परमाणु ऊर्जा शिक्षण संस्था
Atomic Energy Education Society
उत्तर कुंजी / Answer Key (2025-26)

कक्षा/Class: VII　　**विषय/Subject: Mathematics**　　**माह/Month: August**　　**अंक/Marks: 40**
दिया गया पाठ्यक्रम/Portion covered: Chapter 06

1.

   (c) Diagonal cross

   Explanation: Diagonal cross

2. **(a)** 64

   Explanation:
   64

3.

   (b) Even

   Explanation:
   Even

4. **(a) 2**

   Explanation:
   2

5. **(a)** It is divisible by 9

   Explanation:
   It is divisible by 9

6.

   (c) 19

   Explanation:
   19

7.

   (c) 48

   Explanation:
   48

8.

   (b) All of these

   Explanation:
   All of these

9.

   (d) 45

   Explanation:
   45

10.

   (b) Population growth

   Explanation:
   Population growth

Section B

11.

   (b) False

   Explanation:

   False

12.

   (b) False

   Explanation:

   False

13. 4

14. 0, 1, 1, 2, 3, 5, 8……

15. In the first 50 natural numbers, the digits 1 to 5 each occur frequently, but number 1 occurs in every ten numbers as tens digit and units digit. By counting frequency, digit 1 is most frequent. Sum of all occurrences of digit 1 in numbers 1 to 50 is:

$1 + 10 + 11 + 12 + ... + 19 + 21 + 31 + 41$ = Sum of all numbers with 1 in tens or units place. Calculating exact sum:

Tens place 1: 10 to 19 $\rightarrow$ sum = (10+19)/2 * 10 = 145

Units place 1: 1, 21, 31, 41 $\rightarrow$ sum = 1 + 21 + 31 + 41 = 94

Total sum = 145 + 94 = 239

So, digit 1 occurs most frequently and the sum is 239.

16. We are asked to find the digit in the units place of:

   $7 \times 3 \times 9$

Multiply the numbers step by step.

First,

   $7 \times 3 = 21$

Now,

   $21 \times 9 = 189$

Look at the units digit of the final product.

The number 189 has 9 in the units place.

So, the digit in the units place is: 9

Understanding the Pattern:

To find the units digit of any product quickly, follow these steps:

  1. Ignore all other digits except the units digit of each number.

    For example, for $7 \times 3 \times 9$:

    - Units digit of 7 is 7

    - Units digit of 3 is 3

    - Units digit of 9 is 9

  2. Multiply the units digits only:

   $7 \times 3 = 21 \rightarrow$ units digit is 1

   $1 \times 9 = 9$

So, the units digit of the full product is also 9.

This pattern helps save time in large multiplications where only the last digit is needed.

<div align="center">**Section C**</div>

17. Given: Multiply 12×14

We need to find the digit in the tens place of the product.

   Multiply the numbers

$12 \times 14 = 168$

   Identify the tens place

In the number 168,

    ⌂ The ones digit is 8 ⌂

    The tens digit is 6

    ⌂ The hundreds digit is 1 The

digit in the tens place is 6.

Explanation:

To find the tens digit, we look at the second digit from the right.

In 168, counting from the right:

    ⌂ 1st digit: 8 (ones place) ⌂

     2nd digit: 6 (tens place)

Important in real life:

Knowing place values helps in:

Money: ₹168 means 6 tens = ₹60

Packing: 6 full boxes of 10 items each

Measurements: Helps in reading rulers, meters, etc.

It is useful in banking, shopping, budgeting, and calculations in all fields.

18. **The Fibonacci sequence is a special pattern where each term is found by adding the two previous terms.**

    The sequence starts from 0 and 1, like this:

    0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

    a. **Find the 10th term in the Fibonacci sequence:**

    We count the terms:

    1st term = 0

    2nd term = 1

    3rd term = 1

    4th term = 2 5th

    term = 3 6th

    term = 5 7th

    term = 8 8th

    term = 13 9th

    term = 21 **10th**

    term = 34

    So, the **10th term is 34**.

    b. **Calculate the sum of the first 10 Fibonacci numbers:**

    Add the first 10 terms:

    $0 + 1 + 1 + 2 + 3 + 5 + 8 + 13 + 21 + 34 = \textbf{88}$

19. To Prove: The sum of any two odd numbers is even.

    Algebraic Proof:

    Let the two odd numbers be:

    1st odd number = $2m + 1$

    2nd odd number = $2n + 1$

    (where m and n are whole numbers)

    Sum = $(2m + 1) + (2n + 1)$

    $= 2m + 2n + 2$

    $= 2(m + n + 1)$

    Since the result is divisible by 2, the sum is even.

Section D

20. Units place 7 appears in: 7, 17, 27, 37, 47, 57, 67, 77, 87, 97 $\rightarrow$ 10 times

    Tens place 7 appears in: 70, 71, 72, 73, 74, 75, 76, 77, 78, 79 $\rightarrow$ 10 times

    Total numbers containing 7 = 19 (since 77 counted twice)

    Sum of units place 7: $7 + 17 + 27 + 37 + 47 + 57 + 67 + 77 + 87 + 97 = 517$

    Sum of tens place 7 excluding 77: $70 + 71 + 72 + 73 + 74 + 75 + 76 + 78 + 79 = 658$

    Adding 77 once more: 77

    Total sum = $517 + 658 + 77 = 1252$

Section E

21. a. 2 + 4 + 3 = 9

    b. Yes, it ends in 5.

    c. 1 + 8 + 0 = 9

    → divisible by 3 and 9

    Ends in 0

    → divisible by 5 and 10

    Even → divisible by 2 → divisible by 6 (also divisible by 3)

    So, 180 is divisible by all.

    OR

    Sum = 9 → divisible by 3 and 9 → 243 passes both rules.

22. a. 45

    b. Magic square

    c. Total sum = 1 + 2 + ... + 9 = 45

    A 3 × 3 square has 3 rows.

    So, sum of each row = 45 ÷ 3 = 15

    OR

    If any number is repeated or missing, the total will not be 45.

    Also, the equal sum in each row, column, and diagonal (which is the magic property) will not hold. So, all numbers from 1 to 9 must be used once to maintain the balance and pattern of a magic square.