

### **Problems on Numbers - Solved Examples(Set 3)**

101. Which is the natural number nearest to 11720 and completely divisible by 58?

- A. 11716                                      B. 11712  
C. 11718                                      D. 11714

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answer with explanation

Answer: Option A

Explanation:

$$11720 \div 58 = 202, \text{ remainder} = 4$$

Hence the natural number nearest to 11720 and completely divisible by 58  
 $= 11720 - 4 = 11716$

102.  $563124555 - ? = 232323$

- A. 562892232   B. 562892222  
C. 562892212   D. 562892202

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answer with explanation

Answer: Option A

Explanation:

$$? = 563124555 - 232323 = 562892232$$

103. What is the sum of first 200 natural numbers?

- A. 20120                                      B. 19901  
C. 19900                                      D. 20100

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answer with explanation

Answer: Option D

Explanation:

**Solution 1**

$$1+2+3+\dots+n$$

$$= \sum_{n=1}^n n(n+1)/2$$

[\(read more\)](#)

Required sum

$$=1+2+3+\dots+200 = n(n+1)/2 = 200 \times 201 / 2 = 100 \times 201 = 20100$$

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## Solution 2

### Number of terms of an arithmetic progression

$$n = \frac{l-a}{d} + 1$$

where  $n$  = number of terms,  $a$  = the first term,  $l$  = last term,  $d$  = common difference

### Sum of first $n$ terms in an arithmetic progression

$$S_n = n/2 [2a + (n-1)d] = n/2 (a+l)$$

where  $a$  = the first term,  $d$  = common difference,

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

[\(read more\)](#)

$$a=1, l=200, d=2-1=1, n=200$$

Required Sum,

$$S_n = 1+2+3+\dots+200 = n/2 (a+l) = 200/2 (1+200) = 100 \times 201 = 20100$$

104. The number  $1242*2$  is completely divisible by 3. What is the smallest number in place of \* ?

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

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answer with explanation

Answer: Option C

Explanation:

A number is divisible by 3 if the sum of the digits is divisible by 3  
([read more](#))

$1242*2$  is divisible by 3

$\Rightarrow 1+2+4+2+*+2$

is divisible by 3

$\Rightarrow 11+*$

is divisible by 3

The smallest value of \* which satisfies the above equation, is 1 such that  $11 + 1 = 12$  which is divisible by 3

105. Which of the given numbers is divisible by 3, 7, 9 and 11?

A. None of these

B. 1890

C. 4230

D. 6237

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answer with explanation

Answer: Option D

Explanation:

[1. Divisibility by 3](#)

[2. Divisibility by 7](#)

[2. Divisibility by 9](#)

[2. Divisibility by 11](#)

1. Testing 4230

$4 + 2 + 3 + 0 = 9$ .

9 is divisible by 3. Hence 4230 is also divisible by 3

$4 + 2 + 3 + 0 = 9$ .

9 is divisible by 9. Hence 4230 is also divisible by 9

$423 - (2 \times 0) = 423$

$42 - (2 \times 3) = 36$

36 is not divisible by 7. Hence 4230 is not divisible by 7

Therefore, 4230 does not meet all divisibility conditions

## 2. Testing 1890

$$1 + 8 + 9 + 0 = 18.$$

18 is divisible by 3. Hence 1890 is also divisible by 3

$$1 + 8 + 9 + 0 = 18.$$

18 is divisible by 9. Hence 1890 is also divisible by 9

$$189 - (2 \times 0) = 189$$

$$18 - (2 \times 9) = 0$$

Hence 1890 is divisible by 7

$$1 + 9 = 10$$

$$8 + 0 = 8$$

$$10 - 8 = 2$$

2 is not divisible by 11. Hence 1890 is not divisible by 11

Therefore, 1890 does not meet all divisibility conditions

## 3. Testing 6237

$$6 + 2 + 3 + 7 = 18.$$

18 is divisible by 3. Hence 6237 is also divisible by 3

$$6 + 2 + 3 + 7 = 18.$$

18 is divisible by 9. Hence 6237 is also divisible by 9

$$623 - (2 \times 7) = 609$$

$$60 - (2 \times 9) = 42$$

42 is divisible by 7. Hence 6237 is also divisible by 7.

$$6 + 3 = 9$$

$$2 + 7 = 9$$

$$9 - 9 = 0$$

Hence 6237 is divisible by 11

Therefore, 6237 is divisible by 3, 9, 7 and 11.

$$106. \quad 17 + 16 \times 1.6 + 14 \times 1.3 = ?$$

A. 60.8   B. 68.8

C. 60.6   D. 59.6

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answer with explanation

Answer: Option A

Explanation:

$$17+16\times 1.6+14\times 1.3=17+25.6+18.2=60.8$$

107.  $143\times 7298=?$

A. 1642 B. 1802

C. 2022 D. 1372

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answer with explanation

Answer: Option D

Explanation:

$$143\times 7298=143\times 7214\times 7=142\times 7=196\times 7=1372$$

108. What smallest number should be added to 8444 such that the sum is completely divisible by 7 ?

A. 6

B. 5

C. 4

D. 3

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answer with explanation

Answer: Option B

Explanation:

$$8444 \div 7 = 1206, \text{ remainder} = 2$$

$$7 - 2 = 5$$

Hence, 5 should be added to 8444 such that the sum is completely divisible by 7.

109.  $5332\times 992=?$

A. 5289344 B. 5289244

C. 5289214 D. 5289324

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answer with explanation

Answer: Option A

Explanation:

$$5332 \times 992 = 5332(1000 - 8) = 5332000 - 42656 = 5289344$$

please go through [speed maths](#) methods to do calculations faster.

110. 40% of 23

of a number is 32. What is the number?

- A. 160                      B. 240  
C. 80                        D. 120

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answer with explanation

Answer: Option D

Explanation:

Let x

be the number. Then

$$x \times 23 \times 40100 = 32 \Rightarrow x = 32 \times 10040 \times 32 = 32 \times 104 \times 32 = 8 \times 10 \times 32 = 4 \times 10 \times 3 = 120$$

111. If a whole number n is divided by 4, we will get 3 as remainder. What will be the remainder if 2n is divided by 4 ?

- A. 4    B. 3  
C. 2    D. 1

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answer with explanation

Answer: Option C

Explanation:

Let  $n \div 4 = p$ , remainder = 3

$$\Rightarrow n = 4p + 3$$

$$2n = 2(4p + 3)$$

$$= 8p + 6$$

$$= 8p + 4 + 2$$

$$= 4(2p + 1) + 2$$

Hence, if  $2n$  is divided by 4, we will get 2 as remainder.

112.  $241 \times 999 = ?$

A. 240769 B. 230759

C. 230769 D. 240759

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answer with explanation

Answer: Option D

Explanation:

$$241 \times 999 = 241(1000 - 1) = 241000 - 241 = 240759$$

please go through [speed maths](#) methods to do calculations faster.

113. The number  $367505 * 8$  is completely divisible by 8. What is the smallest whole number in place of \*?

A. 1

B. 2

C. 3

D. 4

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answer with explanation

Answer: Option B

Explanation:

A number is divisible by 8 if the number formed by the last three digits is divisible by 8.

[\(read more\)](#)

$367505 * 8$  is divisible by 8

$\Rightarrow 5 * 8$  is divisible by 8

We need to find out the smallest value of \* which satisfies the above condition.

518 is not divisible by 8

528 is divisible by 8. Hence the smallest value of \* is 2

114.  $425 \times ? = 170$

- A. 12
- B. 25
- C. 35
- D. 23

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answer with explanation

Answer: Option B

Explanation:

$$? = 170 / 425 = 3485 = 25$$

115. The unit digit in 7105

is

- A. 8 B. 7
- C. 6 D. 5

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answer with explanation

Answer: Option B

Explanation:

$$7105 = (74)26 \times 7$$

Hence, unit digit of 7105

$$= \text{unit digit of } [(74)26 \times 7]$$

$$= \text{unit digit of } [(7 \times 7 \times 7 \times 7)26 \times 7]$$

$$= \text{unit digit of } [(9 \times 9)26 \times 7] (\because 7 \times 7 = 49 \text{ and } 9 \text{ is the unit digit of } 49)$$

$$= \text{unit digit of } [126 \times 7] (\because 9 \times 9 = 81 \text{ and } 1 \text{ is the unit digit of } 81)$$

$$= \text{unit digit of } [1 \times 7] (\because \text{unit digit of } 126 = 1)$$

)

$$= 7$$

116. Which of the following numbers is a prime number ?

- A. None of these
- B. 377
- C. 469
- D. 176



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answer with explanation

Answer: Option A

Explanation:

[Reference: Divisibility Rules](#)

$$\sqrt{469} < 22$$

Prime numbers < 22 are 2, 3, 5, 7, 11, 13, 17, 19

469 is not divisible by 2

469 is not divisible by 3

469 is not divisible by 5

But 469 is divisible by 7

Hence 469 is not a prime number

176 is divisible by 2.

Hence 176 is not a prime number

$$\sqrt{377} < 20$$

Prime numbers < 20 are 2, 3, 5, 7, 11, 13, 17, 19

377 is not divisible by 2

377 is not divisible by 3

377 is not divisible by 5

377 is not divisible by 7

377 is not divisible by 11

But 377 is divisible by 13

Hence 377 is not a prime number.

Hence answer is "None of these"

117. In a division sum, the divisor is 10 times the quotient and 5 times the remainder. If the remainder is 46, find out the dividend.

A. 4426

B. 3426

C. 4336

D. 5336

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answer with explanation

Answer: Option D

Explanation:

remainder = 46

divisor is 5 times the remainder

=> divisor =  $5 \times \text{remainder} = 5 \times 46 = 230$

divisor is 10 times the quotient

quotient =  $230/10 = 23$

dividend

= (divisor  $\times$  quotient) + remainder

=  $(230 \times 23) + 46$

=  $5290 + 46$

= 5336

118. The difference of two numbers is 1365. On dividing the larger number by the smaller, 6 is obtained as quotient and 15 as remainder. What is the smaller number ?

A. 310

B. 330

C. 250

D. 270

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answer with explanation

Answer: Option D

Explanation:

Let the smaller number be x

and the larger number be (x+1365)

$(x+1365) \div x = 6$ , remainder = 15

=>  $(x+1365) = 6x + 15$

=>  $5x = 1350$

=>  $x = 1350/5 = 270$

Smaller number = x = 270

119. Difference between the squares of two consecutive odd integers is always divisible by

A. 8

B. 7

C. 6

D. 3

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answer with explanation

Answer: Option A

Explanation:

### Solution 1

Let two consecutive odd integers be  $(2n-1)$   
and  $(2n+1)$

Difference between the squares

$$=(2n+1)^2-(2n-1)^2=4n^2+4n+1-(4n^2-4n+1)=8n$$

which is always divisible by 8

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### Solution 2

Take any two consecutive odd integers, say 1 and 3

Difference between the squares

$$=3^2-1^2=9-1=8$$

From the given choices, we can easily figure out the answer as 8

120. A number was divided successively in order by 4, 5 and 6 leaving out the remainders. The remainders were 2, 3 and 4 respectively. What is the number?

A. 224

B. 324

C. 304

D. 214

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answer with explanation

Answer: Option D

Explanation:

Let p

be the number

Suppose,

$$p \div 4 = q, \text{ remainder} = 2$$

$$q \div 5 = r, \text{ remainder} = 3$$

$$r \div 6 = s$$

$$, \text{ remainder} = 4$$

Then,

$$r = 6s + 4$$

$$q = 5r + 3 = 5(6s + 4) + 3 = 30s + 23$$

$$p = 4q + 2 = 4(30s + 23) + 2 = 120s + 94$$

Suppose the final quotient,  $s = 1$ .

$$\text{Then } p = 120 \times 1 + 94 = 214$$

.

214 is one of the choices given and hence it is the answer.

121. What is the sum of first 20 natural numbers?

A. 220

B. 205

C. 190

D. 210

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answer with explanation

Answer: Option D

Explanation:

### **Solution 1**

$$1 + 2 + 3 + \dots + n$$

$$= \sum n = \frac{n(n+1)}{2}$$

[\(read more\)](#)

Required Sum

$$= 1 + 2 + 3 + \dots + 20 = \frac{n(n+1)}{2} = \frac{20 \times 21}{2} = 10 \times 21 = 210$$

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## Solution 2

### Number of terms of an arithmetic progression

$$n = \frac{l - a}{d} + 1$$

where  $n$  = number of terms,  $a$  = the first term,  $l$  = last term,  $d$  = common difference

### Sum of first $n$ terms in an arithmetic progression

$$S_n = \frac{n}{2} [2a + (n-1)d] = \frac{n}{2} (a + l)$$

where  $a$  = the first term,  $d$  = common difference,

$$l = t_n = n^{\text{th}} \text{ term} = a + (n-1)d$$

[\(read more\)](#)

$$a = 1, l = 20, d = 2 - 1 = 1, n = 20$$

Required Sum,

$$S_n = 1 + 2 + 3 + \dots + 20 = \frac{n}{2} (a + l) = \frac{20}{2} (1 + 20) = 10 \times 21 = 210$$

$$122. \quad ? - 23442 - 12411 = 2469$$

A. 38322 B. 37212

C. 37532 D. 38122

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answer with explanation

Answer: Option A

Explanation:

$$? = 2469 + 12411 + 23442 = 38322$$

123. In dividing a number by 585, a student employed the method of short division. He divided the number successively by 5, 9 and 13 and got the remainders 4, 8, 12 respectively. What would have been the remainder if he had divided the number by 585?

A. 144

B. 292

C. 24

D. 584

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answer with explanation

Answer: Option D

Explanation:

Let p

be the number

Suppose,

$p \div 5 = q$ , remainder = 4

$q \div 9 = r$ , remainder = 8

$r \div 13 = s$ , remainder = 12

Hence,

$r = 13s + 12$

$q = 9r + 8 = 9(13s + 12) + 8 = 117s + 116$

$p = 5q + 4 = 5(117s + 116) + 4 = 585s + 584$

Therefore, if p

is divided by 585, we will get 584 as remainder.

124. A number when divided successively by 4 and 5 leaves remainders 1 and 4 respectively. What will be the respective remainders if it is successively divided by 5 and 4?

A. 1, 2

B. 2, 3

C. 3, 2

D. 2, 1

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answer with explanation

Answer: Option B

Explanation:

Let p

be the number

Suppose,

$p \div 4 = q$ , remainder = 1

$q \div 5 = 1$ , remainder = 4. (Note that we assumed the quotient as 1 for the ease of calculations.)

Hence,

$$q = 1 \times 5 + 4 = 9$$

$$p = 4q + 1 = 4 \times 9 + 1 = 37$$

Now divide 37 successively by 5 and 4 respectively.

$$37 \div 5 = 7, \text{ remainder} = 2$$

$$7 \div 4 = 1$$

, remainder = 3

125. What is the sum of even numbers between 9 and 53?

A. 682

B. 672

C. 662

D. 702

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answer with explanation

Answer: Option A

Explanation:

**Number of terms of an arithmetic progression**

$$n = \frac{l - a}{d} + 1$$

where  $n$  = number of terms,  $a$  = the first term,  $l$  = last term,  $d$  = common difference

**Sum of first  $n$  terms in an arithmetic progression**

$$S_n = n[2a + (n-1)d] = n(a+l)$$

where  $a$  = the first term,  $d$  = common difference,

$$l = \text{tn} = n^{\text{th}} \text{ term} = a + (n-1)d$$

[\(read more\)](#)

$$\text{Required sum} = 10 + 12 + 14 + \dots + 52$$

This is an arithmetic progression with

$$a = 10, l = 52, d = 12 - 10 = 2$$





$x=0$  cannot satisfy (1).

Suppose  $x=2$ . Then,

$16+x=16+2=18$  which is divisible by 9.

Hence  $x=2$

is the minimum value which satisfies both (1) and (2). Therefore it is the answer.

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## Solution 2

1 is the minimum value given in the choices. Substituting 1 in place of \*, we get 13148.

But 13148 is not divisible by 9. Therefore 13148 is not divisible by 72.

Substituting 2 in the place of \*, we get 13248

13248 is divisible by 9.

13248 is divisible by 8.

9 and 8 are co-prime numbers and 13248 is divisible by both 9 and 8. Therefore, 13248 is divisible by 72 also (because 72 is the product of 9 and 8).

Therefore the minimum value of \* is 2

127. Which of the following number is divisible by 3 but not by 9 ?

A. 5271

B. 4122

C. 3141

D. 3222

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answer with explanation

Answer: Option A

Explanation:

A number is divisible by 3 if the sum of the digits is divisible by 3 ([read more](#))

A number is divisible by 9 if the sum of its digits is divisible by 9. ([read more](#))

Take 3222

$3 + 2 + 2 + 2 = 9$  which is divisible by 3 and 9.

Hence 3222 is divisible by 3 and 9

Take 3141

$3 + 1 + 4 + 1 = 9$  which is divisible by 3 and 9.

Hence 3141 is divisible by 3 and 9

Take 4122

$4 + 1 + 2 + 2 = 9$  which is divisible by 3 and 9.

Hence 4122 is divisible by 3 and 9

Take 5271

$5 + 2 + 7 + 1 = 15$  which is divisible by 3 , but not divisible by 9.

Hence 5271 is divisible by 3, but not divisible by 9

128. When a number is divided by 13, the remainder is 6. When the same number is divided by 7, then remainder is 1. What is the number ?

A. 243

B. 253

C. 312

D. None of these

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answer with explanation

Answer: Option B

Explanation:

Take 243

$243 \div 7 = 34$ , remainder = 5

Hence this is not the answer

Take 312

$312 \div 7 = 44$ , remainder = 4

Hence this is not the answer

Take 253

$253 \div 7 = 36$ , remainder = 1.

$253 \div 13 = 19$ , remainder = 6

This satisfies both the conditions given in the question. Hence it is the answer.

129. What is the sum of all two digit numbers divisible by 6?

A. 805

B. 820

C. 790

D. 810

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answer with explanation

Answer: Option D

Explanation:

### Number of terms of an arithmetic progression

$$n = \frac{l - a}{d} + 1$$

where  $n$  = number of terms,  $a$  = the first term,  $l$  = last term,  $d$  = common difference

### Sum of first $n$ terms in an arithmetic progression

$$S_n = n[2a + (n-1)d] = \frac{n}{2}(a+l)$$

where  $a$  = the first term,  $d$  = common difference,

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

[\(read more\)](#)

$$\text{Required Sum} = 12 + 18 + 24 + \dots + 96$$

This is an Arithmetic Progression with

$$a = 12, l = 96, d = 6$$

$$n = \frac{l - a}{d} + 1 = \frac{96 - 12}{6} + 1 = 14 + 1 = 15$$

$$S_n = \frac{n}{2}(a+l) = \frac{15}{2}(12+96) = 15 \times 54 = 810$$

$$130. 2002 \times 2002 = ?$$

$$\text{A. } 4008004 \quad \text{B. } 4006004$$

$$\text{C. } 4002004 \quad \text{D. } 4004004$$

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answer with explanation

Answer: Option A

Explanation:

$$2002 \times 2002 = 4008004$$

**or**

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

[\(read more\)](#)

$$2002 \times 2002 = 2002^2 = (2000 + 2)^2 = 2000^2 + (2 \times 2000 \times 2) + 2^2 = 4000000 + 8000 + 4 = 4008004$$

131. Which natural number is completely divisible by 123 and nearest to 410081

- A. 410082                                      B. 409959  
C. 410078                                      D. 410071

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answer with explanation

Answer: Option A

Explanation:

$$410081 \div 123 = 3333, \text{ remainder} = 122$$

Hence required number

$$= 410081 + (123 - 122)$$

$$= 410082$$

132. What is the difference between the place value and the face value of 6 in the numeral 296827?

- A. None of these                                      B. 5999  
C. 994    D. 5994

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answer with explanation

Answer: Option D

Explanation:

$$\text{Place value of 6} = 6000$$

$$\text{Face value of 6} = 6$$

$$\text{Difference} = 6000 - 6 = 5994$$

133. The sum of a series,  $27 + 36 + 45 + \dots + 162$  is 1512

. What is the number of terms in the series?

- A. 14                                      B. 15

C. 16

D. 17

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answer with explanation

Answer: Option C

Explanation:

**Sum of first n terms in an arithmetic progression**

$$S_n = n[2a + (n-1)d] = n(a+l)$$

where a = the first term, d = common difference,

$$l = t_n = n^{\text{th}} \text{ term} = a + (n-1)d$$

[\(read more\)](#)

$$a = 27, d = 36 - 27 = 9$$

$$S_n = 27 + 36 + 45 + \dots + 162 = 1512 \Rightarrow n[2a + (n-1)d] = 1512 \Rightarrow n[(2 \times 27) + (n-1)9] = 1512 \Rightarrow n[54 + 9n - 9] = 1512 \Rightarrow n(45 + 9n) = 3024 \Rightarrow 9n(5+n) = 3024 \Rightarrow n(5+n) = 336 \dots (1)$$

From here, you can solve it either as quadratic equation or using hit and trial method with the given choices. Both are given below.

**Solution 1 (quadratic equation)**

$$\begin{aligned} n(5+n) &= 336 \\ n^2 + 5n - 336 &= 0 \\ n &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times (-336)}}{2 \times 1} = \frac{-5 \pm \sqrt{25 + 1344}}{2} = \frac{-5 \pm \sqrt{1369}}{2} \\ &= \frac{-5 \pm 37}{2} \\ &= 32 \text{ or } -16 \end{aligned}$$

( $\therefore$  taking positive value as number of terms cannot be negative)

i.e., number of terms = 16

**Solution 2 (hit and trial method)**

Substitute the given choices in (1) and see which value satisfies the equation.

If  $n=14$ ,

$$n(5+n) = 14 \times 19 = 266$$

If  $n=15$ ,  
 $n(5+n)=15 \times 20=300$

If  $n=16$ ,  
 $n(5+n)=16 \times 21=336$   
 $n=16$

satisfies (1). Hence, number of terms = 16

134.  $5+14-3+23+1-35=?$

- A. 18960
- B. 19960
- C. 12960
- D. 16960

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answer with explanation

Answer: Option B

Explanation:

$$5+14-3+23+1-35=(5-3+1)+(14+23-35)=3+1 \times 15+2 \times 20-3 \times 1260=3+1960=180+1960=19960$$

135. 996ab  
is divisible by 80. What is  $(a+b)$   
?

- A. 3 B. 5
- C. 6 D. 8

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answer with explanation

Answer: Option D

Explanation:

If a number is divisible by another number, then it is also divisible by all the factors of that number.  
[\(read more\)](#)

A number is divisible by 8 if the number formed by the last three digits is divisible by 8. [\(read more\)](#)

A number is divisible by 9 if the sum of its digits is divisible by 9. ([read more](#))

996ab

is divisible by 80. Since 10 and 8 are factors of 80, 996ab is divisible by 10 and 8 also.

996ab is divisible by 10. We know that a number is divisible by 10 if the last digit is 0.

Hence  $b=0$

Thus we have the number 996a0 which is divisible by 8

$\Rightarrow 6a0$  is divisible by 8

$\Rightarrow a = 0$  or 4 or 8

Hence,  $(a+b)$  may be  $(0+0)$  or  $(4+0)$  or  $(8+0)$

i.e.,  $(a+b)$

may be 0 or 4 or 8.

From the given choices, 8 is the answer

136.  $123-333+321-111=?$

A. 320 B. 100

C. 120 D. 0

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answer with explanation

Answer: Option D

Explanation:

$$123-333+321-111=444-444=0$$

137. On multiplying a number by 3, the product is a number each of whose digits is 7. What is the smallest such number?

A. 259129

B. 259219

C. 259279

D. 259259

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answer with explanation

Answer: Option D

Explanation:

Let's use hit and trial method here.

Smallest number from the given choices = 259129

$$259129 \times 3 = 777387$$

Next highest number from the given choices = 259219

$$259219 \times 3 = 777657$$

Next highest number from the given choices = 259259

$$259259 \times 3 = 777777$$

Hence 259259 is the answer.

138. On dividing a number by 357, 39 is obtained as remainder. On dividing the same number by 17, what will be the remainder?

A. 3

B. 4

C. 5

D. 6

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answer with explanation

Answer: Option C

Explanation:

### **Solution 1**

Let p

be the number.

$$\text{Let } p \div 357 = a, \text{ remainder} = 39$$

Then

$$p = 357a + 39 = (17 \times 21 \times a) + 34 + 5 = (17 \times 21 \times a) + (17 \times 2) + 5 = 17(21a + 2) + 5$$

Hence, if the same number is divided by 17, we will get 5 as remainder.

---

### **Solution 2**

To make calculation easier, let's assume the quotient as 1.

Let p is the number

$$\text{Let } p \div 357 = 1, \text{ remainder} = 39$$

Then



$$p=357\times 1+39=396$$

$$396\div 17$$

gives 5 as remainder.

$$139. 4443\times 6664= ?$$

A. 22622 B. 22642

C. 24622 D. 24642

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answer with explanation

Answer: Option D

Explanation:

$$4443\times 6664=111\times 222=24642$$

140. A student divides a number by 5 and get 3 as remainder. If his friend divides the square of the number by 5, what will be the remainder?

A. 6

B. 5

C. 4

D. 3

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answer with explanation

Answer: Option C

Explanation:

**Solution 1**

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

[\(read more\)](#)

Let p be the number

Let  $p\div 5=a$  and remainder = 3

Then  $p=5a+3$

$$p^2=(5a+3)^2=(5a)^2+(2\times 5a\times 3)+3^2=25a^2+30a+9=25a^2+30a+5+4=5(5a^2+6a+1)+4$$

Hence, if  $p^2$  is divided by 5, we will get 4 as remainder.

---

### Solution 2

Suppose the quotient is 1. Then the number is  $1 \times 5 + 3 = 8$

$$8^2 = 64$$

. When 64 is divided by 5, 4 is the remainder.

141. What is the unit digit in 771

?

A. 4 B. 3

C. 2 D. 1

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answer with explanation

Answer: Option B

Explanation:

$$771 = (74)17 \times 73$$

Hence, unit digit in 771

$$= \text{unit digit in } [(74)17 \times 73]$$

$$= \text{unit digit in } [(7 \times 7 \times 7 \times 7)17 \times 73]$$

$$= \text{unit digit in } [(9 \times 9)17 \times 73] (\because 7 \times 7 = 49 \text{ and } 9 \text{ is the unit digit of } 49)$$

$$= \text{unit digit in } (117 \times 73) (\because 9 \times 9 = 81 \text{ and } 1 \text{ is the unit digit of } 81)$$

$$= \text{unit digit in } (1 \times 73) (\because 117 = 1)$$

$$= \text{unit digit in } (73)$$

$$= \text{unit digit in } (7 \times 7 \times 7)$$

$$= \text{unit digit in } (9 \times 7) (\because 7 \times 7 = 49 \text{ and } 9 \text{ is the unit digit of } 49)$$

$$= 3$$

$$(\because 9 \times 7 = 63 \text{ and } 3 \text{ is the unit digit of } 63)$$

142. What is the unit digit in the product  $(2344 \times 6892 \times 349 \times 527 \times 238)$

?

A. 1 B. 2

C. 3 D. 4

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answer with explanation

Answer: Option B

Explanation:

unit digit of  $(2344 \times 6892 \times 349 \times 527 \times 238)$

= unit digit of  $(4 \times 2 \times 9 \times 7 \times 8)$

= unit digit of  $(8 \times 9 \times 7 \times 8)$  ( $\because 4 \times 2 = 8$ )

= unit digit of  $(2 \times 7 \times 8)$  ( $\because 8 \times 9 = 72$  and 2 is the unit digit of 72)

= unit digit of  $(4 \times 8)$  ( $\because 2 \times 7 = 14$  and 4 is the unit digit of 14)

= 2

( $\because 4 \times 8 = 32$  and 2 is the unit digit of 32)

143. Which is the common factor of  $(22121+19121)$

and  $(22231+19231)$

?

A.  $(22 - 19)$       B.  $(22 + 19)$

C.  $(22231+19231)$

D.  $(22121+19121)$

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answer with explanation

Answer: Option B

Explanation:

$(xn+an)$

is completely divisible by  $(x+a)$  when n

is odd

[\(read more\)](#)

Hence,  $(22121+19121)$  is divisible by  $(22+19)$  because 121 is odd.

Similarly  $(22231+19231)$  is also divisible by  $(22+19)$  because 231 is odd.

Hence  $(22+19)$

is a common factor here.

144.  $(232+323)^2 - (232-323)2232 \times 323 = ?$

A. 4      B. 8

C. 3424 D. 2344

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answer with explanation

Answer: Option A

Explanation:

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

[\(read more\)](#)

Given expression is in the form  $(a+b)^2 - (a-b)^2$

where  $a=232$  and  $b=323$

$$(a+b)^2 - (a-b)^2 = (a^2 + 2ab + b^2) - (a^2 - 2ab + b^2) = 4ab = 4$$

145. A number when divided by 44, gives 432 as quotient and 0 as remainder. What will be the remainder when dividing the same number by 31?

A. 4

B. 0

C. 5

D. 8

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answer with explanation

Answer: Option C

Explanation:

Let  $p$  be the number

$$p \div 44 = 432, \text{ remainder} = 0$$

$$\Rightarrow p = 432 \times 44 + 0 = 19008$$

$$p \div 31 = 19008 \div 31 = 613, \text{ remainder} = 5$$