ANKIT ANAND
IX-E
(3)

THE MOTHER'S INTERNATIONAL SCHOOL
SUMMATIVE ASSESSMENT-I (2014-2015)
CLASS – IX
SUBJECT – MATHEMATICS

TIME: 3 HOURS **M. M:90**

General Instructions:

(i) All questions are compulsory.

(ii) 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.

(iii) There is no overall choice.

(iv) Use of calculators is not permitted.

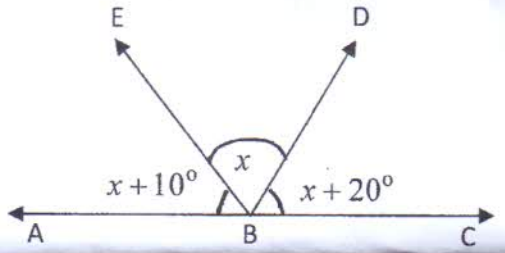
SECTION-A

Q1. Write one irrational number between 0.25 and 0.26 2010010001....

Q2. Verify whether $x = -\frac{1}{\sqrt{3}}$ is a zero of the polynomial $g(x) = 3x^2 - 1$. Yes

Q3. Find the area of an equilateral triangle whose each side is $2\sqrt{3}$ cm. $\sqrt{3}$

Q4. Rays BE and BD stand on a line ABC. Find the value of x when $\angle ABE = x + 10^\circ$, $\angle EBD = x$ and $\angle CBD = x + 20^\circ$.



SECTION-B

Q5. Simplify $(5+\sqrt{2})(2+\sqrt{5})-(7\sqrt{5}-5\sqrt{2})$.

Q6. Evaluate 98 X 102 without multiplying directly

Q7. Find the value of k for which $(x-1)$ is a factor of $2x^3+9x^2+x+k$

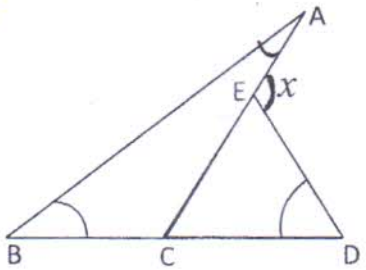
Q8. Use factor theorem to determine whether $g(x)$ is a factor of $p(x)$ where $p(x)=x^3+3x^2+3x+1$ and $g(x)=x+2$.

Q9. Without plotting on a graph, specify in which quadrant or on which axis do (3, −1) and (0, −2.5) lie. Also, find the distance of (3, −1) from the x-axis and the y-axis.

Q10. In the given figure,

$\angle BAC = 30^\circ$, $\angle ABC = 40^\circ$,

$\angle CDE = 50^\circ$. Find $x(\angle AED)$.



SECTION-C

Q11. Represent $\sqrt{5.2}$ geometrically on the number line. Do not write steps of construction.

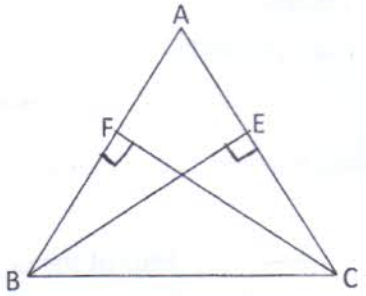
Q12. Express $1.1\overline{237}$ as a rational number in the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$.

Q13. Find the dimensions of a rectangle whose area is $\sqrt{3}x^2 + 11x + 6\sqrt{3}$

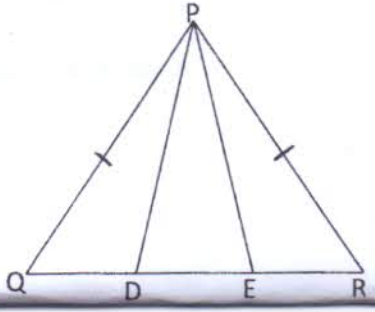
Q14. Verify that $a^3 + b^3 + c^3 - 3abc = \frac{1}{2}(a+b+c)[(a-b)^2 + (b-c)^2 + (c-a)^2]$.

Q15. If a point C lies between two points A and B such that AC=BC, then using Euclid's Geometry prove that $AC = \frac{1}{2}AB$.

Q16. ABC is an isosceles triangle in which altitudes BE and CF are drawn to equal sides AC and AB respectively. Show that these altitudes are equal.



Q17. In an isosceles ΔPQR with PQ = PR, D and E are points on RQ such that QE = RD. Show that PD = PE.

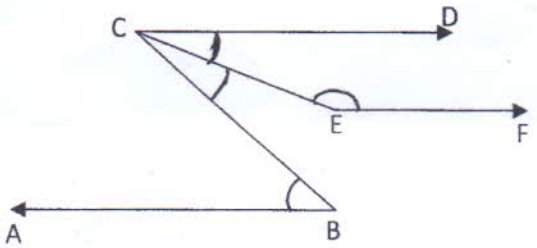


Q18. In the given figure,

$\angle BCE = 30^\circ$, $\angle DCE = 55^\circ$

$\angle CEF = 125^\circ$ and $\angle CBA = 85^\circ$.

Prove that AB $\parallel$ EF



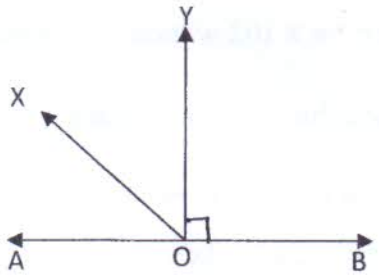
Q19. AOB is a straight line.

Ray OY is perpendicular to

line AB. OX is another ray

lying between rays OA and OY.

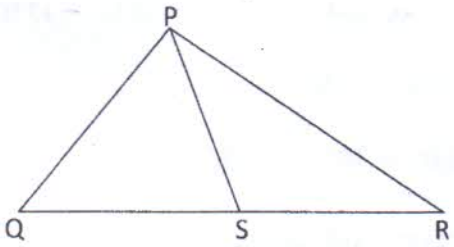
Prove that $2\angle YOX = \angle BOX - \angle AOX$



Q20. In $\Delta\, PQR$, $PR > PQ$ and

PS bisects $\angle QPR$.

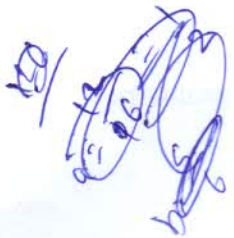
Prove that $\angle PSR > \angle PSQ$.



SECTION-D

Q21. If $\dfrac{\sqrt{2}+\sqrt{3}}{3\sqrt{2}-2\sqrt{3}} = a + b\sqrt{6}$, find the values of a and b.

$a = 2$
$b = 5/6$



Q22. Evaluate $\left(\frac{64}{125}\right)^{-\frac{2}{3}} + \frac{1}{\left(\frac{256}{625}\right)^{\frac{1}{4}}} - \frac{\sqrt{25}}{\sqrt[3]{64}}$

Q23. Using factor theorem, factorise the polynomial $p(x) = x^3 + 10x^2 - 53x + 42$

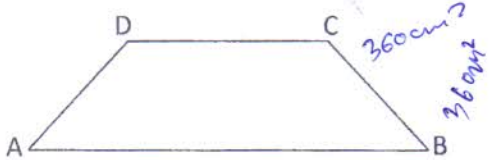
Q24. If the polynomials $p(x) = 2x^3 + ax^2 + 3x - 5$ and $f(x) = x^3 + x^2 - 2x + a$ leave the same remainder when divided by $(x-2)$, find the value of a. Also, find the remainder in each case.

Q25. Factorise using suitable identity. Also, mention the identity used.

(i) $343 + 64\ m^3$

(ii) $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$

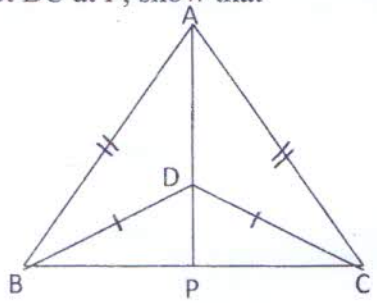
Q26. Students of a school staged a rally for cleanliness campaign. They walked along the path ABCDA which was in the shape of a trapezium where AB || DC. If AB = 35 m, BC = 13 m, CD = 25 m, DA = 13 m, ~~what value is depicted?~~ Find the area enclosed within the lanes. What value is depicted here?



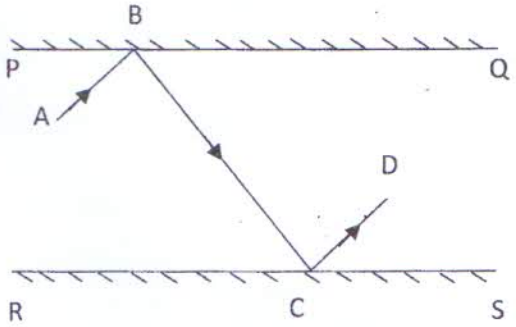
Q27. Plot the points $X(2,-5)$, $Y(-3,-5)$ and $Z(4,4)$ on a cartesian plane. Join all the points. Name the figure obtained and calculate its area.

Q28. ΔABC and ΔDBC are two isosceles triangles on the same base BC such that vertices A and D are on the same side of BC. If AD is extended to intersect BC at P, show that

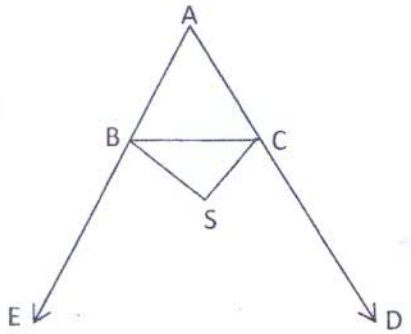
(i) $\Delta ABD \cong \Delta ACD$
(ii) $\Delta ABP \cong \Delta ACP$
(iii) AP bisects BC.



Q29. PQ and RS are two mirrors placed parallel to each other. An incident ray AB strikes the mirror PQ at B, the reflected ray moves along the path BC and strikes the mirror RS at C and again reflects back along CD. Prove that AB || CD.



Q30. The sides AB and AC of ΔABC are produced to points E and D respectively. If bisectors BS and CS of $\angle CBE$ and $\angle BCD$ respectively meet at point S, then prove that $\angle BSC = 90^{\circ} - \frac{1}{2}\angle BAC$



Q31. Prove ASA Congruence Rule which states that two triangles are congruent if two sides and the included angle of one triangle are equal to the corresponding sides and the included angle of the other triangle.

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