

Answer: Option A

Explanation:

$(x^n - 1)$ will be divisible by $(x + 1)$ only when n is even.

$(49^{15} - 1) = \{(7^2)^{15} - 1\} = (7^{30} - 1)$, which is divisible by $(7 + 1)$, i.e., 8.

56. $9 + \frac{3}{4} + 7 + \frac{2}{17} + \left(9 + \frac{1}{15}\right) = ?$

A. $7 + \frac{719}{1020}$

B. $9 + \frac{817}{1020}$

C. $9 + \frac{719}{1020}$

D. $7 + \frac{817}{1020}$

E. None of these

Answer: Option D

Explanation:

$$\begin{aligned} \text{Given sum} &= 9 + \frac{3}{4} + 7 + \frac{2}{17} + \left(9 + \frac{1}{15}\right) \\ &= (9 + 7 - 9) + \left(\frac{3}{4} + \frac{2}{17} + \frac{1}{15}\right) \\ &= 7 + \frac{765 + 120 - 68}{1020} \\ &= 7 + \frac{817}{1020} \end{aligned}$$

57. $\left(1 - \frac{1}{n}\right) + \left(1 - \frac{2}{n}\right) + \left(1 - \frac{3}{n}\right) + \dots$ up to n terms = ?

A. $\frac{1}{2}n$

B. $\frac{1}{2}(n - 1)$

C. $\frac{1}{2}n(n - 1)$

D. None of these

Answer: Option B

Explanation:

$$\begin{aligned} \text{Given sum} &= (1 + 1 + 1 + \dots \text{ to } n \text{ terms}) - \left(\frac{1}{n} + \frac{2}{n} + \frac{3}{n} + \dots \text{ to } n \text{ terms}\right) \\ &= n - \frac{1}{2} \left(\frac{1+n}{n}\right) [\text{Ref: } n \text{th terms} = (n/n) = 1] \\ &= n - \frac{n+1}{2} \\ &= \frac{1}{2}(n - 1) \end{aligned}$$

58. On dividing 2272 as well as 875 by 3-digit number N , we get the same remainder. The sum of the digits of N is:

A. 10

B. 11

C. 12

D. 13

Answer: Option A

Explanation:

Clearly, $(2272 - 875) = 1397$, is exactly divisible by N .

Now, $1397 = 11 \times 127$

∴ The required 3-digit number is 127, the sum of whose digits is 10.

59. A boy multiplied 987 by a certain number and obtained 559981 as his answer. If in the answer both 98 are wrong and the other digits are correct, then the correct answer would be:

A. 553681

B. 555181

C. 555681

D. 556581

Answer: Option C

Explanation:

$$987 = 3 \times 7 \times 47$$

So, the required number must be divisible by each one of 3, 7, 47

553681 \rightarrow (Sum of digits = 28, not divisible by 3)

555181 \rightarrow (Sum of digits = 25, not divisible by 3)

555681 is divisible by 3, 7, 47.

60. How many prime numbers are less than 50 ?

A. 16

B. 15

C. 14

D. 18

Answer: Option B

Explanation:

Prime numbers less than 50 are:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

Their number is 15

Therefore, the required number = 29.

61. When a number is divided by 13, the remainder is 11.

When the same number is divided by 17, then remainder is 9. What is the number ?

A. 339

B. 349

C. 369

D. Data inadequate

Answer: Option B

Explanation:

$$x = 13p + 11 \text{ and } x = 17q + 9$$

$$\therefore 13p + 11 = 17q + 9$$

$$\Rightarrow 17q - 13p = 2$$

$$\Rightarrow q = \frac{2 + 13p}{17}$$

The least value of p for which $q = \frac{2 + 13p}{17}$ is a whole number is $p = 26$

$$\therefore x = (13 \times 26 + 11)$$

$$= (338 + 11)$$

$$= 349$$

62. $(51 + 52 + 53 + \dots + 100) = ?$

A. 2525

B. 2975

C. 3225

D. 3775

Answer: Option D

Explanation:

$$S_n = (1 + 2 + 3 + \dots + 50 + 51 + 52 + \dots + 100) - (1 + 2 + 3 + \dots + 50)$$

$$= \frac{100}{2} \times (1 + 100) - \frac{50}{2} \times (1 + 50)$$

$$= (50 \times 101) - (25 \times 51)$$

$$= (5050 - 1275)$$

$$= 3775.$$

$$\begin{aligned}
 &= (500^2) + (1)^2 + (2 \times 500 \times 1) \\
 &= 250000 + 1 + 1000 \\
 &= 251001
 \end{aligned}$$

72. $(35423 + 7164 + 41720) - (317 \times 89) = ?$

- A. 28213 B. 84307
C. 50694 D. 56094
E. None of these

Answer: Option D

Explanation:

$$\begin{array}{r}
 35423 \quad 317 \times 89 = 317 \times (90 - 1) \\
 + 7164 \quad = (317 \times 90 - 317) \\
 + 41720 \quad = (28530 - 317) \\
 \text{-----} \\
 84307 \\
 - 28213 \\
 \text{-----} \\
 56094 \\
 \text{-----}
 \end{array}$$

73. $(x^n - a^n)$ is completely divisible by $(x - a)$, when

- A. n is any natural number B. n is an even natural number
C. n is an odd natural number D. n is prime

Answer: Option A

Explanation:

For every natural number n , $(x^n - a^n)$ is completely divisible by $(x - a)$.

74. Which one of the following numbers is completely divisible by 45?

- A. 181560 B. 331145
C. 202860 D. 2033555
E. None of these

Answer: Option C

Explanation:

$45 = 5 \times 9$, where 5 and 9 are co-primes.
 Unit digit must be 0 or 5 and sum of digits must be divisible by 9.
 Among given numbers, such number is 202860.

75. Which of the following numbers will completely divide $(3^{25} + 3^{26} + 3^{27} + 3^{28})$?

- A. 11 B. 16
C. 25 D. 30

Answer: Option D

Explanation:

$$\begin{aligned}
 (3^{25} + 3^{26} + 3^{27} + 3^{28}) &= 3^{25} \times (1 + 3 + 3^2 + 3^3) = 3^{25} \times 40 \\
 &= 3^{24} \times 3 \times 4 \times 10 \\
 &= (3^{24} \times 4 \times 30), \text{ which is divisible by } 30.
 \end{aligned}$$

76. A number when divided by 6 leaves a remainder 3. When the square of the number is divided by 6, the remainder is:

- A. 0 B. 1
C. 2 D. 3

Answer: Option D

Explanation:

Let $x = 6q + 3$.

Then, $x^2 = (6q + 3)^2$

$$= 36q^2 + 36q + 9$$

$$= 6(6q^2 + 6q + 1) + 3$$

Thus, when x^2 is divided by 6, then remainder = 3.

77. The sum of the two numbers is 12 and their product is 35. What is the sum of the reciprocals of these numbers?

- A. $\frac{12}{35}$ B. $\frac{1}{35}$
C. $\frac{35}{8}$ D. $\frac{7}{32}$

Answer: Option A

Explanation:

Let the numbers be a and b . Then, $a + b = 12$ and $ab = 35$.

$$\therefore \frac{a+b}{ab} = \frac{12}{35} \Rightarrow \left(\frac{1}{b} + \frac{1}{a} \right) = \frac{12}{35}$$

$$\therefore \text{Sum of reciprocals of given numbers} = \frac{12}{35}$$

78. What will be remainder when 17^{200} is divided by 18?

- A. 17 B. 16
C. 1 D. 2

Answer: Option C

Explanation:

When n is even, $(x^n - a^n)$ is completely divisible by $(x + a)$

$(17^{200} - 1^{200})$ is completely divisible by $(17 + 1)$, i.e., 18.

$\Rightarrow (17^{200} - 1)$ is completely divisible by 18.

\Rightarrow On dividing 17^{200} by 18, we get 1 as remainder.

79. If $1400 \times x = 1050$. Then, $x = ?$

- A. $\frac{1}{4}$ B. $\frac{3}{5}$
C. $\frac{2}{3}$ D. $\frac{3}{4}$
E. None of these

Answer: Option D

Explanation:

$$1400 \times x = 1050 \Rightarrow x = \frac{1050}{1400} = \frac{3}{4}$$

80. $(1^2 + 2^2 + 3^2 + \dots + 10^2) = ?$

- A. 330 B. 345
C. 365 D. 385

Answer: Option D

Explanation:

We know that $(1^2 + 2^2 + 3^2 + \dots + n^2) = \frac{1}{6}n(n+1)(2n+1)$

$$\text{Putting } n = 10, \text{ required sum} = \left(\frac{1}{6} \times 10 \times 11 \times 21 \right) = 385$$

Explanation:

Unit digit in $7^{95} = \text{Unit digit in } [(7^4)^{23} \times 7^3]$
 = Unit digit in $[(\text{Unit digit in } (2401))^{23} \times (343)]$
 = Unit digit in $(1^{23} \times 343)$
 = Unit digit in (343)
 = 3
 Unit digit in $3^{58} = \text{Unit digit in } [(3^4)^{14} \times 3^2]$
 = Unit digit in $[(\text{Unit digit in } (81))^{14} \times 3^2]$
 = Unit digit in $[(1)^{14} \times 3^2]$
 = Unit digit in (1×9)
 = Unit digit in (9)
 = 9
 Unit digit in $(7^{95} - 3^{58}) = \text{Unit digit in } (343 - 9) = \text{Unit digit in } (334) = 4.$

So, Option B is the answer.

91. Which one of the following is a prime number ?

- A.161 B.221
 C.373 D.437
 E.None of these

Answer: Option C

Explanation:

$437 > 22$
 All prime numbers less than 22 are : 2, 3, 5, 7, 11, 13, 17, 19.
 161 is divisible by 7, and 221 is divisible by 13.
 373 is not divisible by any of the above prime numbers.
 ∴ 373 is prime.

92. The smallest 6 digit number exactly divisible by 111 is:

- A.111111 B.110011
 C.100011 D.110101
 E.None of these

Answer: Option C

Explanation:

The smallest 6-digit number 100000.

$$\begin{array}{r} 111) 100000 \text{ (900)} \\ \underline{999} \\ \text{-----} \\ \underline{100} \\ \text{---} \end{array}$$

$$\text{Required number} = 100000 + (111 - 100) = 100111.$$

93. The largest 5 digit number exactly divisible by 91 is:

- A.99921 B.99918
 C.99981 D.99971
 E.None of these

Answer: Option B

Explanation:

Largest 5-digit number = 99999

$$\begin{array}{r} 91) 99999 \text{ (1098)} \\ \underline{91} \\ \text{---} \\ \underline{899} \\ \text{---} \\ \underline{819} \\ \text{---} \\ \underline{809} \\ \text{---} \\ \underline{728} \\ \text{---} \\ \underline{81} \\ \text{---} \end{array}$$

$$\begin{aligned} \text{Required number} &= (99999 - 81) \\ &= 99918. \end{aligned}$$

94. $768 \times 768 \times 768 + 232 \times 232 \times 232 = ?$
 $768 \times 768 - 768 \times 232 + 232 \times 232 = ?$
 A.1000 B.536
 C.500 D.268
 E.None of these

Answer: Option A

Explanation:

$$\begin{aligned} \text{Given Exp. } & (a^3 + b^3) = (a + b)(a^2 - ab + b^2) \\ & = (a + b) = (768 + 232) = 1000 \end{aligned}$$

95. The smallest 5 digit number exactly divisible by 41 is:

- A.1004 B.10004
 C.10045 D.10025
 E.None of these

Answer: Option B

Explanation:

The smallest 5-digit number = 10000.

$$\begin{array}{r} 41) 10000 \text{ (243)} \\ \underline{82} \\ \text{---} \\ \underline{180} \\ \text{---} \\ \underline{164} \\ \text{---} \\ \underline{160} \\ \text{---} \\ \underline{123} \\ \text{---} \\ \underline{37} \\ \text{---} \end{array}$$

$$\begin{aligned} \text{Required number} &= 10000 + (41 - 37) \\ &= 10004. \end{aligned}$$

96. How many terms are there in the G.P. 3, 6, 12, 24, ..., 384 ?

- A.8 B.9
 C.10 D.11
 E.7

Answer: Option A

Explanation:

Here $a = 3$ and $r = \frac{6}{3} = 2$. Let the number of terms be n .
 Then, $t_n = 384 \Rightarrow ar^{n-1} = 384$
 $\Rightarrow 3 \times 2^{n-1} = 384$
 $\Rightarrow 2^{n-1} = 128 = 2^7$
 $\Rightarrow n - 1 = 7$
 $\Rightarrow n = 8$
 ∴ Number of terms = 8.

97. If x and y are positive integers such that $(3x + 7y)$ is a multiple of 11, then which of the following will be divisible by 11 ?

- A. $4x + 6y$ B. $x + y + 4$
 C. $9x + 4y$ D. $4x - 9y$

Answer: Option D

Explanation:

By hit and trial, we put $x = 5$ and $y = 1$ so that $(3x + 7y) = (3 \times 5 + 7 \times 1) = 22$, which is divisible by 11.

$\therefore (4x + 6y) = (4 \times 5 + 6 \times 1) = 26$, which is not divisible by 11;

$(x + y + 4) = (5 + 1 + 4) = 10$, which is not divisible by 11;

$(9x + 4y) = (9 \times 5 + 4 \times 1) = 49$, which is not divisible by 11;

$(4x - 9y) = (4 \times 5 - 9 \times 1) = 11$, which is divisible by 11.

98. $9548 + 7314 = 8362 + (?)$

[A.](#)8230

[B.](#)8410

[C.](#)8500

[D.](#)8600

[E.](#)None of these

Answer: Option C

Explanation:

$$\begin{array}{r} 9548 \quad 16862 = 8362 + x \\ + 7314 \quad x = 16862 - 8362 \\ \hline \text{-----} \quad = 8500 \\ 16862 \\ \hline \text{-----} \end{array}$$

99. In a division sum, the remainder is 0. As student mistook the divisor by 12 instead of 21 and obtained 35 as quotient. What is the correct quotient ?

[A.](#)0

[B.](#)12

[C.](#)13

[D.](#)20

Answer: Option D

Explanation:

Number = (12×35)

Correct Quotient = $420 \div 21 = 20$

100. $2 + 2^2 + 2^3 + \dots + 2^9 = ?$

[A.](#)2044

[B.](#)1022

[C.](#)1056

[D.](#)None of these

Answer: Option B

Explanation:

This is a G.P. in which $a = 2$, $r = \frac{2^2}{2} = 2$ and $n = 9$.

$$\therefore S_n = \frac{a(r^n - 1)}{(r - 1)} = \frac{2 \times (2^9 - 1)}{(2 - 1)} = 2 \times (512 - 1) = 2 \times 511 = 1022.$$

101. The sum of even numbers between 1 and 31 is:

[A.](#)6

[B.](#)28

[C.](#)240

[D.](#)512

Answer: Option C

Explanation:

Let $S_n = (2 + 4 + 6 + \dots + 30)$. This is an A.P. in which $a = 2$, $d = 2$ and $l = 30$

Let the number of terms be n . Then,

$$a + (n - 1)d = 30$$

$$\Rightarrow 2 + (n - 1) \times 2 = 30$$

$$\Rightarrow n = 15.$$

$$\therefore S_n = \frac{n}{2}(a + l) = \frac{15}{2} \times (2 + 30) = (15 \times 16) = 240.$$

102. If the number $91876 * 2$ is completely divisible by 8,

then the smallest whole number in place of * will be:

[A.](#)1

[B.](#)2

[C.](#)3

[D.](#)4

[E.](#)None of these

Answer: Option C

Explanation:

Then number $6x2$ must be divisible by 8.

$\therefore x = 3$, as 632 is divisible 8.

103. $2056 \times 987 = ?$

[A.](#)1936372

[B.](#)2029272

[C.](#)1896172

[D.](#)1926172

[E.](#)None of these

Answer: Option B

Explanation:

$$\begin{aligned} 2056 \times 987 &= 2056 \times (1000 - 13) \\ &= 2056 \times 1000 - 2056 \times 13 \\ &= 2056000 - 26728 \\ &= 2029272. \end{aligned}$$

104. On multiplying a number by 7, the product is a number each of whose digits is 3. The smallest such number is:

[A.](#)47619

[B.](#)47719

[C.](#)48619

[D.](#)47649

Answer: Option A

Explanation:

By hit and trial, we find that

$$47619 \times 7 = 333333.$$

105. If 60% of $\frac{3}{5}$ of a number is 36, then the number is:

[A.](#)80

[B.](#)100

[C.](#)75

[D.](#)90

Answer: Option B

Explanation:

Let the number be x . Then

$$60\% \text{ of } \frac{3}{5} \text{ of } x = 36$$

$$\Rightarrow \frac{60}{100} \times \frac{3}{5} \times x = 36$$

$$\Rightarrow x = \left(\frac{36 \times 25}{9} \right) = 100$$

\therefore Required number = 100

106. If x and y are the two digits of the number $653xy$ such that this number is divisible by 80, then $x + y = ?$

[A.](#)2 or 6

[B.](#)4

[C.](#)4 or 8

[D.](#)8

[E.](#)None of these

Answer: Option A

Explanation:

$$80 = 2 \times 5 \times 8$$

Since $653xy$ is divisible by 2 and 5 both, so $y = 0$.

Now, $653x0$ is divisible by 8, so $3x0$ should be divisible by 8.

This happens when $x = 2$ or 6.

$$\therefore x + y = (2 + 0) = 2 \quad [\text{or}] \quad x + y = (6 + 0) = 6.$$

107. The difference of the squares of two consecutive odd integers is divisible by which of the following integers ?

- A.3 B.6
C.7 D.8

Answer: Option D

Explanation:

Let the two consecutive odd integers be $(2n + 1)$ and $(2n + 3)$. Then,
 $(2n + 3)^2 - (2n + 1)^2 = (2n + 3 + 2n + 1)(2n + 3 - 2n - 1)$
 $= (4n + 4) \times 2$
 $= 8(n + 1)$, which is divisible by 8.

108. What is the unit digit in $(4137)^{754}$?

- A.1 B.3
C.7 D.9

Answer: Option D

Explanation:

Unit digit in $(4137)^{754} = \text{Unit digit in } \{[(4137)^4]^{188} \times (4137)^2\}$
 $= \text{Unit digit in } \{292915317923361 \times 17114769\}$
 $= (1 \times 9) = 9$

109. $587 \times 999 = ?$

- A.586413 B.587523
C.614823 D.615173

Answer: Option A

Explanation:

$587 \times 999 = 587 \times (1000 - 1)$
 $= 587 \times 1000 - 587 \times 1$
 $= 587000 - 587$
 $= 586413$.

110. A number was divided successively in order by 4, 5 and 6. The remainders were respectively 2, 3 and 4. The number is:

- A.214 B.476
C.954 D.1908

Answer: Option A

Explanation:

$4 \mid x \quad z = 6 \times 1 + 4 = 10$

 $5 \mid y - 2 \quad y = 5 \times z + 3 = 5 \times 10 + 3 = 53$

 $6 \mid z - 3 \quad x = 4 \times y + 2 = 4 \times 53 + 2 = 214$

 $\mid 1 - 4$
 Hence, required number = 214.

111. If $(64)^2 - (36)^2 = 20 \times x$, then $x = ?$

- A.70 B.120
C.180 D.140
E.None of these

Answer: Option D

Explanation:

$20 \times x = (64 + 36)(64 - 36) = 100 \times 28$
 $\Rightarrow x = \frac{100 \times 28}{20} = 140$

112. Which one of the following can't be the square of natural number ?

- A.32761 B.81225
C.42437 D.20164
E.None of these

Answer: Option C

Explanation:

The square of a natural number never ends in 7.
 $\therefore 42437$ is not the square of a natural number.

113. $(2^2 + 4^2 + 6^2 + \dots + 20^2) = ?$

- A.770 B.1155
C.1540 D.385 x 385

Answer: Option C

Explanation:

$(2^2 + 4^2 + 6^2 + \dots + 20^2) = (1 \times 2)^2 + (2 \times 2)^2 + (2 \times 3)^2 + \dots + (2 \times 10)^2$
 $= (2^2 \times 1^2) + (2^2 \times 2^2) + (2^2 \times 3^2) + \dots + (2^2 \times 10^2)$
 $= 2^2 \times [1^2 + 2^2 + 3^2 + \dots + 10^2]$
 $\left[\text{Ref: } (1^2 + 2^2 + 3^2 + \dots + n^2) = \frac{1}{6}n(n+1)(2n+1) \right]$
 $= \left[4 \times \frac{1}{6} \times 10 \times 11 \times 21 \right]$
 $= (4 \times 5 \times 77)$
 $= 1540$.

114. $854 \times 854 \times 854 - 276 \times 276 \times 276 = ?$

- A.1130 B.578
C.565 D.1156
E.None of these

Answer: Option B

Explanation:

Given Exp. $= (a^3 - b^3) = (a - b)(a^2 + ab + b^2) = (854 - 276) \times 578$

115. $35 + 15 \times 1.5 = ?$

- A.85 B.51.5
C.57.5 D.5.25
E.None of these

Answer: Option C

Explanation:

Given Exp. $= 35 + 15 \times 1.5 = 35 + 22.5 = 57.5$

116. The sum of first 45 natural numbers is:

- A.1035 B.1280
C.2070 D.2140

Answer: Option A

Explanation:

Let $S_n = (1 + 2 + 3 + \dots + 45)$
 This is an A.P. in which $a = 1$, $d = 1$, $n = 45$ and $l = 45$
 $\therefore S_n = \frac{n}{2}(a + l) = \frac{45}{2} \times (1 + 45) = (45 \times 23) = 1035$
 Required sum = 1035.

117. $666 \div 6 \div 3 = ?$

- [A.](#)37 [B.](#)333
- [C.](#)111 [D.](#)84
- [E.](#)None of these

Answer: Option A

Explanation:

Given Exp. = $666 \times \frac{1}{6} \times \frac{1}{3} = 37$

118. The sum of all two digit numbers divisible by 5 is:

- [A.](#)1035 [B.](#)1245
- [C.](#)1230 [D.](#)945
- [E.](#)None of these

Answer: Option D

Explanation:

Required numbers are 10, 15, 20, 25, ..., 95

This is an A.P. in which $a = 10, d = 5$ and $l = 95$.

$t_n = 95 \Rightarrow a + (n - 1)d = 95$

$\Rightarrow 10 + (n - 1) \times 5 = 95$

$\Rightarrow (n - 1) \times 5 = 85$

$\Rightarrow (n - 1) = 17$

$\Rightarrow n = 18$

∴ Required Sum = $n(a + \frac{18 \times (10 + 95)}{2}) = (9 \times 210) = 945$.

119. The difference between the place values of two sevens in the numeral 69758472 is

- [A.](#)0 [B.](#)6993
- [C.](#)699930 [D.](#)None of these

Answer: Option C

Explanation:

Required difference = $(700000 - 70) = 699930$

120. On dividing a number by 68, we get 269 as quotient and 0 as remainder. On dividing the same number by 67, what will the remainder ?

- [A.](#)0 [B.](#)1
- [C.](#)2 [D.](#)3

Answer: Option B

Explanation:

Number = $269 \times 68 + 0 = 18292$

```

67) 18292 (273
   134
   ----
    489
    469
    ----
     202
     201
     ---
      1
      ---
  
```

Therefore, Required remainder = 1

121. What is the unit digit in the product $(3^{65} \times 6^{59} \times 7^{71})$?

- [A.](#)1 [B.](#)2
- [C.](#)4 [D.](#)6

Answer: Option C

Explanation:

Unit digit in $3^4 = 1 \Rightarrow$ Unit digit in $(3^4)^{16} = 1$

∴ Unit digit in $3^{65} =$ Unit digit in $[(3^4)^{16} \times 3] = (1 \times 3) = 3$

Unit digit in $6^{59} = 6$

Unit digit in $7^4 \Rightarrow$ Unit digit in $(7^4)^{17}$ is 1.

Unit digit in $7^{71} =$ Unit digit in $[(7^4)^{17} \times 7^3] = (1 \times 3) = 3$

∴ Required digit = Unit digit in $(3 \times 6 \times 3) = 4$.

122. $3251 + 587 + 369 - ? = 3007$

- [A.](#)1250 [B.](#)1300
- [C.](#)1375 [D.](#)1200
- [E.](#)None of these

Answer: Option D

Explanation:

3251 Let $4207 - x = 3007$

$+ 587$ Then, $x = 4207 - 3007 = 1200$

$+ 369$

4207

123. $7589 - ? = 3434$

- [A.](#)4242 [B.](#)4155
- [C.](#)1123 [D.](#)11023
- [E.](#)None of these

Answer: Option B

Explanation:

Let $7589 - x = 3434$

Then, $x = 7589 - 3434 = 4155$

124. $217 \times 217 + 183 \times 183 = ?$

- [A.](#)79698 [B.](#)80578
- [C.](#)80698 [D.](#)81268

Answer: Option B

Explanation:

$$\begin{aligned}
 (217)^2 + (183)^2 &= (200 + 17)^2 + (200 - 17)^2 \\
 &= 2 \times [(200)^2 + (17)^2] \quad [\text{Ref: } (a + b)^2 + (a - b)^2 = 2(a^2 + b^2)] \\
 &= 2[40000 + 289] \\
 &= 2 \times 40289 \\
 &= 80578.
 \end{aligned}$$

125. The unit digit in the product $(784 \times 618 \times 917 \times 463)$ is:

- [A.](#)2 [B.](#)3
- [C.](#)4 [D.](#)5

Answer: Option A

Explanation:

Unit digit in the given product = Unit digit in $(4 \times 8 \times 7 \times 3) = (672) = 2$

126. If the number 653.xy is divisible by 90, then $(x + y) = ?$

- [A.](#)2 [B.](#)3
- [C.](#)4 [D.](#)6

Answer: Option C

Explanation:

$$90 = 10 \times 9$$

Clearly, $653xy$ is divisible by 10, so $y = 0$

Now, $653x0$ is divisible by 9.

So, $(6 + 5 + 3 + x + 0) = (14 + x)$ is divisible by 9. So, $x = 4$.

Hence, $(x + y) = (4 + 0) = 4$.

127. $3897 \times 999 = ?$

[A.](#)3883203

[B.](#)3893103

[C.](#)3639403

[D.](#)3791203

[E.](#)None of these

Answer: Option B

Explanation:

$$\begin{aligned} 3897 \times 999 &= 3897 \times (1000 - 1) \\ &= 3897 \times 1000 - 3897 \times 1 \\ &= 3897000 - 3897 \\ &= 3893103. \end{aligned}$$

128. What is the unit digit in 7^{105} ?

[A.](#)1

[B.](#)5

[C.](#)7

[D.](#)9

Answer: Option C

Explanation:

Unit digit in $7^{105} =$ Unit digit in $[(7^4)^{26} \times 7]$

But, unit digit in $(7^4)^{26} = 1$

\therefore Unit digit in $7^{105} = (1 \times 7) = 7$

129. Which of the following numbers will completely divide $(4^{61} + 4^{62} + 4^{63} + 4^{64})$?

[A.](#)3

[B.](#)10

[C.](#)11

[D.](#)13

Answer: Option B

Explanation:

$$\begin{aligned} (4^{61} + 4^{62} + 4^{63} + 4^{64}) &= 4^{61} \times (1 + 4 + 4^2 + 4^3) = 4^{61} \times 85 \\ &= 4^{60} \times (4 \times 85) \\ &= (4^{60} \times 340), \text{ which is divisible by 10.} \end{aligned}$$

130. $106 \times 106 - 94 \times 94 = ?$

[A.](#)2400

[B.](#)2000

[C.](#)1904

[D.](#)1906

[E.](#)None of these

Answer: Option A

Explanation:

$$\begin{aligned} 106 \times 106 - 94 \times 94 &= (106)^2 - (94)^2 \\ &= (106 + 94)(106 - 94) \quad [\text{Ref: } (a^2 - b^2) = (a + b)(a - b)] \\ &= (200 \times 12) \\ &= 2400. \end{aligned}$$

131. A number when divided successively by 4 and 5 leaves remainders 1 and 4 respectively. When it is successively divided by 5 and 4, then the respective remainders will be

[A.](#)1, 2

[B.](#)2, 3

[C.](#)3, 2

[D.](#)4, 1

Answer: Option B

Explanation:

$$4 \mid x \quad y = (5 \times 1 + 4) = 9$$

$$5 \mid y - 1 \quad x = (4 \times y + 1) = (4 \times 9 + 1) = 37$$

$$\mid 1 - 4$$

Now, 37 when divided successively by 5 and 4, we get

$$5 \mid 37$$

$$4 \mid 7 - 2$$

$$\mid 1 - 3$$

Respective remainders are 2 and 3.

132. $8796 \times 223 + 8796 \times 77 = ?$

[A.](#)2736900

[B.](#)2638800

[C.](#)2658560

[D.](#)2716740

[E.](#)None of these

Answer: Option B

Explanation:

$$\begin{aligned} 8796 \times 223 + 8796 \times 77 &= 8796 \times (223 + 77) \quad [\text{Ref: By Distributive Law}] \\ &= (8796 \times 300) \\ &= 2638800 \end{aligned}$$

133. $8988 \div 8 \div 4 = ?$

[A.](#)4494

[B.](#)561.75

[C.](#)2247

[D.](#)280.875

[E.](#)None of these

Answer: Option D

Explanation:

$$\text{Given Exp.} = 8988 \times \frac{1}{8} \times \frac{1}{4} = \frac{2247}{8} = 280.875$$

134. $287 \times 287 + 269 \times 269 - 2 \times 287 \times 269 = ?$

[A.](#)534

[B.](#)446

[C.](#)354

[D.](#)324

[E.](#)None of these

Answer: Option D

Explanation:

$$\begin{aligned} \text{Given Exp.} &= a^2 + b^2 - 2ab, \text{ where } a = 287 \text{ and } b = 269 \\ &= (a - b)^2 = (287 - 269)^2 \\ &= (18^2) \\ &= 324 \end{aligned}$$

135. $3 + 33 + 333 + 3.33 = ?$

- [A.](#)362.3 [B.](#)372.33
[C.](#)702.33 [D.](#)702
[E.](#)None of these

Answer: Option B**Explanation:**

$$\begin{array}{r} 3 \\ + 33 \\ + 333 \\ + 3.33 \\ \hline 372.33 \\ \hline \end{array}$$

136. Which one of the following can't be the square of natural number ?

- [A.](#)30976 [B.](#)75625
[C.](#)28561 [D.](#)143642
[E.](#)None of these

Answer: Option D**Explanation:**

The square of a natural number never ends in 2.

∴ 143642 is not the square of natural number.

137. $(1000)^9 \div 10^{24} = ?$

- [A.](#)10000 [B.](#)1000
[C.](#)100 [D.](#)10
[E.](#)None of these

Answer: Option B**Explanation:**

$$\begin{aligned} \text{Given Exp. } (1000)^9 &= (10^3)^9 = (10)^{27} = 10^{(27-24)} = 10^3 = \\ &= 10^{24} = 10^{24} = 10^{24} \quad 1000 \end{aligned}$$

138. $\{(476 + 424)^2 - 4 \times 476 \times 424\} = ?$

- [A.](#)2906 [B.](#)3116
[C.](#)2704 [D.](#)2904
[E.](#)None of these

Answer: Option C**Explanation:**

$$\begin{aligned} \text{Given} &= [(a + b)^2 - 4ab], \text{ where } a = 476 \text{ and } b = \\ \text{Exp.} & 424 \\ &= [(476 + 424)^2 - 4 \times 476 \times 424] \\ &= [(900)^2 - 807296] \\ &= 810000 - 807296 \\ &= 2704. \end{aligned}$$

1. If one-third of one-fourth of a number is 15, then three-tenth of that number is:

- [A.](#)35 [B.](#)36
[C.](#)45 [D.](#)54

Answer: Option D**Explanation:**Let the number be x .

$$\text{Then, } \frac{1}{3} \text{ of } \frac{1}{4} \text{ of } x = 15 \Leftrightarrow x = 15 \times 12 = 180.$$

$$\text{So, required number} = \left(\frac{3}{10} \times 180 \right) = 54.$$

2. Three times the first of three consecutive odd integers is 3 more than twice the third. The third integer is:

- [A.](#)9 [B.](#)11
[C.](#)13 [D.](#)15

Answer: Option D**Explanation:**Let the three integers be x , $x + 2$ and $x + 4$.

$$\text{Then, } 3x = 2(x + 4) + 3 \Leftrightarrow x = 11.$$

$$\therefore \text{ Third integer} = x + 4 = 15.$$

3. The difference between a two-digit number and the number obtained by interchanging the positions of its digits is 36. What is the difference between the two digits of that number?

- [A.](#)3 [B.](#)4
[C.](#)9 [D.](#)Cannot be determined
[E.](#)None of these

Answer: Option B**Explanation:**Let the ten's digit be x and unit's digit be y .

$$\text{Then, } (10x + y) - (10y + x) = 36$$

$$\Rightarrow 9(x - y) = 36$$

$$\Rightarrow x - y = 4.$$

4. The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits of the number if the ratio between the digits of the number is 1 : 2 ?

- [A.](#)4 [B.](#)8
[C.](#)16 [D.](#)None of these

Answer: Option B**Explanation:**

Since the number is greater than the number obtained on reversing the digits, so the ten's digit is greater than the unit's digit.

Let ten's and unit's digits be $2x$ and x respectively.

$$\text{Then, } (10 \times 2x + x) - (10x + 2x) = 36$$

$$\Rightarrow 9x = 36$$

$$\Rightarrow x = 4.$$

$$\therefore \text{ Required difference} = (2x + x) - (2x - x) = 2x = 8.$$

Explanation:

$$2ab = (a^2 + b^2) - (a - b)^2$$

$$= 29 - 9 = 20$$

$$\Rightarrow ab = 10.$$

5. The price of 2 sarees and 4 shirts is Rs. 1600. With the same money one can buy 1 saree and 6 shirts. If one wants to buy 12 shirts, how much shall he have to pay ?

- A.Rs. 1200 B.Rs. 2400
C.Rs. 4800 D.Cannot be determined
E.None of these

Answer: Option B

Explanation:

Let the price of a saree and a shirt be Rs. x and Rs. y respectively.

Then, $2x + 4y = 1600$ (i)
 and $x + 6y = 1600$ (ii)

Divide equation (i) by 2, we get the below equation.

$$\Rightarrow x + 2y = 800. \text{--- (iii)}$$

Now subtract (iii) from (ii)

$$\begin{array}{r} x + 6y = 1600 \text{ (-)} \\ x + 2y = 800 \\ \hline 4y = 800 \\ \hline \end{array}$$

Therefore, $y = 200$.

Now apply value of y in (iii)

$$\Rightarrow x + 2 \times 200 = 800$$

$$\Rightarrow x + 400 = 800$$

Therefore $x = 400$

Solving (i) and (ii) we get $x = 400$, $y = 200$.

\therefore Cost of 12 shirts = Rs. $(12 \times 200) = \text{Rs. } 2400$.

6. A sum of Rs. 1360 has been divided among A, B and C such that A gets $\frac{2}{3}$ of what B gets and B gets $\frac{1}{4}$ of what C gets. B's share is:

- A.Rs. 120 B.Rs. 160
C.Rs. 240 D.Rs. 300

Answer: Option C

Explanation:

Let C's share = Rs. x

Then, B's share = Rs. $\frac{x}{4}$, A's share = Rs. $\left(\frac{2}{3} \times \frac{x}{4}\right) = \text{Rs. } \frac{x}{6}$

$$\therefore \frac{x}{6} + \frac{x}{4} + x = 1360$$

$$\Rightarrow \frac{17x}{12} = 1360$$

$$\Rightarrow x = \frac{1360 \times 12}{17} = \text{Rs. } 960$$

Hence, B's share = Rs. $\left(\frac{960}{4}\right) = \text{Rs. } 240$.

7. One-third of Rahul's savings in National Savings Certificate is equal to one-half of his savings in Public Provident Fund. If he has Rs. 1,50,000 as total savings, how much has he saved in Public Provident Fund ?

- A.Rs. 30,000 B.Rs. 50,000
C.Rs. 60,000 D.Rs. 90,000

Answer: Option C

Explanation:

Let savings in N.S.C and P.P.F. be Rs. x and Rs. $(150000 - x)$ respectively. Then,

$$\frac{1}{3}x = \frac{1}{2}(150000 - x)$$

$$\Rightarrow \frac{x}{3} + \frac{x}{2} = 75000$$

$$\Rightarrow \frac{5x}{6} = 75000$$

$$\Rightarrow x = \frac{75000 \times 6}{5} = 90000$$

\therefore Savings in Public Provident Fund = Rs. $(150000 - 90000) = \text{Rs. } 60000$

8. A fires 5 shots to B's 3 but A kills only once in 3 shots while B kills once in 2 shots. When B has missed 27 times, A has killed:

- A.30 birds B.60 birds
C.72 birds D.90 birds

Answer: Option A

Explanation:

Let the total number of shots be x . Then,

Shots fired by A = $\frac{5}{8}x$

Shots fired by B = $\frac{3}{8}x$

Killing shots by A = $\frac{1}{3}$ of $\frac{5}{8}x = \frac{5}{24}x$

Shots missed by B = $\frac{1}{2}$ of $\frac{3}{8}x = \frac{3}{16}x$

$$\therefore \frac{3x}{16} = 27 \text{ or } x = \left(\frac{27 \times 16}{3}\right) = 144.$$

Birds killed by A = $\frac{5x}{24} = \left(\frac{5}{24} \times 144\right) = 30$.

9. Eight people are planning to share equally the cost of a rental car. If one person withdraws from the arrangement and the others share equally the entire cost of the car, then the share of each of the remaining persons increased by:

- A. $\frac{1}{7}$ B. $\frac{1}{8}$
C. $\frac{1}{9}$ D. $\frac{7}{8}$

Answer: Option A

Explanation:

Original share of 1 person = $\frac{1}{8}$

New share of 1 person = $\frac{1}{7}$

Increase = $\left(\frac{1}{7} - \frac{1}{8}\right) = \frac{1}{56}$

$$\therefore \text{Required fraction} = \frac{(1/56)}{(1/8)} = \left(\frac{1}{56} \times 8\right) = \frac{1}{7}$$

