

Class 9
16-9-2015

Summative Assessment I in MATHEMATICS

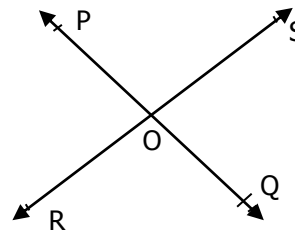
Time : 3 hrs.
M. Marks : 90

General Instructions:

- i) All questions are compulsory.
- ii) The question paper consists of 31 questions divided into four sections A, B, C & 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 & Section – D comprises of 11 questions of 4 marks each.

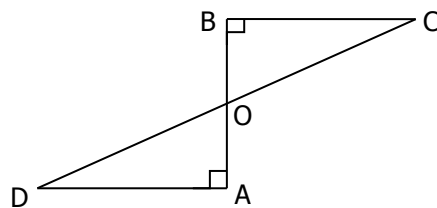
Section – A [1x4 = 4 marks]

1. Find two irrational numbers between $0.\overline{72}$ and $0.\overline{83}$.
2. Find the value of $a^3 + 2a + 7$ at $a = -1$.
3. Write the co-ordinates of a point
 - i) above x-axis & lying on y-axis at a distance of 5 units.
 - ii) with ordinate -2 & abscissa 3.
4. Lines PQ & RS intersect each other at point O. If $\angle POR : \angle ROQ = 5:7$, then find $\angle QOS$ & $\angle POS$.

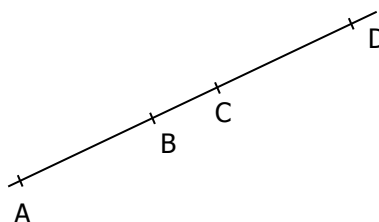


Section – B [2x6 = 12 marks]

5. Simplify :
 - i) $2^{2/3} \times 2^{-5/3}$
 - ii) $64^{2/3}$
6. AD & BC are equal perpendiculars to a line segment AB. Show that CD bisects AB.



7. Check whether the polynomial $q(t) = 4t^3 + 4t^2 - t - 1$ is a multiple of $2t + 1$.
8. Evaluate 93×95 without actual multiplication.
9. Find the value of k for which the polynomial $a^4 - a^3 - 11a^2 - a + k$ is divisible by $a + 3$.
10. In the fig, if $AC=BD$, then prove that $AB=CD$.



Section – C [3x10 = 30 marks]

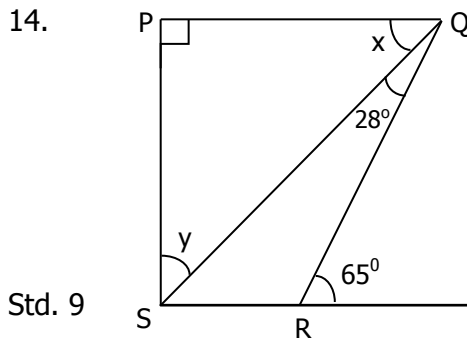
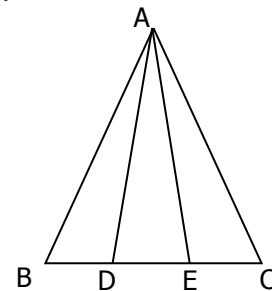
11. Prove that the sum of the angles of a triangle is 180° .

12. Rationalise the denominator of

i) $\frac{6}{\sqrt{5} - \sqrt{2}}$

ii) $\frac{31}{7 + 3\sqrt{2}}$

13. In an isosceles triangle ABC with $AB=AC$, D & E are points on BC such that $BE=CD$. Show that $AD=AE$.



In the fig, if $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28^\circ$ & $\angle QRT = 65^\circ$, find the values of x & y.

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15. A triangle and a parallelogram have the same base & same area. If the sides of the triangle are 26 cm, 28 cm & 30 cm and the parallelogram stands on the base 28 cm, find the height of the parallelogram.

16. Find the product using identities

i) $[(a+3)(a-3)]^2$

ii) $(3p-2q)(3p-2q)(3p-2q)$

17. Show that the angles of an equilateral triangle are 60° each.

18. Express $0.\overline{245}$ in the form of $\frac{p}{q}$, where p & q are integers and $q \neq 0$.

19. Factorise :

i) $64a^3 - 27b^3$

(ii) $125p^3 + 8q^3 + r^3 - 30pqr$.

20. Plot the points A(1,3), B(1,-1), C(6,-1) & D(6,3) on the Cartesian plane. Join them in order & name the figure so formed.

Section – D [4x11 = 44 marks]

21. State whether the following statements are true or false. Give reason.

i) Every natural number is a whole number.

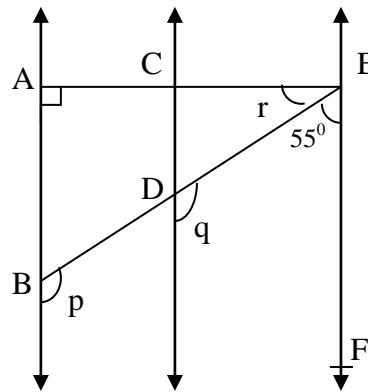
ii) Every irrational number is a real number.

iii) Every whole number is a rational number.

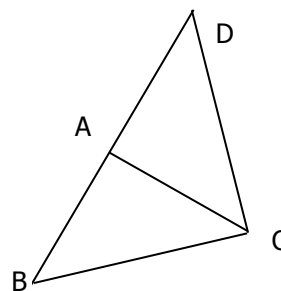
iv) Every integer is a whole number.

22. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.
23. Using factor theorem, factorise $m^3 - 2m^2 - 5m + 6$.
24. Express $\sqrt{4.3}$ on the number line.
25. Using remainder theorem, find the remainder when $4a^4 - 3a^3 - 2a^2 + a - 7$ is divided by $a+1$ and verify it by long division method.

26. In the fig, $AB \parallel CD$, $CD \parallel EF$. Also $EA \perp AB$. If $\angle BEF = 55^\circ$, find the values of p , q & r .



27. Verify that $a^3 + b^3 + c^3 - 3abc = \frac{1}{2} (a+b+c)[(a-b)^2 + (b-c)^2 + (c-a)^2]$.
28. PQ & RS are respectively the smallest & largest sides of a quadrilateral PQRS. Show that
 i) $\angle P > \angle R$ ii) $\angle Q > \angle S$
29. The sides AB & AC of ΔABC are produced to points E & D respectively. If bisectors BO & CO of $\angle CBE$ & $\angle BCD$ respectively meet at point O, then prove that $\angle BOC = 90^\circ - \frac{1}{2} \angle BAC$.
30. A rhombus field has grass for 20 cows to graze. If each side of the rhombus is 52 m & longer diagonal is 96 m, how much area of the grass field will each cow be getting? Why is greenary important for the environment?
31. ΔABC is isosceles in which $AB=AC$. Side BA is produced to D such that $AD=AB$. Show that $\angle BCD$ is a right angle.



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