31- If 6*x*43 – 46*y*9 = 1904, which of the following should come in place of *x*=?

- **A.**4
- **B.**6
- **C.**9
- **D.**Cannot be determined
- **E.**None of these

Answer & Explanation

Answer - **E** (None of these)
Explanation - 6*x*43 - 46*y*9 = 1904

6*x*43 = 1904 + 46*y*9

[1 + *y* = 4 *y* = 3]

6*x*43 = 1904 + 4639 = 6543

[*y* = 3]

x = 5

32- How many of the following numbers are divisible by 3 but not by 9?
2133, 2343, 3474, 4131, 5286, 5340, 6336, 7347, 8115, 9276

- **A.**5
- **B.**6
- **C.**7
- **D.**8
- **E.**None of these

Answer & Explanation

Answer - **B** (6)
Explanation - Taking the sum of the digits, we have :

$S_1 = 9$, $S_2 = 12$, $S_3 = 18$, $S_4 = 9$, $S_5 = 21$, $S_6 = 12$, $S_7 = 18$, $S_8 = 21$, $S_9 = 15$, $S_{10} = 24$.

Clearly, S_2, S_3, S_6, S_8, S_9, S_{10} are all divisible by 3 but not by 9.

So, the number of required numbers = 6

33- The difference between the squares of two consecutive odd integers is always divisible by:

- **A.**3
- **B.**6
- **C.**7
- **D.**8
- **E.**None of these

Answer & Explanation

Answer - **D** (8)

Explanation - Let the two consecutive odd integers be $(2x + 1)$ and $(2x + 3)$

Then, $(2x + 3)^2 - (2x + 1)^2 = (2x + 3 + 2x + 1)(2x + 3 - 2x - 1) = (4x + 4) \times 2$

$= 8(x + 1)$, which is always divisible by 8

34- The smallest value of n, for which $2n + 1$ is not a prime number, is:

- **A.**3
- **B.**4
- **C.**5
- **D.**6
- **E.**None of these

Answer & Explanation

Answer - **B** (4)

Explanation - $(2 \times 1 + 1) = 3$, $(2 \times 2 + 1) = 5$, $(2 \times 3 + 1) = 7$. $(2 \times 4 + 1) = 9$

which is not prime.

n = 4

35- What largest number of five digits is divisible by 99?

- **A.**99909
- **B.**99981
- **C.**99990
- **D.**99999
- **E.**None of these

Answer & Explanation

Answer - **C** (99990)

Explanation - Largest number of 5 digits = 99999. On dividing 99999 by 99, we get 9 as remainder.

Required number = (99999 - 9) = 99990

36- The value of 112×5^4 is:

- **A.**6700
- **B.**70000
- **C.**76500
- **D.**77200
- **E.**None of these

Answer & Explanation

Answer - **B** (70000)

Explanation -

$$(112 \times 5^4) = \frac{1120000}{2^4} = \frac{1120000}{16} = 70000.$$

37- If *x* and *y* are the two digits of the number 653*xy* such that this number is divisible by 80, then*x* + *y* is equal to:

- **A.**2
- **B.**3
- **C.**4
- **D.**6
- **E.**None of these

Answer & Explanation

Answer - **A** (2)

Explanation - Since 653*xy* is divisible by 5 as well as 2, so *y* = 0.

Now, 653*x*0 must be divisible by 8.

So, 3*x*0 must be divisible by 8. This happens when *x* = 2

x + y = (2 + 0) = 2

38- What least number must be subtracted from 13294 so that the remainder is exactly divisible by 97?

- **A.**1
- **B.**3
- **C.**4
- **D.**5
- **E.**None of these

Answer & Explanation

Answer - **D** (5)

Explanation - On dividing 13294 by 97, we get remainder = 5.

Required number to be subtracted = 5

39- If *n* is a negative number, then which of the following is the least?

- **A.**0
- **B.**- n
- **C.**2n
- **D.**4n
- **E.**None of these

Answer & Explanation

Answer - **C** (2n)

Explanation - $n < 0$ $2n < 0$, $-n > 0$ and $n^2 > 0$

Least of 2n, 0, -n and n^2 is 2n

40- The least number by which 72 must be multiplied in order to produce a multiple of 112, is:

- **A.**6
- **B.**12
- **C.**14
- **D.**18
- **E.**None of these

Answer & Explanation

Answer - **C** (14)

Explanation - Required number is divisible by 72 as well as by 112, If it is divisible by their L.C.M, which is 1008.

Now, 1008 when divided by 72, Gives quotient = 14.

Required number = 14