CLASS IX – MATHEMATICS

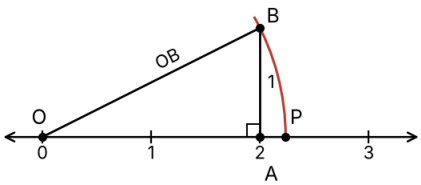
Chapter Test: The World of Numbers

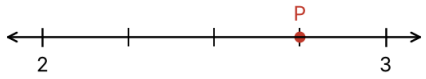
(Ganita Manjari, Grade 9, Part I – Chapter 3)

Time: 1½ Hours **M. M.: 40**

General Instructions:

1. This paper contains 21 questions. All questions are compulsory.
2. This paper is divided into 5 sections: **A, B, C, D** and **E**.
3. In **Section A**, Questions no. **1** to **10** are MCQs and questions no. **11** and **12** are Assertion-Reason based questions of 1 mark each.
4. In **Section B**, Questions no. **13** to **16** are Very Short Answer type questions carrying 2 marks each.
5. In **Section C**, Questions no. **17** and **18** are Short Answer type questions carrying 3 marks each.
6. In **Section D**, Questions no. **19** and **20** are Long Answer type questions carrying 5 marks each.
7. In **Section E**, Question no. **21** is a case based question carrying 4 marks. Internal choice is provided in the 2 marks part of the case study.
8. There is no overall choice. However, an internal choice has been provided in 2 questions in Section B, 2 questions in Section C, 2 questions in Section D and 1 part of Section E.
9. Show all the steps of your working and give reasons wherever required.
10. Use of calculator is **not** allowed.

Q. No.	Section – A	Marks
1.	Which of the following is an irrational number? (A) √225 (B) 0.1212… (the block 12 repeats) (C) √50 (D) 3.14	**[1]**
2.	The decimal expansion of 7/40 terminates after how many decimal places? (A) 2 (B) 3 (C) 4 (D) 5	**[1]**
3.	The rational number p/q equal to 0.777… (the digit 7 repeats) is (A) 7/9 (B) 7/10 (C) 70/99 (D) 7/90	**[1]**
4.	Which of the following rational numbers lies between 1/3 and 1/2? (A) 1/4 (B) 7/12 (C) 3/5 (D) 2/5	**[1]**
5.	The value of $(-8) \times (-5) + (-3) \times 4$ is (A) 52 (B) 28 (C) −28 (D) 12	**[1]**
6.	The distance between −4/3 and 5/3 on the number line is (A) 1/3 (B) 1 (C) 2 (D) 3	**[1]**
7.	Which of the following has a non-terminating repeating decimal expansion? (A) 9/16 (B) 11/40 (C) 7/30 (D) 3/125	**[1]**
8.	In the figure, OA = 2 units on the number line, AB = 1 unit is perpendicular to OA, and an arc with centre O and radius OB meets the number line at P. The point P represents  (A) √5 (B) √3 (C) 3 (D) √7	**[1]**

Q. No.	Section – A	Marks
9.	The unit interval between 2 and 3 is divided into 4 equal parts. The point P is the third mark from 2, as shown. P represents  (A) 9/4 (B) 5/2 (C) 7/3 (D) 11/4	**[1]**
10.	The sum of a rational number and an irrational number is (A) always rational (B) always irrational (C) sometimes rational and sometimes irrational (D) always zero	**[1]**
	Questions number 11 and 12 are Assertion and Reason based questions. Two statements are given, one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer from the options (A), (B), (C) and (D) as given below. (A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (B) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A). (C) Assertion (A) is true but Reason (R) is false. (D) Assertion (A) is false but Reason (R) is true.	
11.	**Assertion (A):** √3 is an irrational number. **Reason (R):** The square root of every positive integer is irrational.	**[1]**
12.	**Assertion (A):** There are infinitely many rational numbers between any two rational numbers. **Reason (R):** The average of two rational numbers a and b is a rational number that lies between them.	**[1]**

Q. No.	Section – B	Marks
13.	Express 0.363636… (the block 36 repeats) in the form p/q, where p and q are integers and $q \neq 0$.	**[2]**
14.	(A) Without performing long division, show that 23/80 has a terminating decimal expansion and state after how many places it terminates. **OR** (B) Find three rational numbers between 2/7 and 3/7.	**[2]**
15.	A trader takes 6 loans of ₹150 each (debts) and then receives ₹1,000 from selling pottery. Write this as an expression using integers and find his final financial standing.	**[2]**
16.	(A) Classify each as rational or irrational, with a reason: (i) √0.09 (ii) 0.1010010001… (the number of zeros between consecutive 1s keeps increasing). **OR** (B) Find the distance between −7/4 and 5/6 on the number line.	**[2]**

Q. No.	Section – C	Marks
17.	(A) Prove that √3 is an irrational number. **OR** (B) Given that √3 is irrational, prove that 4 + 5√3 is irrational.	**[3]**

Q. No.	Section – C	Marks
18.	(A) Express 2.1666… (only the digit 6 repeats) in the form p/q. **OR** (B) Express 0.2454545… (the block 45 repeats after the digit 2) in the form p/q.	**[3]**

Q. No.	Section – D	Marks
19.	(A) (i) Find four rational numbers between 3/5 and 2/3. [3] (ii) Write one irrational number between 3/5 and 2/3 and justify your answer. [2] **OR** (B) (i) Using algebra, show that 0.999… = 1. [2] (ii) Express 0.0363636… (the block 36 repeats after the first zero) in the form p/q. [3]	**[5]**
20.	(A) A tailor has 18¾ metres of cloth. One shirt needs 2½ metres of cloth. (i) How many complete shirts can he make? [3] (ii) How much cloth is left over? [2] **OR** (B) Without performing long division, state with a reason whether the decimal expansion of each is terminating or non-terminating repeating: (i) 33/500 (ii) 13/30 (iii) 49/7000. [1 + 1 + 1] (iv) For each terminating one, write the decimal expansion. [2]	**[5]**

Q. No.	Section – E	Marks
21.	**Case Study:** Following Brahmagupta, a trader of Lothal records fortunes (*dhana*) as positive integers and debts (*ṛiṇa*) as negative integers in his ledger. His opening balance is a debt of ₹250, written as −250. (i) He then takes 4 new loans of ₹75 each. Write the change in his balance as a product of integers and evaluate it. **[1]** (ii) Find his balance after these loans. **[1]** (iii) (A) The king waives (takes away) 3 of the debts of ₹75. Using (−3) × (−75), find the change in his balance and his new balance. **[2]** **OR** (iii) (B) Instead, he earns ₹900 by selling pottery. Find his balance after this and state whether it is a fortune or a debt. **[2]**	**[4]**