

SUMMATIVE ASSESSMENT - I, 2014
MATHEMATICS
Class - IX

Time Allowed: 3 hours

Date: 29-9-2014

Maximum Marks: 90

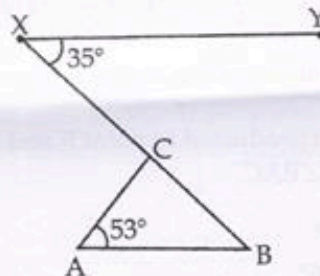
General Instructions:

1. All questions are compulsory.
2. 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.
3. There is no overall choice in this question paper.
4. Use of calculator is not permitted.

SECTION-A

Question numbers 1 to 4 carry one mark each

1. Simplify: $\frac{17^{\frac{5}{3}}}{17^{\frac{1}{3}}}$ 1
2. Give the degree of the polynomial $p(x) = (x-1)(x-2) + (2-x)(3-x)$ 1
3. In fig., $AB \parallel XY$, $\angle YXC = 35^\circ$, $\angle BAC = 53^\circ$ then $\angle ACB = ?$ 1



4. Write coordinates of a point whose abscissa is -2 and ordinate is -3 . 1

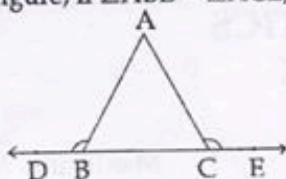
SECTION-B

Question numbers 5 to 10 carry two marks each.

5. Simplify $\sqrt[3]{2\sqrt{y^3}}$ and express the result in the form of a power of y . 2
6. Verify whether the following are zeroes of the polynomial, indicated against them :
 $p(x) = 2x^2 - 3$,
 $x = \sqrt{\frac{2}{3}}$, $x = \sqrt{\frac{3}{2}}$ 2
7. Two line segments AB and CD intersect each other at O such that $AO = OB$ and $CO = OD$. Prove that $AC = BD$. 2

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8. In the figure, if $\angle ABD = \angle ACE$, then prove that $AB = AC$.

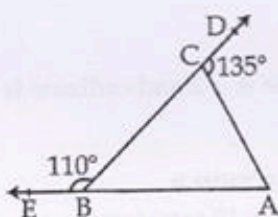


9. The longest side of a right angled triangle is 90 cm and one of the remaining two sides is 54 cm. Find its area. 2
10. On which axes the following points lie? $(0, 4)$, $(-5, 0)$, $(5, 0)$ and $(0, -3)$ 2

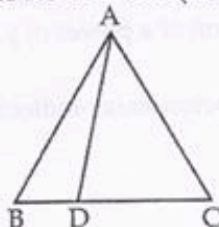
SECTION-C

Question numbers 11 to 20 carry three marks each.

11. If $\frac{1 + \sqrt{2}}{1 - \sqrt{2}} + \frac{1 - \sqrt{2}}{1 + \sqrt{2}} = a + b\sqrt{2}$, then find a and b. 3
12. Simplify: $\left(\frac{7776}{243}\right)^{-3/5}$.
13. If $x - \frac{1}{x} = 3$, then find the value of $x^3 - \frac{1}{x^3}$. 3
14. Factorise: $(p^3q^3 - 343)$ 3
15. Prove that if two lines intersect, vertically opposite angles are equal. 3
16. In figure, sides AB and BC of $\triangle ABC$ are produced to point E and D respectively. If $\angle EBC = 110^\circ$ and $\angle ACD = 135^\circ$, find $\angle BAC$. 3



17. D is a point on side BC of $\triangle ABC$ (see figure), such that $AD = AC$. Show that $AB > AD$ 3



18. Prove that the angles opposite to equal sides of a triangle are equal. 3
19. If two diagonals of a rhombus are of lengths 240 m and 44 m, then find the height and perimeter of the rhombus. 3

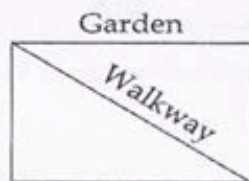
20. Plot the points (x, y) given in the following table on the given graph, choosing suitable units of distances on the axes : 3

x	-5	0	3	6	4	-3
y	2	3	-4	-2	-3	0

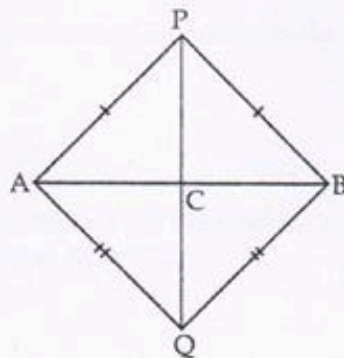
SECTION-D

Question numbers 21 to 31 carry four marks each.

21. If $x = 9 - 4\sqrt{5}$ then find the value of $x + \frac{1}{x}$ 4
22. Rationalise the denominator of $\frac{1}{\sqrt{2} + \sqrt{3}}$ and hence find its value,
if $\sqrt{2} = 1.414$ and $\sqrt{3} = 1.732$. 4
23. Factorise : $6y^3 - 7y^2 - 8y + 5$ 4
24. If $a^2 + b^2 + c^2 = 90$ and $a + b + c = 20$ then find the value of $ab + bc + ca$ 4
25. Factorise : $\sqrt{7}x^2 + 9x + 2\sqrt{7}$ 4
26. Simplify by factorising : $\frac{-9 - 6x - x^2}{9 - x^2}$ 4
27. Mr. Kapoor is making a straight walkway in the garden joining the diagonally opposite points for the purpose of morning walk of elderly people (as shown in the figure). What value he is exhibiting by doing so? State any three postulates of Euclids. 4

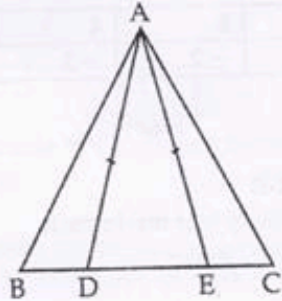


28. AB is a line segment. P and Q are points on opposite sides of AB such that each of them is equidistant from the points A and B, as shown in figure. Show that the line PQ is perpendicular bisector of AB. 4

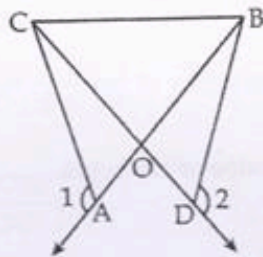


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29. In $\triangle ABC$ points D and E are on BC such that $BD = EC$ and $AD = AE$, Prove that $AB = AC$ 4



30. In figure $OA = OD$ and $\angle 1 = \angle 2$. Prove that $\triangle OCB$ is an isosceles triangle. 4



31. In $\triangle ABC$, $AC > AB$. The bisectors of $\angle B$ and $\angle C$ intersect each other at O. Prove that $OC > OB$. 4

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