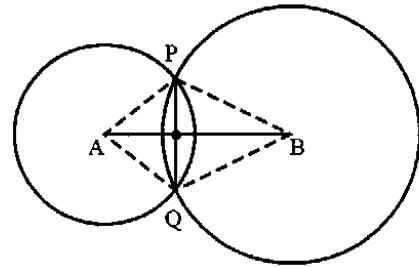


Fig. 14

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.