



Attempt questions first; check the separate key afterward. Show all working. Draw accurate figures where required.

A. Very short answers - 1 mark each

1. Test 738 for divisibility by 3.
2. Test 814 for divisibility by 11.
3. Find the missing digit in $4\square 2$ if divisible by 9.
4. Find all digits making $53\square$ divisible by 6.
5. Find the digital root of 9876.
6. Is digital root 9 sufficient for divisibility by 9?
7. Write an algebraic expression for a two-digit number with digits a, b .
8. Express its reversed number.

B. Short answers / practice - 2 marks each

9. Show that a two-digit number minus its reversal is divisible by 9.
10. Find $83-38$ and compare with the rule.
11. Find the next two terms: 2, 6, 12, 20, 30.
12. Write a rule for the n th term.
13. Test 123456 for divisibility by 8.
14. Test 123450 for divisibility by 4.
15. Find the smallest three-digit multiple of 7.
16. Find the largest three-digit multiple of 13.
17. Find a two-digit number whose digit sum is 9 and tens digit is twice the units digit.
18. Find the number obtained on reversing it.
19. Is the sum of two odd numbers always even? Explain algebraically.
20. Is the product of two odd numbers always odd? Explain.

C. Application / reasoning - 3 marks each

21. Find the next two triangular numbers after 1, 3, 6, 10, 15.

22. Explain the difference pattern of triangular numbers.

23. Place digits 1 to 9 in a 3×3 magic square with each line sum 15.

24. What must its central entry be?

25. A number is 2 more than a multiple of 5. What remainders may its double leave on division by 5?

26. What remainder does its square leave?

27. Find all digits making $72\square$ divisible by 4.

28. Find the least four-digit multiple of 11.

29. Show that the sum of five consecutive integers is divisible by 5.

30. A two-digit number and its reversal sum to 121. Find their digit sum.

31. Find the next two terms of 1, 4, 9, 16, 25 using the simplest square-number pattern.

D. Extended practice - 5 marks per pair

32. Prove the product of three consecutive integers is divisible by 6.

33. Is their sum always divisible by 3?

34. A two-digit number exceeds its reversal by 27; digit sum is 11. Find it.

35. Explain why reversing a three-digit number changes it by a multiple of 99.

ANSWER KEY - Numerical / closed questions

- 1) Yes. 2) Yes. 3) 3. 4) 4. 5) 3. 6) Yes, for a positive integer. 7) $10a+b$. 8) $10b+a$. 10) $45=9 \times 5$. 11) 42, 56. 12) $n(n+1)$. 13) Yes. 14) No. 15) 105. 16) 988. 17) 63. 18) 36. 19) Yes. 20) Yes. 21) 21, 28. 22) Consecutive positive integers. 23) Example rows: 8, 1, 6; 3, 5, 7; 4, 9, 2. 24) 5. 25) 4 only. 26) 4. 27) 0, 4, 8. 28) 1001. 30) 11. 31) 36, 49. 33) Yes. 34) 74.