MOCK MATHEMATICS SUBJECTIVE TEST CLASS – VIII (SET – 2)

Maximum Marks: 80   **Duration 3.0 Hours**

Rational number, Linear Equations in One Variable, Quadrilaterals, Square & Square Roots, Cube & Cube Roots, Data Handling, Exponents & Powers.

General Instructions:
1. This question paper consists of **38 questions**. All questions are compulsory.
2. **Paper Pattern and Marking Scheme:**
   There are **Five Sections** in the question paper (Section **A**, **B**, **C**, **D** and **E**).
   - In **Section A** – question numbers **1 to 20** are Multiple Choice Questions (MCQs) carrying **1** mark each.
   - In **Section B** – question numbers **21 to 25** are Very Short Answer Questions (VSA) type questions carrying **2** marks each. Answer to there questions should be in the range of **30** to **50** words.
   - In **Section C** – question numbers **26 to 31** are Short Answer Questions (SA) type questions carrying **3** marks each. Answer to these questions should be in the range of **50** to **80** words.
   - In **Section D** – question numbers **32 to 35** are Long Answer Questions (LA) type questions carrying **5** marks each. Answer to these questions should be in the range of **80** to **120** words.
   - In **Section E** – question numbers **36 to 38** are 3 source-based/case-based units of assessment carrying 4 marks each with sub-parts.
   - There is no overall choice. However, an internal choice has been provided in some Sections.

(SECTION – A)

1. Square numbers can have _____ at the end.
   - **(A)** Odd number of zeroes
   - **(B)** Even number of zeroes
   - **(C)** Both (A) and (B)
   - **(D)** None of these

2. The scientific notation of 165000000000000 is given by:
   - **(A)** 16.5×10^{13}
   - **(B)** 165×10^{12}
   - **(C)** 1650×10^{11}
   - **(D)** 1.65×10^{14}

3. The square of an even number is always.
   - **(A)** an odd number
   - **(B)** an even number
   - **(C)** a prime number
   - **(D)** None of these

4. Solve: $4x + 1 = 125$

(A) 21   (B) 31   (C) 25   (D) 24

5. Two numbers are in the ratio 9 : 5. If they differ by 16, find the numbers.

(A) 36, 20   (B) 54, 38   (C) 27, 15   (D) 45, 25

6. Which least number should be subtracted from 1051 so as to get a perfect square?

(A) 18   (B) 16   (C) 27   (D) 23

7. The cube of which of the following would be an odd number?

(A) 28   (B) 36   (C) 51   (D) 64

8. Each prime factor appears _____ times in its square.

(A) 2   (B) 4   (C) 3   (D) 5

9. Length of a rectangle is 8 m less than twice its breadth. If the perimeter of the rectangle is 56m. find its length and breadth.

(A) L = 16m, B = 12m   (B) L = 13m, B = 15m

(C) L = 14m, B = 17m   (D) L = 18m, B = 21m

10. Find x: $4\left(x^2 + 4\right) = 80$

(A) ±3   (B) ±5   (C) ±6   (D) ±4

11. Simplify and write in exponent form: $7^3 \times 7^5 \times 7^4$

(A) 7^5 (B) 7^{12} (C) 7^7 (D) 7^8

12. How many natural numbers lie between 11^2 and 12^2 ?

(A) 12   (B) 24   (C) 11   (D) 22

13. The sum of all the interior angles in an 8 sided polygon is:

(A) 360°   (B) 590°   (C) 1620°   (D) 1080°

14. Product of a rational number $-\dfrac{8}{5}$ and its multiplicative inverse is:

(A) $\dfrac{64}{25}$ (B) 1   (C) $-\dfrac{64}{25}$ (D) –1

15. Evaluate: $\dfrac{7}{8} - \dfrac{2}{3}$

(A) $-\dfrac{5}{24}$ (B) $\dfrac{5}{24}$ (C) $\dfrac{5}{11}$ (D) $\dfrac{5}{16}$

Assertion and Reason Questions (16-20)

Each of the Questions given below consists of two paired statements: Statement 1 (Assertion) and Statement 2 (Reason) connected by the term "because". Mark the appropriate answer using the key given below:

(A)   Both assertion and reason are true, and the reason is the correct explanation of the assertion.

(B)   Both assertion and reason are true, but the reason is not the correct explanation of the assertion.

(C)   The assertion is true, but the reason is false.

(D)   The assertion is false, but the reason is true.

16.   **Assertion (A):** $3^5 \times 5^5$ is equal to 15^5.

       Reason (R): $a^m \times b^m$ is equal to $(ab)^m$.

17.   **Assertion (A):** The root of the equation $3x = \dfrac{20}{7} - x$ is $\dfrac{4}{7}$.

       Reason (R): The value of the variable which makes left hand side equal to right hand side in the given equation is called the solution or the root of the equation.

18.   **Assertion (A):** (6, 8, 10) is a Pythagorean triplet.

       Reason (R): A triplet (b, p, h) of three natural numbers b, p and h is called a Pythagorean triplet, if $b^2 + p^2 = h^2$.

19.   **Assertion (A):** $8^3 = 512, 11^3 = 1331$.

       Reason (R): The cube of number ending with digit 4, will also end with digit 4.

20.   **Assertion (A):** Regular hexagon is a regular polygon of 6 sides.

       Reason (R): A polygon that is equiangular (all angles are equal in measure) is called regular polygon.

(SECTION – B)

21.   Find the number of sides of a regular polygon whose each exterior angle has a measure of $30°$.

22.   Solve for x : $\dfrac{2x+1}{3x-1} = \dfrac{3}{2}$

23.   Write a Pythagorean triplet whose one of the member is 15

24.   What is the smallest number by which 2560 must be multiplied so that the product is a perfect cube?

25.   What number should be added to $-\dfrac{4}{7}$ to get $\dfrac{5}{9}$?

26. Find the value of : $\dfrac{(67.542)^2 - (32.458)^2}{75.458 - 40.374}$

27. Solve the following equation: $\dfrac{3x-4}{3} + \dfrac{5x+2}{2} = \dfrac{x}{6} + 3$

28. Evaluate: $\dfrac{\sqrt{59.29} - \sqrt{5.29}}{\sqrt{59.29} + \sqrt{5.29}}$

29. Find the smallest natural number by which 1458 must be divided so that the quotient is a perfect cube.

30. Find the value of $\left(\dfrac{5}{9}\right)^{-2} \times \left(\dfrac{3}{5}\right)^{-2} \times \left(\dfrac{3}{5}\right)^{0}$

31. **(i)** The size of a plant cell is 0.00001275 m. Express this size in standard form

   **(ii)** What is the usual form of 1.0001×10^9 ?

(SECTION – D)

32. **(i)** Find the value of x, if $\dfrac{a^x}{a^y} = a^{10}$ and $\left(a^y\right)^3 = a^x$ for $a > 1$.

   (ii) If $27^{x+1} = 9^{x+3} = 3^y$, find the respective values of 'x' and 'y'.

33. **(i)** The exterior angle of a regular polygon is one-third of its interior angle. How many sides does the polygon have?

   (ii) In the given figure, line RT is drawn parallel to SQ. If $\angle QPS = 100°$, $\angle PQS = 40°$, $\angle PSR = 85°$ and $\angle QRS = 70°$, then find $\angle QRT$.
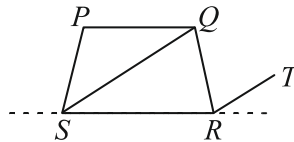
34. A gardener wants to plant 17956 trees and arranges them in such a way that there are as many rows as there are trees in a row. What is the number of trees in a row?

35. Solve: $6.5x + \dfrac{19.5x - 32.5}{2} = 6.5x - 13 - \left(\dfrac{13x - 26}{2}\right)$

36. An eye camp is organized in a village. The graph below shows the number of people who came for eye check-ups during the camp.
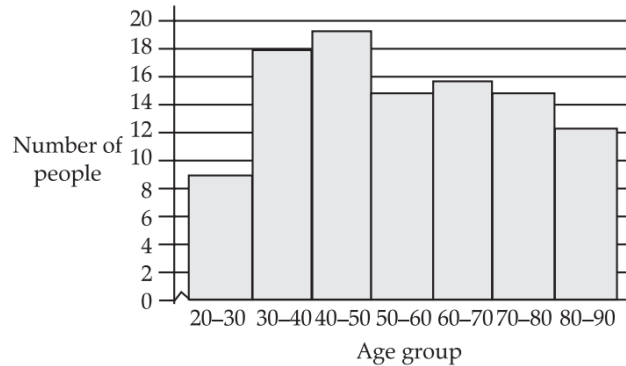
(i) For which age group the most eye check-ups were done during the camp?

(A) 20-30   **(B)** 30-40   **(C)** 40-50   **(D)** 80-90

(ii) How many people got their eyes checked in the camp?

(iii) Rajneesh said that, 'Lesser number of people from the 20-40 years age group got their eyes checked than people from the 50-70 years age group'. Is Rajneesh correct? Justify your answer.

37. The angles of a quadrilateral are in the ratio 3 : 5 : 7 : 9.

(i) If measure of angles be $(3x)°, (5x)°, (7x)°$ and $(9x)°$, then the value of x is:

(A) 20   **(B)** 15   **(C)** 25   **(D)** 10

(ii) The measure of all angles are:

(A) 45°, 70°, 105°, 140°   **(B)** 40°, 80°, 105°, 135°

(C) 45°, 75°, 110°, 130°   **(D)** 45°, 75°, 105°, 135°

(iii) The sum of the least and the greatest angle is:

(A) 175°   **(B)** 180°   **(C)** 170°   **(D)** 185°

38. Smart watches are a big innovation in the wearable industry, performing too many functions. The most common now a days is to count the number of steps. This has a big impact on health.

Gunjan noticed the number of steps she walked on her smart watch in the evening and found it to be 23,328.

Based on the above information, answer the following questions:

(i) Is the given number a perfect cube?

(ii) If not, then what is the smallest number to be multiplied to make it a perfect cube?

or

What is the cube-root of the resulting number?

(iii) Find the one's digit in the cube of the number 9999.