Genius High School(2020-2021)

Class 09

Mathematics

Summative assessment – 1

Maximum marks:80

Time allowed: 3 hours

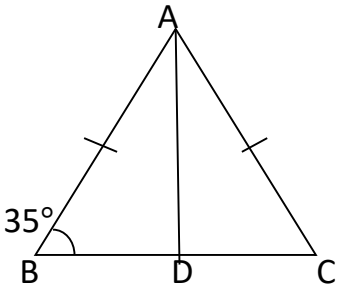
General instructions :

i. All the questions are compulsory.
ii. The question paper consists of 40 questions divided into 4 sections A,B,C, and D.
iii. Section A comprises of 20 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each. Section C comprises of 8 questions of 3 marks each. Section D comprises of 6 questions of 4 marks each.
iv. There is no overall choice. However , an internal choice has been provided in two questions of 1 mark each, two questions of 2 marks each , three questions of 3 marks each, and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
v. Use of calculators is not permitted.

SECTION A (1x20=20)

1. Which of the following statement is true?
   a. $\sqrt[3]{ab} = \sqrt{a} \times \sqrt{b}$
   b. $\sqrt{a-b} = \sqrt{a} - \sqrt{b}$
   c. $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$
   d. $\sqrt{ab} = \sqrt{a} \times \sqrt{b}$

2. In two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 5:4 , then the smaller of the two angles is:
   a. 120° b. 60° c. 100° d. 80°
3. The longest chord of the circle is:
   a. Radius b. arc c. diameter d. segment.
4. The factors of $12x^2$-x-6 are
   a. (12x+1)(x-6)
   b. (12x-1)(x+6)
   c. (3x+2)(4x-3)
   d. (3x-2)(4x+3)
5. The polynomial of type ax^2+bx+c, when a=0
   a. Linear b. Quadratic c. cubic d. Biquadratic
6. If ∠P and 100° form a linear pair. What is the measure of ∠P.
   a. 80° b. 180° c. 120° d. 75°
7. In the given figure AD is the median and ∠ABC = 35° , then ∠BAD is
   a. 70° b. 55° c.110° d.35°



8. If x=0 and y=k are the solutions of the equation 5x-3y=3, the value of k is :
   a. $\frac{3}{2}$ b. 0 c. -1 d. $\frac{-2}{3}$
9. Which of the following is a rational number?
   a. 0.123456…… b. $\sqrt{23}$ c. $\sqrt{36}$ d. $2\sqrt{3}$
10. If a+b+c = 0 then $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab}$ = ?
    a. 1 b. -1 c. 0 d. 3

    (OR)

    The zero of the polynomial p(x) = 2x+5 is
    a. 2 b. $\frac{2}{5}$ c. 5 d. $\frac{-5}{2}$

11.A terminating decimal is a/an _____ number.

12. The equation of X-axis is _____.

OR

The line segment joining (-4,5) and (-3,-6) lies completely in _____ quadrants respectively.

13.Equal chords of a circle are _____ from the centre.

14. An arc is a _____ when its ends are the ends of a diameter.

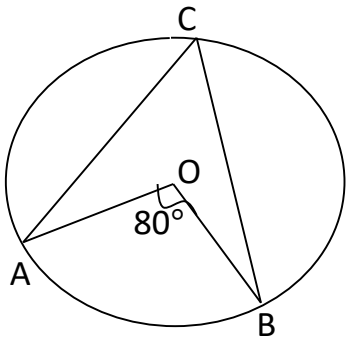
15.The consecutive angles of a parallelogram are _____.

16. How many solutions does the equation 2x+5y=8 has?

17.Write $\frac{36}{100}$ in decimal form and say what kind of decimal expansion it has.

18.In a parallelogram ABCD , ∠D = 135˚. Determine the measures of ∠A and ∠B.

19. In the given figure if O is the centre of a circle, then measure of ∠ACB is ?



20. The angles of a triangle are in the ratio 2:4:3 . the smallest angle of the triangle is ____?

SECTION B (2x6=12)

21. If the point (3,4) lies on the graph of 3y=ax+7 , then find the value of a.

OR

Find four different solutions of x=0.

22.Simplify : $4\sqrt{28} \div 3\sqrt{7}$.

23. Find the value of the polynomial $5x-4x^2+3$ at a) x=0 b) x=2.

24. Find the product with out multiplying directly 107 x 93.

25. Find the measure of each exterior angle of an equilateral triangle.

OR

If p(x) = x+5 then find the value of p(x)+p(-x).

26. Three angles of a quadrilateral are equal and the fourth angle is equal to 144˚. Find each of the equal angles of the quadrilateral.

SECTION C **(3x8=24)**

27. Simplify $\frac{6^{2/3} \, x \, \sqrt[3]{6^7}}{\sqrt[3]{6^6}}$.

OR

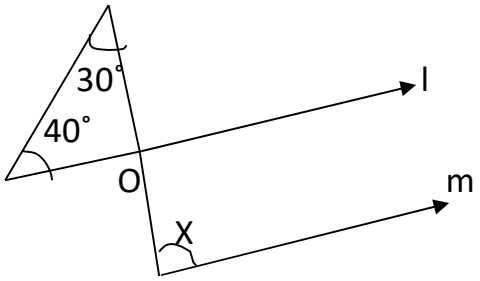
Rationalize the denominator $\frac{\sqrt{3}-1}{\sqrt{3}+1}$.

28. Draw the graph of following linear equation in two variables x+y=4.

OR

The cost of four chairs and five tables is Rs.3200 . write a linear equation in two variables for this statement and find out its two solutions.

29. In the given figure if l//m then find the value of x.



30. Prove that equal chords of a circle subtend equal angles at the centre.

OR

If the non parallel sides of a trapezium are equal. Prove that it is cyclic.

31. Divide the polynomial $9x^3-3x^2+15x-3$ by (3x-1) and find its quotient and remainder.

32. ABCD is a rectangle in which diagonal AC bisects ∠A as well as ∠C . show that ABCD is square.

33. Two lines AB and CD intersect each other at O. If ∠AOC + ∠COB + ∠BOD = 255˚. Find angles ∠AOC ,∠COB,∠BOD and ∠DOA.

34. The measure of angles of a quadrilateral are (x+20)˚,(x-20)˚,(2x+5)˚ & (2x-5)˚. Find the value of x.

SECTION D (6x4=24)

35. Factorize the expression

$8x^3+27y^3+36x^2y+54xy^2$.

36. Express $0.\overline{3178}$ is the form of p/q where p and q are integers and q≠0.

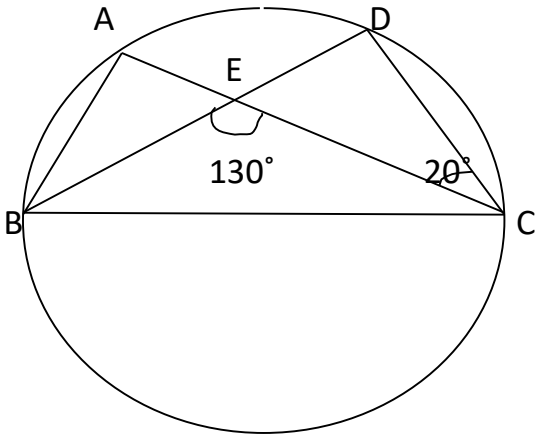
OR

Show that : $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{7}-6} = 5$.

37. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

OR

In the given figure A,B,C and D are four points on a circle. AC and BD intersect at a point E such that ∠BEC =130˚ and ∠ECD = 20˚. Find ∠BAC.

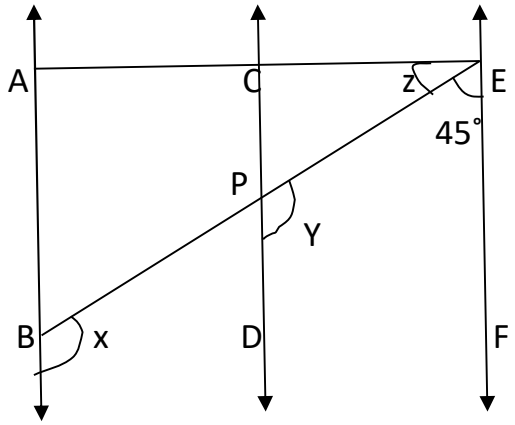


38. In a rhombus ABCD , ∠ABC = 72˚. Find ∠ACD.

OR

If the four angles of a quadrilateral are in the ratio 3:5:6:10. Find its angles.

39.In the given figure, AB//CD and CD//EF . Also , EA is perpendicular AB. If ∠BEF =45˚, then find the values of x,y and z.



40. I)Solve for x: (5x+1)(x+3)-8 = 5(x+1)(x+2).

ii) solve: $(625)^{0.06}$ x $(625)^{0.19}$.