

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.

1. The decimal expansion of a rational number is

- a) terminating
- b) non-terminating recurring
- c) non-terminating non-recurring
- d) both (b) and (c)

2. What is the degree of a non-zero constant polynomial?

- a) 0
- b) 1
- c) x
- d) not defined

3. In figure 1, determine the value of x ?

- a) 90°
- b) 45°
- c) 28°
- d) 30°

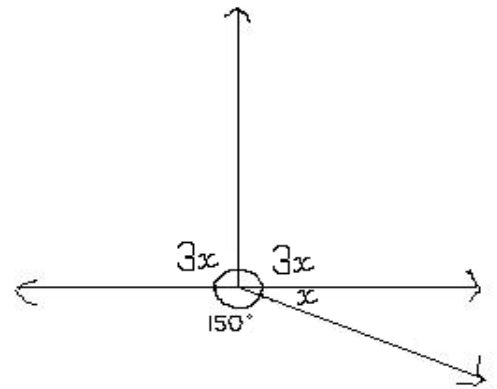


Figure 1

4. In figure 2, if $AX = BY$ and AX and BY are parallel to each other, then by which of the following congruence criterion it can be said that $\triangle APX \cong \triangle BPY$?

- a) SSS
- b) ASA
- c) SAS
- d) RHS

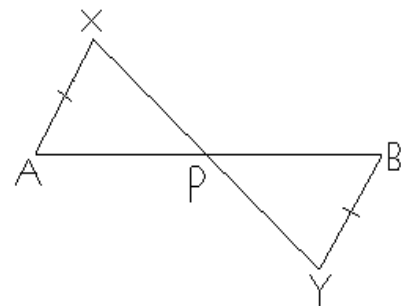


Figure 2

5. In figure 3, $AE \perp DC$ and $CF \perp AD$. If $AB = 16$ cm and $CF = 10$ cm, measure of AD will be

- a) 11.5 cm
- b) 12.8 cm
- c) 10.5 cm
- d) 16.7 cm

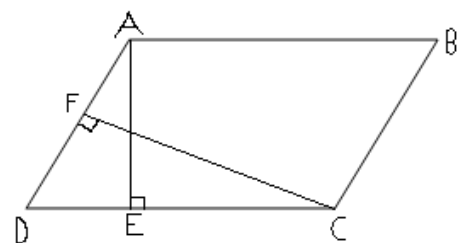


Figure 3

6. An equilateral triangle is inscribed in a circle. What will be the angle subtended by each side of the triangle at the centre?

- a) 60°
- b) 120°
- c) 50°
- d) 180°

7. If the mean of 6 numbers is 30, what will be their sum?

- a) 60
- b) 240
- c) 5
- d) 36

8. In triangle ABC (see figure 4), E and F are the mid-points of sides AB and AC respectively. If BC = 16 cm, EF is.....:

- a) 10 cm
- b) 9 cm
- c) 5 cm
- d) 8 cm

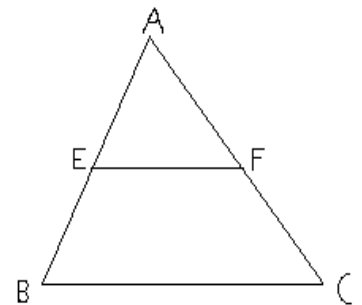


Figure 4

9. If $27^x = \frac{9}{3^x}$, find x .

- a) 1
- b) $\frac{1}{4}$
- c) 2
- d) $\frac{1}{2}$

10. In figure 5, determine x .

- a) 210°
- b) 64°
- c) 110°
- d) 115°

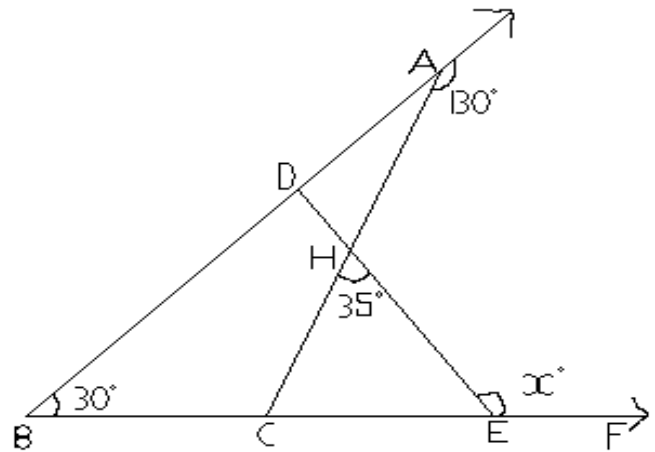


Figure 5

11. The mean of marks scored by 100 students in a maths test was found to be 40. Later on it was found that a score of 53 was misread as 83, so the correct mean will be

- a) 38
- b) 39.7
- c) 40
- d) 35

12. In figure 6, if $AB = AC$ and $AD = AB$, then the measure of $\angle BCD$ is

- a) 60°
- b) 90°
- c) 50°
- d) 80°

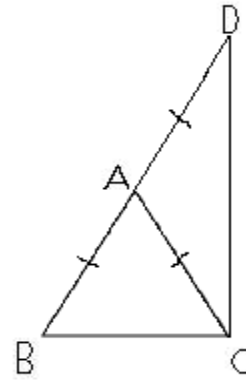


Figure 6

SECTION-B

Question number 13 to 19 carry 2 marks each.

13. Find the volume of water contained by a hemispherical bowl of diameter 7 cm.

14. The mean monthly salary of 10 members of a group is Rs. 1445, one more member whose monthly salary is Rs. 1500 has joined the group. Find the mean monthly salary of 11 members of the group.

15. In figure 7, the sides AB and AC of triangle ABC are produced to P and Q respectively. The bisectors of $\angle PBC$ and $\angle QCB$ intersect at O. Prove that $\angle BOC = 90^\circ - \frac{1}{2} \angle BAC$.

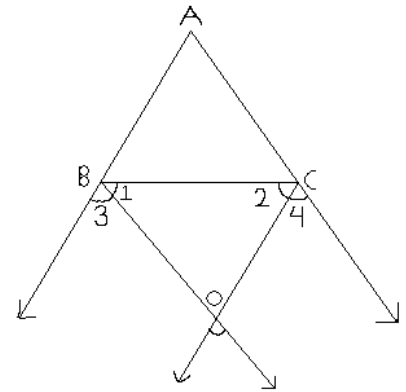


Figure 7

16. On a semi-circle with AB as diameter, a point C is taken, so that $m(\angle CAB) = 30^\circ$. Find $m(\angle ACB)$ and $m(\angle ABC)$.

17. The diagonals of a quadrilateral ABCD, AC and BD intersect in O. Prove that if $BO = OD$, the triangles ABC and ADC are equal in area.

18. Without actually calculating, find the sum of $(28)^3 + (-15)^3 + (-13)^3$.

19. If the mean of five observations $x, x + 2, x + 4, x + 6, x + 8$ is 11, find the mean of first three observations.

SECTION-C

Question number 20-29 carry 3 marks each.

20. If $x = 7 + 4\sqrt{3}$, find the value of $\sqrt{x} + \frac{1}{\sqrt{x}}$

21. Find the ratio of the surface areas of two cones if their diameters of the bases are equal and slant heights are in the ratio 4:3.

22. If O is the circumcentre of a ΔABC and $OD \perp BC$, prove that $\angle BOD = \angle A$.

23. In figure 8, it is given that $\angle A = \angle C$ and $AB = BC$. Prove that $\Delta ABD \cong \Delta CBE$.

24. A hemi-spherical dome of a building needs to be painted. If the circumference of the base of the dome is 17.6 cm, find the cost of painting it, given the cost of painting is Rs. 5 per 100 cm^2 .

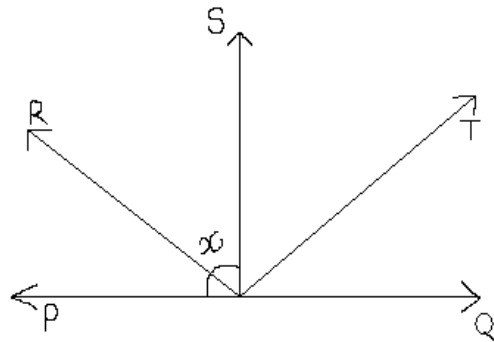
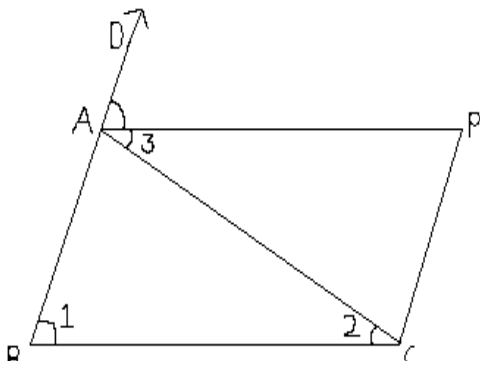
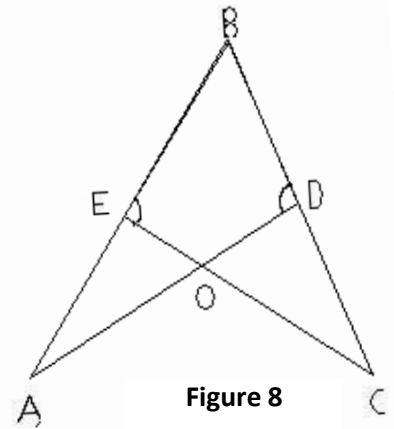
25. Factorise: $2\sqrt{2}a^3 + 16\sqrt{2}b^3 + c^3 - 12abc$.

26. In figure 9, ABC is an isosceles triangle in which $AB = AC$. $CP \parallel AB$ and AP is the bisector exterior $\angle AD$ of ΔABC . Prove that

- (i) $\angle PAC = \angle BCA$
- (ii) ABCP is a parallelogram.

27. Factorize: $x^3 + 13x^2 + 32x + 20$

28. In figure 10, ray OS stands on a line POQ. Ray OR and ray OT are angle bisectors of $\angle POS$ and $\angle SOQ$. If $\angle POS = x$, find $\angle ROT$.



29. The expenditure on health and family planning during the Sixth Five Year Plan in India is shown by the following graph. Read the graph and answer the questions:

- 1) What was the expenditure on health and family planning in the year 1982-83?
- 2) In which year is the increase in expenditure maximum over the expenditure in previous year?
- 3) What is the maximum increase of the expenditure in the year in which the expenditure is maximum?

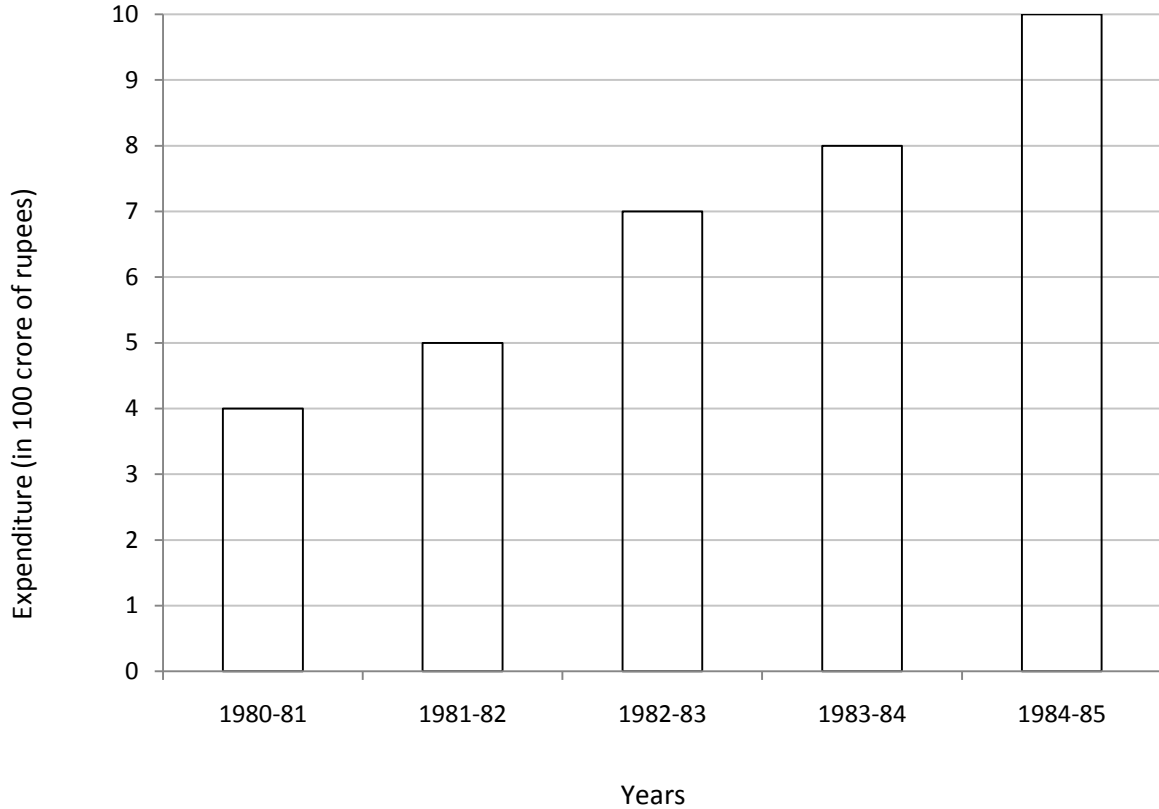


Figure 11

SECTION-D

Question number 30-34 carry 4 marks each.

30. A cylinder is within the cube touching all the vertical faces. A cone is inside the cylinder. If their heights are with the same base, find the ratio of their volumes.

31. Prove that two triangles are congruent if two angles and the included side of one triangle are equal to two angles and the included side of other triangle.

32. In ΔABC , AD is the median through A and E is the mid-point of AD. BE produced meets AC in F (see figure 12). Prove that $AF = \frac{1}{3} AC$.

33. Factorise: $a^3 + 3a^2b + 3ab^2 + b^3 - 8$.

34. Draw a histogram for the marks of students given below:

Marks:	0-10	10-30	30-45	45-50	50-60
No. Of students:	8	32	18	10	6

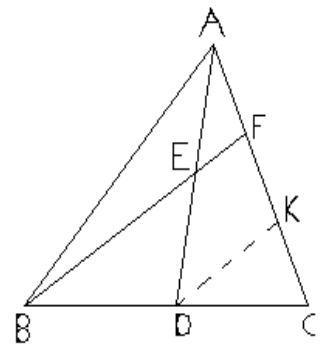


Figure 12

