

SUMMATIVE ASSESSMENT - I, 2016-17

MATHEMATICS

Class - IX

SET - A

Time Allowed : 3 hours

Maximum Marks: 90

General Instructions:

- All questions are compulsory.
- The question paper consists of 31 questions divided into four sections A, B, C and D. Section-A comprises of 4 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 11 questions of 4 marks each.
- There is no overall choice in this question paper.
- Use of calculator is not permitted.

SECTION-A

Question numbers 1 to 4 carry one mark each.

1. Simplify: $\left[\frac{7^{-4}}{4^{-2}}\right]^{1/4}$

1

2. Using appropriate identity, factorise $4x^2 - \frac{y^2}{9}$.

1

3. Is ΔABC possible, if $\angle A = 60^\circ$, $\angle B = 80^\circ$ and $\angle C = 40^\circ$?

1

4. The point $P(a, b)$ lies in II Quadrant. Find out which of a or b is greater?

1

SECTION-B

Question numbers 5 to 10 carry two marks each.

5. Find two rational numbers between 4 and 5.

2

6. Find the value of k , if $x-2$ is a factor of $p(x) = x^2 + kx + 2k$

2

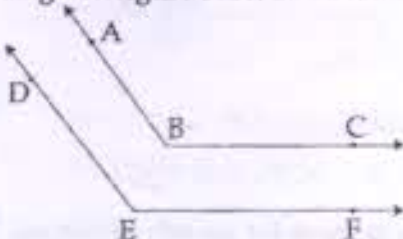
7. In a Triangle ABC , X and Y are the points on AB and BC such that $BX = BY$ and $AB = BC$.

2

Show that $AX = CY$. State the Euclid's Axiom Used.

8. In given figure $BA \parallel ED$ and $BC \parallel EF$. Show that $\angle ABC = \angle DEF$

2



9. Plot the points $P(-1, 0)$, $Q(0, 1)$ and $R(2, 3)$ on the graph paper and check whether they are collinear or not.

2

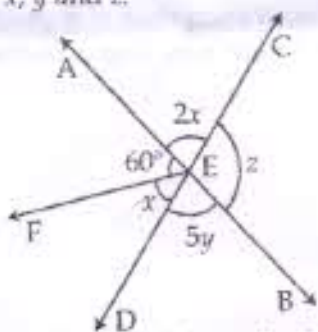
10. Find the area of a triangle, two sides of which are 13 cm and 8 cm and perimeter is 32 cm.

2

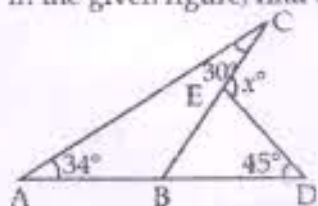
SECTION-C

Question numbers 11 to 20 carry three marks each.

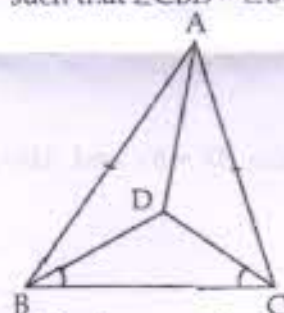
- 11 ✓ Locate $\sqrt{5}$ on the number line. 3
- 12 ✓ Determine a and b, if $\frac{7 + \sqrt{5}}{7 - \sqrt{5}} - \frac{7 - \sqrt{5}}{7 + \sqrt{5}} = a + 7\sqrt{5}b$. 3
- 13 ✓ If $f(x) = 3x^3 - 5x^2 + 7x - 11$, then find if $f(0) + f(1) = f(2)$? 3
- 14 ✓ Find the value of $(x-a)^3 + (x-b)^3 + (x-c)^3 - 3(x-a)(x-b)(x-c)$, when $a+b+c=3x$. 3
- 15 ✓ Prove that the bisectors of pairs of vertically opposite angles are in the same straight line. 3
- 16 ✓ In the given figure, two lines AB and CD intersect each other at a point E. Find the values of x, y and z. 3



17 ✓ In the given figure, find the value of x: 3



18 ✓ In the figure, ABC is an isosceles triangle with $AB = AC$. D is a point in the interior of ΔABC such that $\angle CBD = \angle BCD$. Prove that AD bisects $\angle BAC$ of ΔABC . 3



- 19 ✓ Write the co-ordinates of the point: 3
- (i) whose ordinate is -5 and which lies on y -axis.
 - (ii) which lies on x and y axes both.
 - (iii) whose abscissa is -3 and which lies on x -axis.

20 ✓ A right angled triangle of sides 30 cm, 72 cm and 78 cm is used for an advertisement by a company. How much company will pay for it at the rate of ₹ 40 per cm^2 ? 3

SECTION-D

Question numbers 21 to 31 carry four marks each.

21 If $x = 4 - \sqrt{15}$, find the value of $\left(x + \frac{1}{x}\right)^2 - \left(x - \frac{1}{x}\right)^2$ 4

22 Simplify: $(\sqrt{x})^{\frac{-2}{3}} \sqrt{y^4} \div \sqrt{\frac{-1}{y^2}}$ 4

23 The polynomials $ax^3 - 3x^2 + 4$ and $2x^3 - 5x + a$ when divided by $(x - 2)$ leave the remainder p and q respectively. If $p - 2q = 4$, find a . 4

24 Divide the polynomial $2x^4 + 5x^3 - 2x^2 + 2x - 4$ by $2x + 1$ and verify remainder by using remainder theorem. 4

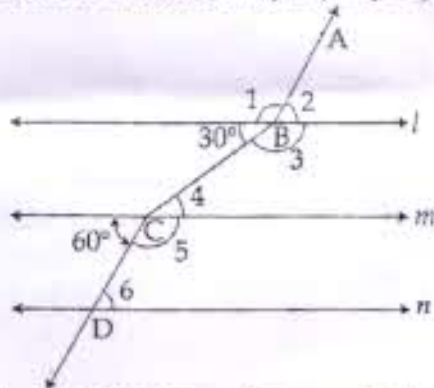
25 What are the possible expressions for the dimensions of the cuboid whose volume = $18kx^2 + 15kxy - 18ky^2$? 4

26 If $3a - 2b + 5c = 5$ and $6ab + 10bc - 15ac = 14$, find the value of: $27a^3 + 125c^3 + 90abc - 8b^3$. 4

27 There is a triangular park ABC whose two corner angles A and B are 50° and 60° respectively. Three friends Rashmi, Sita and Geeta go daily for a morning walk and walk along these three sides AB, BC and AC respectively. Who walks maximum distance among these three? Who walks least? Why morning walk is necessary for us? 4

28 It is known that $a \times c = 30$ and that $a = b$. Show that $b \times c = 30$. Write the Euclid's axiom that best illustrates this statement. Also give two more axioms other than the axiom used in the above situation. 4

29 In the given figure $l \parallel m \parallel n$. Find the values of $\angle 1, \angle 2, \angle 3, \angle 4, \angle 5$ and $\angle 6$. 4



30 In a ΔABC , BO and CO are the bisectors of $\angle ABC$ and $\angle ACB$ respectively intersecting other at O . Prove that $\angle BOC = 90^\circ + \frac{1}{2}\angle A$. 4

31 If two isosceles triangles have a common base, prove that the line joining their vertices bisects them at right angles. 4

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