* **Choose The Right Answer From The Given Options.** [22]

1. What is the largest number that can be formed using the digits 6382?

(A) 8632 (B) 8362 (C) 8623 (D) 8236

**Ans. :** A. 8632

Explanation:

To form the largest number, arrange the digits in descending order. The largest number formed by 6382 is 8632.

Hence correct answer is option (a).

2. How many times does the digit '7' appear when writing all the numbers from 1 to 100?

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

**Ans. :** C. 20

Explanation:

The digit '7' appears in the 7th, 17th, 27th, 37th, 47th, 57th, 67th, 70-79 (10 times), and 87th, 97th, totaling 20 times.

Hence correct answer is option (c).

3. What is the smallest'4-digit number?

(A) 1000 (B) 1001 (C) 1100 (D) 1010

**Ans. :** A. 1000

Explanation:

The smallest 4-digit number is 1000. Hence correct answer is option (a).

4. The largest 4-digit number, using any one digit twice, from digits 5, 9, 2 and 6 is

(A) 9652 (B) 9562 (C) 9659 (D) 9965

**Ans. :** D. 9965

Explanation:

Using 9 as twice from 5, 9, 2 and 6, then the number is 9965.

Hence correct answer is option (d).

5. The largest 5-digit number having only three different digits is

(A) 98978 (B) 99897 (C) 99987 (D) 98799

**Ans. :** C. 99987

Explanation:

In the given options there are three numbers used 9, 8 and 7. To get the largest of 5-digit we have to arrange the numbers in descending order. Then, from the given options 99987 is the largest of 5-digit number. Hence correct answer is option (c).

6. The total number of 4-digit numbers is

(A) 8999 (B) 9000 (C) 8000 (D) 9999

**Ans. :** B. 9000

Explanation:

We know that the smallest four-digit number = 1,000. Largest four-digit number = 9,999. So the total number of four-digit numbers = [9,999 – 1,000] + 1 = 9,000.

Hence correct answer is option (b).

7. What is the Kaprekar constant for 4-digit numbers?

(A) 495 (B) 6174 (C) 8127 (D) 8372

**Ans. :** B. 6174

Explanation:

The Kaprekar constant for 4-digit numbers is 6174.

Hence correct answer is option (b).

8. Which of the following is the correct sum of digits for the number 176?

(A) 12 (B) 14 (C) 16 (D) 17

**Ans. :** B. 14

Explanation:

The sum of the digits of 176 is 1 + 7 + 6 = 14.

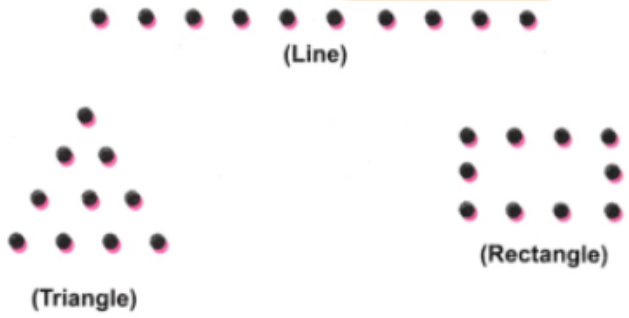
Hence correct answer is option (b).

9. By using dot (.) patterns, which of the following numbers can be arranged in all the three ways namely a line, a triangle and a rectangle?

(A) 9 (B) 10 (C) 11 (D) 12

**Ans. :** B. 10

Explanation:




10. Which of the following numbers is a supercell in the grid [45, 78, 92, 31, 60]?

(A) 45 (B) 78 (C) 92 (D) 60

**Ans. :** C. 92

Explanation:

A supercell is a number in a grid that is larger than all of its neighboring numbers. In the given grid, 92 is greater than 78 (to its left) and 31 (to its right), making it a supercell.

Hence correct answer is option (c).

11. What is the correct order of placing the numbers 2180, 9950, 3050 on a number line?

(A) 2180, 3050, 9950 (B) 3050, 2180, 9950 (C) 9950, 3050, 2180 (D) 2180, 9950, 3050

**Ans. :** A. 2180, 3050, 9950

Explanation:

The numbers 2180, 9950 and 3050 should be placed in ascending order on the number line as 2180, 3050, and 9950.

Hence correct answer is option (a).

12. The supercell in the given table is

| | | | | | |
|---|---|---|---|---|---|
| 34 | 94 | 86 | 56 | 43 | 20 |

(A) 86 (B) 43 (C) 94 (D) 56

**Ans. :** C. 94

13. What is the sum of the smallest two-digit number and the largest one-digit number?

(A) 19 (B) 20 (C) 21 (D) 10

**Ans. :** A. 19

14. Which of the following number is a multiple of 6?

(A) 24 (B) 32 (C) 45 (D) 53

**Ans. :** A. 24

15. If you subtract the smallest prime number from 15, What is the result?

(A) 12 (B) 13 (C) 14 (D) 10

**Ans. :** B. 13

16. What is the result of multiplying the largest single-digit number by 3?

(A) 18 (B) 21 (C) 27 (D) 30

**Ans. :** C. 27

17. What is the next number in the sequence

2, 4, 8,16, ..... ?

(A) 18 (B) 32 (C) 24 (D) 34

**Ans. :** B. 32

18. Which of the following numbers is both a multiple of 7 and an even number?

(A) 14 (B) 21 (C) 35 (D) 49

**Ans. :** A. 14

19. In the number line pattern, if you are moving from 5 to 15 and then from 15 to 25, what will be the number after moving from 25 with the same pattern?

(A) 30 (B) 35 (C) 40 (D) 45

**Ans. :** B. 35

20. Which of the following is a palindromic number?

(A) 848 (B) 123 (C) 401 (D) 236

**Ans. :** A. 848

21. Which of the following is a Kaprekar constant?

(A) 4176 (B) 7614 (C) 6174 (D) 1476

**Ans. :** C. 6174

22. Which of the following clock timing forms a palindrome?

(A) 10:01 (B) 11:21 (C) 12:51 (D) 10:22

**Ans. :** A. 10:01

*** a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.** [3]

23. Assertion (A) The number 6174 is known as Kaprekar's constant.
Reason (R) Kaprekar's constant is attained through specific iterative process involving subtraction and rearrangement of digits.

(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.

**Ans. :** A. Both A and R are true and R is the correct explanation of A.

24. Assertion (A) The number 12345 is palindrome.
Reason (R) A number is called palindrome if it reads the same forwards and backwards.

(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.

**Ans. :** D. A is false but R is true.

25. Assertion (A) In the pattern 2, 4, 6, 8,10, each number is 2 more than the previous number.
Reason (R) This pattern represents an arithmetic sequence where the common difference is constant.

(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.

**Ans. :** A.Both A and R are true and R is the correct explanation of A.

*** State Whether The Following Sentences Are True Or False.** [12]

26. The largest if-digit telephone number that can be formed by using digits 5, 3, .4, 7, 0, 8 only once is 875403.

**Ans. :** False
The largest six-digit telephone number that can be formed by using digits 5,3,4,7,0,8 only once is 875430.

27. The largest 4-digit number formed by the digits 6, 7, 0, 9 using each digit only once is 9760.

**Ans. :** True

28. The numbers 4578, 4587, 5478, 5487 are in descending order.

**Ans. :** False
In the question, the arrangement of the numbers in ascending order. Descending order of the given number = 5487, 5478, 4587,4578.

29. 8439 is an odd number.

**Ans. :** True

30. 2787 is an even number.

**Ans. :** False

31. The Kaprekar constant is 7164.

**Ans. :** False

32. The number 1221 is a palindrome number.

**Ans. :** True

33. The difference of 98500 and 26580 gives a four digit number.

**Ans. :** False

34. The sum of 56560 and 3228 gives a five digit number.

**Ans. :** True

35. If you reverse the digits of the number 6776, you get 6776.

**Ans. :** True

36. Total number of four digit numbers are 900.

**Ans. :** False

37. The sum of digits of 672 and 564 is different.

**Ans. :** False

*** Fill In The Blanks With Correct Alternative.** **[15]**

38. Smallest 4-digit number formed by the digits 3, 0, 4,1 is _____

**Ans. :** 1034

39. Greatest 4-digit number formed by the digits 0, 8,1, 9 is _____

**Ans. :** 9810

40. I am the greatest number made from digit 7,1, 8, 3.

**Ans. :** 8731

41. I am the smallest number made from digit 3, 9, 0, 1. _____

**Ans. :** 1039

42. Smallest 4-digit even number is _____

**Ans. :** 1000

43. Largest 4-digit even number is _____

**Ans. :** 9998

44. In the number 4321, the digit 3 is _____ in the place.

**Ans. :** hundreds

45. The magic number of Kaprekar is _____ .

**Ans. :** 6174

46. Total number of two-digit numbers are _____ .

**Ans. :** 90

47. The digits of number 950 adds upto _____ .

**Ans. :** 14

48. The number 323 is a _____ number.

**Ans. :** Palindrome

49. Total number of five digit numbers are _____ .

**Ans. :** 90000

50. The difference between 8000 and 2345 is _____

**Ans. :** 5655

51. When you add 1000 to 4567, the result is _____

**Ans. :** 5567

52. If you reverse the digits of the number 2332, then you still get _____ .

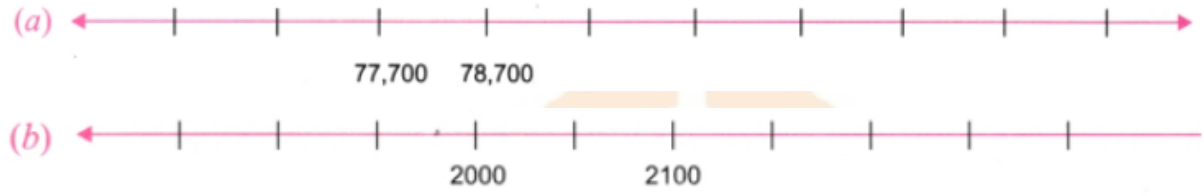
**Ans. :** 2332

*** Answer The Following Questions In One Sentence.[1 Marks Each]** **[22]**

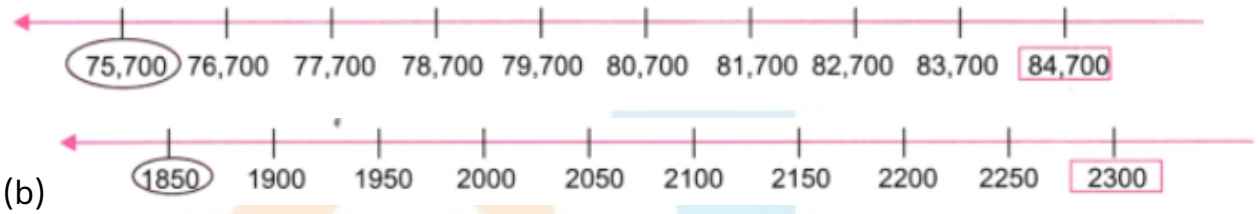
53. Given the single line grid below, identify which cells are supercells.
253 421 356 789 345 678 234

**Ans. :** 421 is a supercell because it is larger than 253 and 356.
789 is a supercell because it is larger than 356 and 345.
678 is a supercell because it is larger than 345 and 234.

54. Identify the numbers marked on the number lines below, and label the missing numbers. Put a circle around the smallest number and a box around the largest number in each of the sequences below.




**Ans. :** (a)




(b)




55. Can you use Kaprekar's process with numbers that are not 4-digit numbers, such as 3-digit numbers? Why or why not?

**Ans. :** Yes, the Kaprekar process specifically works with 4-digit numbers and 3 digit numbers only. If you use a 5-digit or above number, the steps and the constant will not be the same. The process is designed to reach 6174 with 4-digit numbers and 495 with 3 digit numbers.

56. What if you start with the number 2222? What do you notice?

**Ans. :** If you start with 2222, all the digits are the same. Subtracting the number from itself gives 2222 – 2222 = 0. Since Kaprekar's process requires distinct digits, it cannot reach 6174 from this number.

57. On a 12-hour digital clock, what is the smallest interval between two times that are palindromic (can be read forwards and backwards as the same number)?

**Ans. :** The interval is two minutes, between the times of 9:59 and 10:01.

58. Provide a list of all palindromic times in a 12-hour cycle.

**Ans. :** • 01:10
• 02:20
• 03:30
• 04:40
• 05:50
• 10:01

- 11:11
- 12:21

59. What are some palindromic dates that occurred in the 21st century?

**Ans. :** 02/02/2020, 12/02/2021, 22/02/2022

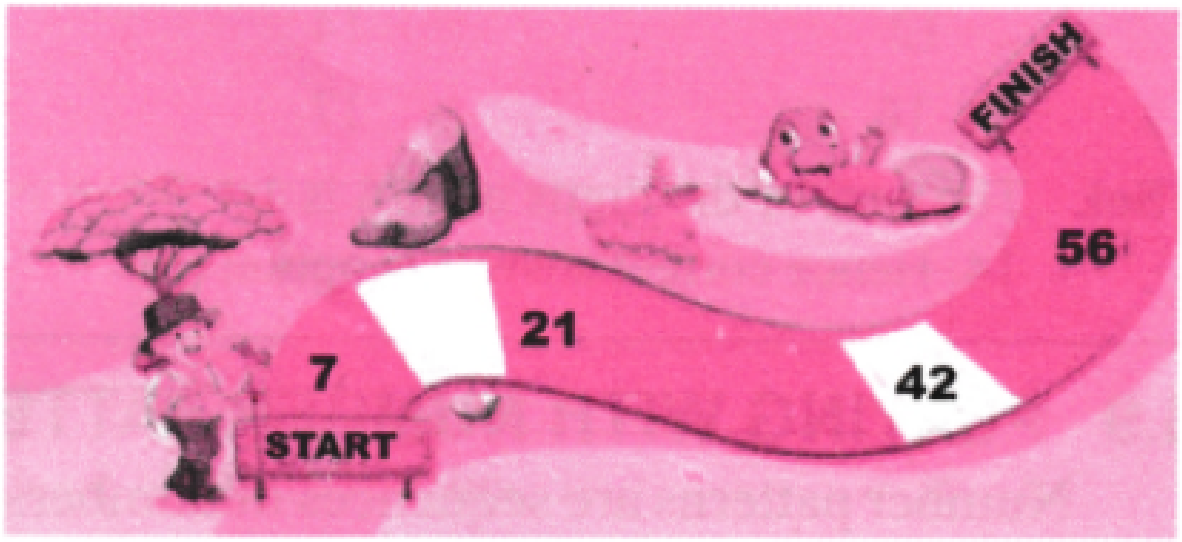
60. Solve 87 + 46 mentally.

**Ans. :** Break it down in mind 87 + 40 = 127.
Then add 6: 127 + 6 = 133

61. Solve 76 - 34 mentally.

**Ans. :** Subtract 30 from 76 in mind 76 - 30 = 46.
Subtract the remaining 4: 46 - 4 = 42

62. Fill in the missing numbers in the track by understanding the number pattern.




**Ans. :** 7, 14, 21, 28, 35, 42, 49, 56, 63

63. Start with the number 12. Follow the Collatz rules to find out how many steps it takes to reach 1.

**Ans. :** Step to Solve:
1. 12 is even, so divide by 2→ 6
2. 6 is even, so divide by 2 → 3
3. 3 is odd, so multiply by 3 and add 1 → 10
4. 10 is even, so divide by 2 → 5
5. 5 is odd, so multiply by 3 and add 1 → 16
6. 16 is even, so divide by 2→ 8
7. 8 is even, so divide by 2 → 4
8. 4 is even, so divide by 2 → 2
9. 2 is even, so divide by 2 → 1

It takes 9 steps to reach 1.

64. Name the smallest 4-digit numbers with different digits.

**Ans. :** The smallest 4-digit number with different digits is 1023.
This number satisfies the given conditions of having four digits and each digit being unique.

65. Form the largest and smallest 4-digit numbers using each of digits 7, 1, 0, 5 only once.

**Ans. :** The largest 4-digit number = 7510.
Smallest 4-digit number = 1057.
Therefore, the largest and smallest 4-digit numbers using each of digits 7, 1, 0, 5 only once is 7510 and 1057.

66. What is the largest 5-digit number with unique digits?

**Ans. :** 98765 is the largest 5-digit number with unique digits.

67. What happens if you pick any 4-digit number (where not all digits are the same), rearrange the digits to make the largest and smallest numbers possible, subtract the smaller number from the larger one, and repeat the*process? What number do you always end up with?

**Ans. :** You will always end up with 6174 which is Kaprekar constant.

68. Why is it important that not all the digits of the 4-digit number are the same while calculating Kaprekar constant?

**Ans. :** If all the digits are the same (like 1111 or 2222), subtracting the number from itself will always give you 0, and you can't reach 6174.

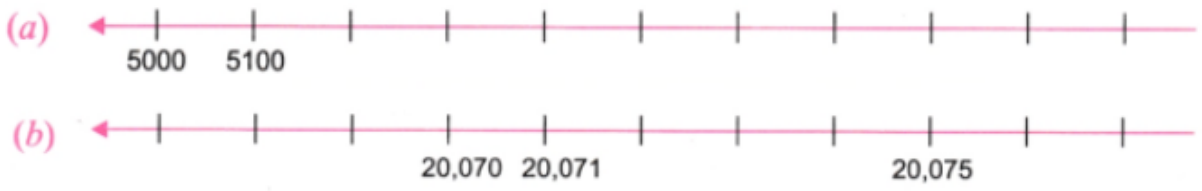
69. Create a grid using numbers from 1 to 7 so that no cell is a supercell.

**Ans. :** In this arrangement, no cell is larger than its immediate neighbors: 1 2 3 4 5 6 7.

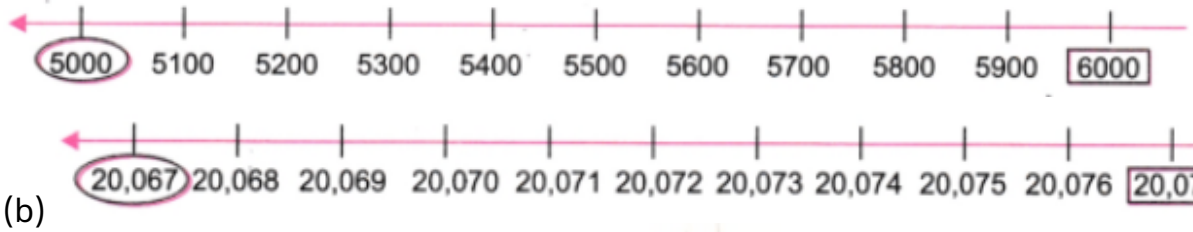
70. What is the difference between the greatest and the smallest 4-digit number that can be formed using the digits 8, 0, 7, 9?

**Ans. :** Greatest number = 9870
Smallest number = 7809
Difference = 9870 – 7809
= 2061

71. Identify the numbers marked on the number lines below, and label the missing numbers. Put a circle around the smallest number and a box around the largest number in each of the sequences below.



**Ans. :** (a)




(b)




72. What is the smallest 2-digit number whose digit sum is 9?

**Ans. :** 18

73. Is the number 45654 a palindrome? Explain why or why not.

**Ans. :** 45654 is a palindrome because it reads the same backward and forward.

74. Calculate the digit sums for the numbers in the series 12, 23, 34, 45, 56. Look for any patterns in the results.

**Ans. :** • 12:1 + 2 = 3
• 23:2 + 3 = 5
• 34:3 + 4 = 7
• 45:4 + 5 = 9
• 56:5 + 6 = 11
Series shows increasing odd numbers.

*** Match the following.** **[4]**

75.

| Column A | Column B |
|---|---|
| (i) Palindrome number | (a) 97982 |
| (ii) Kaprekar constant | (b) 8532 |
| (iii) five digit even number | (c) 99983 |
| (iv) five digit odd number | (d) 6174 |
| | (e) 4224 |

**Ans. :**

| Column A | Column B |
|---|---|
| (i) Palindrome number | (e) 4224 |
| (ii) Kaprekar constant | (d) 6174 |
| (iii) five digit even number | (a) 97982 |
| (iv) five digit odd number | (c) 99983 |

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