EDUFEST JUNIOR, BAVDHAN — PUNE
Unit Test PRACTICE PAPER (2026-27)
SUBJECT: MATHEMATICS MAX. MARKS: 40
CLASS: VII DURATION: 1½ hrs

General Instructions:

(i). All questions are compulsory.
(ii). This question paper contains 20 questions divided into five Sections A, B, C, D and E.
(iii). Section A: 10 MCQs of 1 mark each. Section B: 4 questions of 2 marks each.
Section C: 3 questions of 3 marks each. Section D: 1 question of 5 marks.
Section E: 2 Case Study Based Questions of 4 marks each.
(iv). There is no overall choice.
(v). Use of Calculators is not permitted.

SECTION – A Questions 1 to 10 carry 1 mark each.

1. A shopkeeper records a sale of ₹ 3,07,45,982. In the International number system, this amount is written as:

(a) 3,074,598.2
(b) 30,745,982
(c) 307,459,820
(d) 3,074,598,200

2. The digit 8 in the number 4,83,72,015 has a place value of:

(a) 8,00,000
(b) 80,00,000
(c) 8,00,00,000
(d) 80,00,00,000

3. Which of the following expressions ALWAYS gives an odd number for every positive integer n?

(a) $6n + 4$
(b) $4n^2 + 2n$
(c) $8n - 3$
(d) $10n + 6$

4. Two parallel lines are cut by a transversal. If a pair of co-interior (same-side interior) angles are $(3x + 15)°$ and $(2x + 25)°$, the value of x is:

(a) 24 (b) 28 (c) 30 (d) 32

5. The HCF of two numbers is 18 and their LCM is 1,260. If one number is 252, the other number is:

(a) 72 (b) 90 (c) 108 (d) 126

6. Using the shortcut for multiplying by 125 (÷ 8 × 1000), the value of 648 × 125 is:

(a) 80,000
(b) 81,000
(c) 82,000
(d) 84,000

7. In the Virahāṅka sequence $V(n) = V(n-1) + V(n-2)$, if $V(8) = 34$ and $V(9) = 55$, then $V(12)$ is:

(a) 144 (b) 89 (c) 177 (d) 233

8. Lines $l \parallel m$ are cut by a transversal t. One of the alternate interior angles is $(5y - 20)°$ and its alternate interior angle is $(3y + 16)°$. The measure of each angle is:

(a) 82° (b) 88° (c) 96° (d) 78°

In Questions 9 and 10, choose the correct option:

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. Assertion (A): If the LCM of 12, 18, and 24 is 72, then any number exactly divisible by all three must also be divisible by 72.

Reason (R): The LCM of a set of numbers is the smallest number divisible by each of them; every common multiple is a multiple of the LCM.

10. Assertion (A): When two parallel lines are cut by a transversal, corresponding angles are supplementary.

Reason (R): Corresponding angles formed by a transversal cutting parallel lines are always equal, not supplementary.

SECTION – B Questions 11 to 14 carry 2 marks each.

11. The population of a city is 2,47,38,965. Write this number (a) in words using the Indian place value system, and (b) in the International system with correct comma placement.

12. Without computing fully, determine the parity (odd or even) of the expression: (Sum of first 20 natural numbers) × (Product of 47 × 83 × 126). Justify each step.

13. Lines PQ ∥ RS. A transversal cuts them such that one pair of co-interior angles are $(4x + 10)°$ and $(6x − 30)°$. Find x and the measure of both angles. Verify they add up to 180°.

14. Find the LCM and HCF of 36, 48, and 60 using prime factorisation. Verify: LCM × HCF = Product of any two of the three numbers (use 36 and 48).

SECTION – C Questions 15 to 17 carry 3 marks each.

15. A certain 8-digit number reads 5,A3,B4,728. It is known that the number is divisible by both 9 and 4. Find all possible pairs (A, B) of single digits that satisfy both conditions simultaneously. Show all working.

16. In the figure below (described), two parallel lines l and m are cut by a transversal t. The angles formed at the two intersections are: at line l — angles p, q, r, s (going around), and at line m — angles w, x, y, z. If p = 112°, find the values of q, r, s, w, x, y, and z. Name the angle relationship used for each.

17. Prove algebraically that the sum of any two consecutive even numbers is always even but NOT divisible by 4. Verify with a numerical example. Also state whether the product of the same two consecutive even numbers is divisible by 8 — justify your answer.

SECTION – D Question 18 carries 5 marks.

18. A school has three bells installed at its main gate, sports hall, and library. Bell A rings every 24 minutes, Bell B every 36 minutes, and Bell C every 48 minutes. All three rang together at 8:00 AM.

(a) Find the LCM of 24, 36, and 48 using prime factorisation. Show complete working.

(b) At what time will all three bells next ring together?

(c) How many times does Bell A ring between 8:00 AM and 1:00 PM (inclusive of both endpoints)?

(d) The school plans to display the bell schedule on a board. The total number of rings by all three bells in 5 hours is some large number — determine its parity (odd or even) without computing the exact total. Justify.

(e) Express the total number of minutes in the 5-hour session (8:00 AM to 1:00 PM) in both the Indian and International number systems.

SECTION – E (Case Study Based Questions) Questions 19 to 20 carry 4 marks each.

19. Case Study 1: The Heritage City Renovation Project

The Pune Municipal Corporation has approved a budget of ₹ 4,08,75,62,000 for renovation of three heritage roads — Road X, Road Y, and Road Z. Road X costs ₹ 1,25,40,000 per kilometre, Road Y costs ₹ 98,75,000 per kilometre, and Road Z costs ₹ 1,50,00,000 per kilometre. Two parallel boundary walls of the project area — Wall A and Wall B — are separated by a diagonal road (transversal). The

diagonal road meets Wall A at an angle of $(7k - 5)°$ and meets Wall B at a corresponding angle of $(5k + 27)°$.

(i) Write the total project budget ₹ 4,08,75,62,000 in words using the Indian place value system.

(ii) Write the budget in the International system with correct commas, and state how many millions it equals.

(iii) Find k and the measure of the angle the diagonal road makes with Wall A.

(iv) What is the measure of the alternate interior angle on the other side of Wall A where the diagonal road crosses it? Name the property used.

20. Case Study 2: The Rhythm and Number Challenge

A music teacher at a school challenges her class with two problems. First, she defines a sequence using the rule $M(n) = M(n-1) + M(n-2)$, with $M(1) = 2$ and $M(2) = 3$. Second, she tells students that the school hall has 3 rows of lights switched on in a pattern — Row 1 turns on every 15 seconds, Row 2 every 20 seconds, and Row 3 every 30 seconds. All three rows switched on simultaneously at the start of the performance.

(a) Find $M(3)$, $M(4)$, $M(5)$, $M(6)$, and $M(7)$ using the recurrence $M(n) = M(n-1) + M(n-2)$.

(b) Determine the parity (odd or even) of $M(10)$ without computing it. Justify using the pattern of parities from $M(1)$ to $M(7)$.

(c) Find the LCM of 15, 20, and 30. After how many seconds will all three rows of lights switch on together again?

(d) If the performance lasts exactly 10 minutes (600 seconds), how many times do all three rows switch on together during the performance (include $t = 0$)?