SUMMATIVE ASSESSMENT – I, 2016-17 MATHEMATICS Class – IX

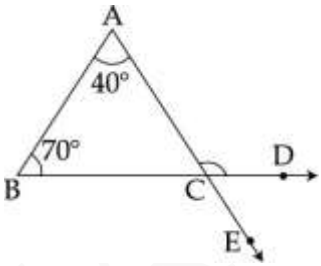
CPS _ Question paper - 4 [Code: 4TSAC6X]

SECTION-A

1. Write the rationalising factor of $\frac{1}{\sqrt{7}-\sqrt{4}}$

2. If x + 1 is a factor of ax3 + 2x2 – x + 3a - 7, then find the value of a.

3. In the figure, if < A = 40 and <B =70, then find <DCE.



4. Point P is on x-axis and is at a distance of 4 units from y-axis to its left. Write the coordinates of the point P.

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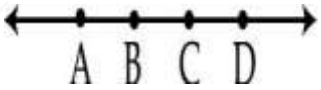
SECTION-B

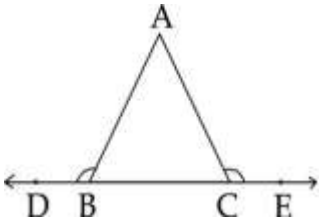
5. Rationalize the denominator of $\frac{1}{\sqrt{2}+\sqrt{3}+\sqrt{5}}$

6. If 3x + 2y =12 and xy = 6, then find $27x^3 + 8y^3$.

7. In figure if AB = CD, prove that AC = BD. State Euclid axiom, which is applicable here.



8. In the figure, if <ABD = <ACE, then prove that AB = AC



9. Find area of an isosceles triangle whose base is 16 cm and one of its equal sides is 10 cm.

10. Plot the points A(1, 0), B(4, 0) and C(4,4). Find the co-ordinates of the point D such that ABCD is a square

SECTION-C

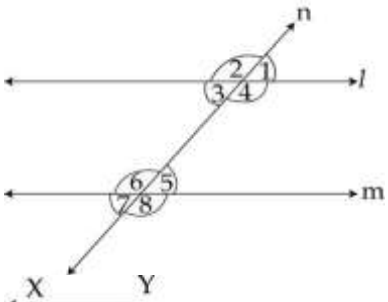
11. Simplify: $27^{\frac{1}{3}}\left[27^{\frac{1}{3}} - 27^{\frac{2}{3}}\right]$

12. Find the value of x if $\frac{2^{\frac{-1}{3}}}{32^x} = \frac{8^x}{2^3}$

13. factorize $a^9 - b^9$

14. Find whether (x - 2), (x + 2) and (2x - 3) are factors of $2x^3 - x^2 - 8x + 4$.

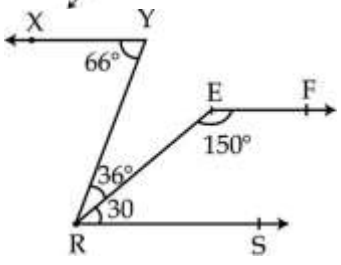
15. In the figure, if $l \; II \; m$ and n is a transversal such that <8 : <5 = 13 : 5 , find all the angles.



16. In given figure, show that XY II EF.

17. In an Isosceles triangle LMN the sides LM = LN. MP and NQ are two medians of the triangle. Show that MP = NQ.

18. LMN is a triangle in which altitudes MP and NQ to sides LN and LM respectively are equal. Show that $\Delta LMP \cong \Delta LNQ$ and LM = LN.



19. The sides of a quadrilateral taken in order are 9 m, 40 m, 15 m and 28 m. If the angle between first two sides is a right angle, find its area.

20. Plot the following ordered pairs (x, y) of numbers as points in the Cartesian plane:

x	0	- 4.5	- 1	2	- 3	4
y	2.5	0	3	5	- 2	- 6

SECTION-D

21. Simplify: $\frac{1}{2+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{6}} + \frac{1}{\sqrt{6}+\sqrt{7}} + \frac{1}{\sqrt{7}+\sqrt{8}}$

22. if a = $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and b = $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ find the value of $a^2 + b^2 + 5ab$.

23. $If\ a + b + c = 0$ Show that $a^4 + b^4 + c^4 = 2(a^2b^2 + b^2c^2 + c^2a^2)$

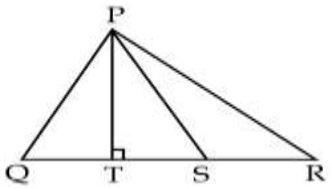
24. If a + b + c = 6, find $(2 - a)^3 + (2 - b)^3 + (2 - c)^3 - 3(2 - a)(2 - b)(2 - c)$.

25. Factorise : $x^3 - 6x^2 + 11x - 6$

26. If a + b + c = 0, then prove that $\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab}$

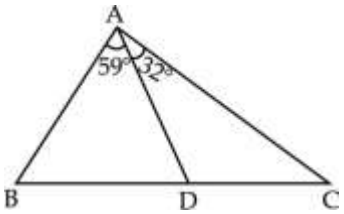
27. in fig. PS is bisector of < PQR and PT ⊥ QR . Show that <TPS = ½(<Q - <R)

28. Diagonals PR and SQ of a quadrilateral PQRS meet at O.
Prove that PQ + QR + RS + SP <2(PR+QS)

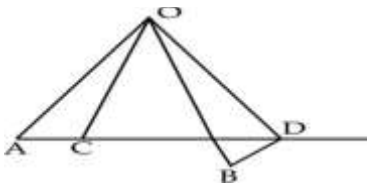


29. if AO and DO are the bisectors of <A and <D respectively of the quadrilateral ABCD.Prove that < AOD = ½ (<B + <C)

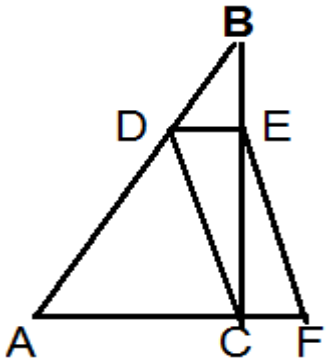
30. In the given figure AD = BD. Prove that BD < AC.



31. In figure OA = OB, OC + OD and <AOB = <COD. Prove that AC = BD.



31. OR, In given figure <ACB = 90 , AC =CD and CDEF is parallelogram.
If <FEC = 10^0 then find <BDE



Extra:

1. Write the co-ordinates of the point,
(I) whose ordinate is —5 and which lies on y-axis. (ii) which lies on x and y axes both. 0 (iii) whose abscissa is —3 and which lies on x-axis.

2. Factories :$4a^2 - 9b^2 — 2a— 3b$

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