Whole Numbers
Ex 3A

Q1

Answer :

The next three whole numbers after 30999 are 31000, 31001 and 31002.

Q2

Answer :

Three whole numbers occurring just before 10001 are as follows:

10001 – 1 = 10000
10000 – 1 = 9999
9999 – 1 = 9998

∴ The three whole numbers just before 10001 are 10000, 9999 and 9998.

Q3

Answer :

Number of whole numbers between 1032 and 1209 = (1209 – 1032) – 1
= 177 – 1
= 176

Q4

Answer :

0 (zero) is the smallest whole number.

All the natural numbers along with 0 are called whole numbers.

Q5

Answer :

(i) Successor of 2540801 = 2540801 + 1 = 2540802
(ii) Successor of 9999 = 9999 + 1 = 10000
(iii) Successor of 50904 = 50904 + 1 = 50905
(iv) Successor of 61639 = 61639 + 1 = 61640
(v) Successor of 687890 = 687890 + 1 = 687891
(vi) Successor of 5386700 = 5386700 + 1 = 5386701
(vii) Successor of 6475999 = 6475999 + 1 = 6476000
(viii) Successor of 9999999 = 9999999 + 1 = 10000000

Q6

Answer :

(i) Predecessor of 97 = 97 − 1 = 96
(ii) Predecessor of 10000 = 10000 − 1 = 9999
(iii) Predecessor of 36900 = 36900 − 1 = 36899
(iv) Predecessor of 7684320 = 7684320 − 1 = 7684319
(v) Predecessor of 1566391 = 1566391 − 1 = 1566390
(vi) Predecessor of 2456800 = 2456800 − 1 = 2456799
(vii) Predecessor of 100000 = 100000 − 1 = 99999
(viii) Predecessor of 1000000 = 1000000 − 1 = 999999

Q7

Answer :

The three consecutive whole numbers just preceding 7510001 are as follows:

7510001 − 1 = 7510000
7510000 − 1 = 7509999
7509999 − 1 = 7509998

∴ The three consecutive numbers just preceding 7510001 are 7510000, 7509999 and 7509998.

Q8

Answer :

(i) False. 0 is not a natural number.1 is the smallest natural number.
(ii) True.
(iii) False. 0 is a whole number but not a natural number.
(iv) True. Natural numbers include 1,2,3 ..., which are whole numbers.
(v) False. 0 is the smallest whole number.
(vi) True. The predecessor of 1 is 1 − 1 = 0, which is not a natural number.
(vii) False. The predecessor of 1 is 1 − 1 = 0, which is a whole number.
(viii) True. The predecessor of 0 is 0 − 1 = −1, which is not a whole number.
(ix) False. The predecessor of a two-digit number can be a single digit number. For example, the predecessor of 10 is 10 − 1, i.e., 9.
(x) False. The successor of a two-digit number is not always a two-digit number. For example, the successor of 99 is 99 + 1, i.e., 100.
(xi) False. The predecessor of 499 is 499 − 1, i.e., 498.
(xii) True. The successor of 6999 is 6999 + 1, i.e., 7000.

Whole Numbers
Ex 3B

Q1

Answer :

(i) 458 + 639 = 639 + 458
(ii) 864 + 2006 = 2006 + 864
(iii) 1946 + 984 = 984 + 1946
(iv) 8063 + 0 = 8063
(v) 53501 + (574 + 799) = 574 + (53501 + 799)

Q2

Answer :

(i) 16509 + 114 = 16623
By reversing the order of the addends, we get:
114 + 16509 = 16623
∴ 16509 + 114 = 114 + 16509

(ii) 2359 + 548 = 2907
By reversing the order of the addends, we get:
548 + 2359 = 2907
∴ 2359 + 548 = 548 + 2359

(iii) 19753 + 2867 = 22620
By reversing the order of the addends, we get:
2867 + 19753 = 22620
∴ 19753 + 2867 = 2867 + 19753

Q3

Answer :

We have:

(1546 + 498) + 3589 = 2044 + 3589 = 5633

Also, 1546 + (498 + 3589) = 1546 + 4087 = 5633

Yes, the two sums are equal.
The associative property of addition is satisfied.

Q4

Answer :

(i) 953 + 707 + 647
953 + (707 + 647) (Using associative property of addition)
= 953 + 1354
= 2307

(ii) 1983 + 647 + 217 + 353
(1983 + 647) + (217 +353) (Using associative property of addition)
= 2630 + 570
= 3200

(iii) 15409 + 278 + 691 + 422
(15409 + 278) + (691 + 422) (Using associative property of addition)
= 15687 + 1113
= 16800

(iv) 3259 + 10001 + 2641 + 9999
(3259 + 10001) + (2641 + 9999) (Using associative property of addition)
= 13260 + 12640
= 25900

(v)1 + 2 + 3 + 4 + 96 + 97 + 98 + 99
(1 + 2 + 3 + 4) + (96 + 97 + 98 + 99) (Using associative property of addition)
= (10) + (390)
= 400

(vi) 2 + 3 + 4 + 5 + 45 + 46 + 47 + 48
(2 + 3 + 4 + 5) + (45 + 46 + 47 + 48) (Using associative property of addition)
= 14 + 186
= 200

Q5

Answer :

(i) 6784 + 9999
= 6784 + (10000 − 1)
= (6784 + 10000) − 1 (Using associative property of addition)
= 16784 − 1
= 16783

(ii) 10578 + 99999
= 10578 + (100000 − 1)
= (10578 + 100000) − 1 (Using associative property of addition)
= 110578 − 1
= 110577

Q6

Answer :

For any whole numbers a, b and c, we have:
$(a + b) + c = a + (b + c)$

Let $a = 2$, $b = 3$ and $c = 4$ [we can take any values for a, b and c]

LHS = $(a + b) + c$
$= (2 + 3) + 4$
$= 5 + 4$
$= 9$

RHS = $a + (c + b)$
$= a + (b + c)$ [∵ Whole numbers follow the commutative law]
$= 2 + (3 + 4)$
$= 2 + 7$
$= 9$

∴ This shows that associativity (in addition) is one of the properties of whole numbers.

Q7

Answer :

In a magic square, the sum of each row is equal to the sum of each column and the sum of each main diagonal. By using this concept, we have:

(i)

4	9	2
3	5	7
8	1	6

(ii)

16	2	12
6	10	14
8	18	4

(iii)

2	15	16	5
9	12	11	6
13	8	7	10
14	3	4	17

(iv)

7	18	17	4
8	13	14	11
12	9	10	15
19	6	5	16

Q8

Answer :

(i) F (false). The sum of two odd numbers may not be an odd number. Example: 3 + 5 = 8, which is an even number.

(ii) T (true). The sum of two even numbers is an even number. Example: 2 + 4 = 6, which is an even number.

(iii) T (true). The sum of an even and an odd number is an odd number. Example: 5 + 4 = 9, which is an odd number.

Whole Numbers
Ex 3C

Q1

Answer :

(i) Subtraction: 6237 – 694 = 5543
Addition: 5543 + 694 = 6237

(ii) Subtraction: 21205 – 10899 = 10306
Addition: 10306 + 10899 = 21205

(iii) Subtraction: 100000 – 78987 = 21013
Addition: 21013 + 78987 = 100000

(iv) Subtraction: 1010101 – 656565 = 353536
Addition: 353536 + 656565 = 1010101

Q2

Answer :

(i) 917 – *5* = 5*8

$$\begin{array}{r} 917 \\ -\,*5* \\ \hline 5*8 \end{array} \Rightarrow \begin{array}{r} 917 \\ -\,359 \\ \hline 558 \end{array}$$

⇒ 917 – 359 = 558

(ii) 6172 – **69 = 29**

$$\begin{array}{r} 6172 \\ -\,**69 \\ \hline 29** \end{array} \Rightarrow \begin{array}{r} 6172 \\ -\,3269 \\ \hline 2903 \end{array}$$

⇒ 6172 – 3269 = 2903

(iii) 5001003 – **6987 = 484****

$$\begin{array}{r} 5001003 \\ -\ **6987 \\ \hline 484**** \end{array} \Rightarrow \begin{array}{r} 5001003 \\ -\ 156987 \\ \hline 4845016 \end{array}$$

⇒ 5001003 – 155987 = 4845016

(iv) 1000000 – ****1 = *7042*

$$\begin{array}{r} 1000000 \\ -\ ****1 \\ \hline *7042* \end{array} \Rightarrow \begin{array}{r} 1000000 \\ -\ 29571 \\ \hline 970429 \end{array}$$

⇒ 1000000 – 29571 = 970429

Q3

Answer :

(i) 463 – 9
= 463 – 10 + 1
= 464 – 10
= 454

(ii) 5632 – 99
= 5632 – 100 + 1
= 5633 – 100
= 5533

(iii) 8640 – 999
= 8640 – 1000 + 1
= 8641 – 1000
= 7641

(iv) 13006 – 9999
= 13006 – 10000 + 1
= 13007 – 10000
= 3007

Q4

Answer :

Smallest seven-digit number = 1000000
Largest four-digit number = 9999
∴ Their difference = 1000000 – 9999
=1000000 – 10000 + 1
=1000001 – 10000
=990001

Q5

Answer :

Money deposited by Ravi = Rs 1,36,000
Money withdrawn by Ravi= Rs 73,129
Money left in his account = money deposited – money withdrawn
= Rs (136000 – 73129)
= Rs 62871

∴ Rs 62,871 is left in Ravi's account.

Q6

Answer :

Money withdrawn by Mrs Saxena = Rs 1,00,000
Cost of the TV set = Rs 38,750
Cost of the refrigerator = Rs 23,890
Cost of the jewellery = Rs 35,560
Total money spent = Rs (38750 + 23890 + 35560) = Rs 98200

Now, money left = money withdrawn − money spent
= Rs (100000 − 98200)
= Rs 1800

∴ Rs 1,800 is left with Mrs Saxena.

Q7

Answer :

Population of the town = 110500
Increased population = 110500 + 3608 = 114108
Number of persons who died or left the town = 8973
Population at the end of the year = 114108 − 8973 = 105135

∴ The population at the end of the year will be 105135.

Q8

Answer :

(i) $n + 4 = 9$
$\Rightarrow n = 9 - 4 = 5$

(ii) $n + 35 = 101$
$\Rightarrow n = 101 - 35 = 66$

(iii) $n - 18 = 39$
$\Rightarrow n = 18 + 39 = 57$

(iv) $n - 20568 = 21403$
$\Rightarrow n = 21403 + 20568 = 41971$

Whole Numbers
Ex 3D

Q1

Answer :

(i) 246 × 1 = 246
(ii) 1369 × 0 = 0
(iii) 593 × 188 = 188 × 593
(iv) 286 × 753 = 753 × 286
(v) 38 × (91 × 37) = 91 × (38 × 37)
(vi) 13 × 100 × 1000 = 1300000
(vii) 59 × 66 + 59 × 34 = 59 × (66 + 34)
(viii) 68 × 95 = 68 × 100 – 68 × 5

Q2

Answer :

(i) Commutative law in multiplication
(ii) Closure property
(iii) Associativity of multiplication
(iv) Multiplicative identity
(v) Property of zero
(vi) Distributive law of multiplication over addition
(vii) Distributive law of multiplication over subtraction

Q3

Answer :

(i) 647 × 13 + 647 × 7
= 647 × (13 + 7)
= 647 × 20
= 12940 (By using distributive property)

(ii) 8759 × 94 + 8759 × 6
= 8759 × (94 + 6)
= 8759 × 100
= 875900 (By using distributive property)

(iii) 7459 × 999 + 7459
= 7459× (999 + 1)
= 7459 × 1000
= 7459000 (By using distributive property)

(iv) 9870 × 561 – 9870 × 461
= 9870 × (561 – 461)
= 9870 × 100
= 987000 (By using distributive property)

(v) 569 × 17 + 569 × 13 + 569 × 70
= 569 × (17+ 13+ 70)
= 569 × 100
= 56900 (By using distributive property)

(vi) 16825 × 16825 – 16825 × 6825
= 16825 × (16825 – 6825)
= 16825 × 10000
= 168250000 (By using distributive property)

Q4

Answer :

(i) 2 × 1658 × 50
= (2 × 50) × 1658
= 100 × 1658
= 165800

(ii) 4 × 927 × 25
= (4 × 25) × 927
= 100 × 927
= 92700

(iii) 625 × 20 × 8 × 50
= (20 × 50) × 8 × 625
= 1000 × 8 × 625
= 8000 × 625
= 5000000

(iv) 574 × 625 × 16
= 574 × (625 × 16)
= 574 × 10000
= 5740000

(v) 250 × 60 × 50 × 8
= (250 × 8) × (60 × 50)
= 2000 × 3000
= 6000000

(vi) 8 × 125 × 40 × 25
= (8 × 125) × (40 × 25)
= 1000 × 1000
= 1000000

Q5

Answer :

(i) 740 × 105
= 740 × (100 + 5)
= 740 × 100 + 740 × 5 (Using distributive law of multiplication over addition)
= 74000 + 3700
= 77700

(ii) 245 × 1008
= 245 × (1000 + 8)
= 245 × 1000 + 245 × 8 (Using distributive law of multiplication over addition)
= 245000 + 1960
= 246960

(iii) 947 × 96
= 947 × (100 − 4)
= 947 × 100 − 947 × 4 (Using distributive law of multiplication over subtraction)
= 94700 − 3788
= 90912

(iv) 996 × 367
= 367 × (1000 − 4)
= 367 × 1000 − 367 × 4 (Using distributive law of multiplication over subtraction)
= 367000 × 1468
= 365532

Q6

Answer :

Distributive property of multiplication over addition states that $a\,(b + c) = ab + ac$
Distributive property of multiplication over subtraction states that $a\,(b - c) = ab - ac$
(i) 3576 × 9
= 3576 × (10 − 1)
= 3576 × 10 − 3576 × 1
= 35760 − 3576
= 32184

(ii) 847 × 99
= 847 × (100 − 1)
= 847 × 100 − 847 × 1
= 84700 − 847
= 83853

(iii) 2437 × 999
= 2437 × (1000 − 1)
= 2437 × 1000 − 2437 × 1
= 2437000 − 2437
= 2434563

Q7

Answer :

(i)

$$\begin{array}{r} 456 \\ \times\ 67 \\ \hline 3206 \\ 27480 \\ \hline 30686 \end{array}$$

Multiplication by 7
Multiplication by 60

458 × 67 = 30686

(ii)

$$\begin{array}{r} 3709 \\ \times\ 89 \\ \hline 33381 \\ 296720 \\ \hline 330101 \end{array}$$

Multiplication by 9
Multiplication by 80

3709 × 89 = 330101

(iii)

$$\begin{array}{r} 4617 \\ \times\ 234 \\ \hline 18468 \\ 138510 \\ 923400 \\ \hline 1080378 \end{array}$$

Multiplication by 4
Multiplication by 30
Multiplication by 200

4617 × 234 = 1080378

(iv)

$$\begin{array}{r} 15208 \\ \times\ 542 \\ \hline 30416 \\ 608320 \\ 7604000 \\ \hline 8242736 \end{array}$$

Multiplication by 2
Multiplication by 40
Multiplication by 500

15208 × 542 = 8242736

Q8

Answer :

Largest three-digit number = 999
Largest five-digit number = 99999
∴ Product of the two numbers = 999 × 99999
= 999 × (100000 − 1) (Using distributive law)
= 99900000 − 999
= 99899001

Q9

Answer :

Uniform speed of a car = 75 km/h

Distance = speed × time
= 75 × 98
=75 × (100 − 2) (Using distributive law)
=75 × 100 − 75 × 2
=7500 − 150
= 7350 km

∴ The distance covered in 98 h is 7350 km.

Q10

Answer :

Cost of 1 VCR set = Rs 24350
Cost of 139 VCR sets = 139 × 24350
=24350 × (140 − 1) (Using distributive property)
=24350 × 140 − 24350
=3409000 − 24350
= Rs. 3384650

∴ The cost of all the VCR sets is Rs 33,84,650.

Q11

Answer :

Cost of construction of 1 house = Rs 450000
Cost of construction of 197 such houses = 197 × 450000
= 450000 × (200 − 3)
= 450000 × 200 − 450000 × 3 [Using distributive property of multiplication over subtraction]
= 90000000 − 1350000
= 88650000

∴ The total cost of construction of 197 houses is Rs 8,86,50,000.

Q12

Answer :

Cost of a chair = Rs 1065
Cost of a blackboard = Rs 1645
Cost of 50 chairs = 50 × 1065 = Rs 53250
Cost of 30 blackboards = 30 × 1645 = Rs 49350
∴ Total amount of the bill = cost of 50 chairs + cost of 30 blackboards
= Rs (53250 + 49350)
= Rs 1,02,600

Q13

Answer :

Number of student in 1 section = 45
Number of students in 6 sections = 45 × 6 = 270
Monthly charges from 1 student = Rs 1650
∴ Total monthly collection from class VI = Rs 1650 × 270 = Rs 4,45,500

Q14

Answer :

If the product of two whole numbers is zero, then one of them is definitely zero.
Example: 0 × 2 = 0 and 0 × 15 = 0

If the product of whole numbers is zero, then both of them may be zero.
i.e., 0 × 0 = 0

Now, 2 × 5 = 10. Here, the product will be non-zero because the numbers to be multiplied are not equal to zero.

Q15

Answer :

(i) Sum of two odd numbers is an even number. Example: 3 + 5 = 8, which is an even number.
(ii) Product of two odd numbers is an odd number. Example: 5 × 7 = 35, which is an odd number.
(iii) $a \neq 0$ and $a \times a = a$
Given: $a \times a = a$
$\Rightarrow a = \frac{a}{a} = 1, a \neq 0$

Whole Numbers
Ex 3E

Q1

Answer :

(i)

$$\begin{array}{r} 53 \\ 36\overline{)1936} \\ -180 \\ \hline 136 \\ -108 \\ \hline 28 \end{array}$$

Dividend = 1936, Divisor = 36 , Quotient = 53 , Remainder = 28

Check: Divisor × Quotient + Remainder = 36 × 53 + 28

= 1936

=Dividend

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

(ii) 19881 ÷ 47

$$\begin{array}{r} 423 \\ 47\overline{)19881} \\ -188 \\ \hline 108 \\ -94 \\ \hline 141 \\ -141 \\ \hline 0 \end{array}$$

Dividend = 19881, Divisor = 47 , Quotient = 423, Remainder = 0

Check: Divisor ×Quotient + Remainder= 47 × 423 + 0

= 19881

=Dividend

Hence, Dividend = Divisor × Quotient + Remainder

Verified.

(iii)

$$\begin{array}{r} 756 \\ 341\overline{)257796} \\ -2387 \\ \hline 1909 \\ -1705 \\ \hline 2046 \\ -2046 \\ \hline 0 \end{array}$$

Dividend = 257796 , Divisor = 341 , Quotient = 756 , Remainder = 0
Check : Divisor × Quotient + Remainder = 341 × 756 + 0
= 257796
= Dividend
Hence, Dividend = Divisor × Quotient + Remainder
Verified.

(iv) 612846 ÷ 582

$$\begin{array}{r} 1053 \\ 582\overline{)612846} \\ -582 \\ \hline 3084 \\ -2910 \\ \hline 1746 \\ -1746 \\ \hline 0 \end{array}$$

Dividend = 612846 , Divisor = 582, Quotient = 1053 , Remainder = 0
Check : Divisor × Quotient + Remainder= 582 × 1053 + 0
= 612846
=Dividend
Hence, Dividend = Divisor × Quotient + Remainder
Verified.

(v) 34419 ÷ 149

$$\begin{array}{r} 231 \\ 149\overline{)34419} \\ -298 \\ \hline 461 \\ -447 \\ \hline 149 \\ -149 \\ \hline 0 \end{array}$$

Dividend = 34419, Divisor = 149 , Quotient = 231, Remainder = 0
Check : Divisor × Quotient + Remainder = 149 × 231 + 0
= 34419
=Dividend
Hence, Dividend = Divisor × Quotient + Remainder
Verified.

(vi) 39039 ÷ 1001

$$\begin{array}{r} 39 \\ 1001\overline{)39039} \\ -3003 \\ \hline 9009 \\ -9009 \\ \hline 0 \end{array}$$

Dividend = 39039 , Divisor = 1001 , Quotient = 39 , Remainder = 0
Check : Divisor × Quotient + Remainder = 1001 × 39 + 0
= 39039
=Dividend
Hence, Dividend = Divisor × Quotient + Remainder
Verified.

Q2

Answer :

(i) 6971 ÷ 47

$$\begin{array}{r} 148 \\ 47\overline{)6971} \\ -47 \\ \hline 227 \\ -188 \\ \hline 391 \\ -376 \\ \hline 15 \end{array}$$

Quotient = 148 and Remainder = 15

Check: Divisor × Quotient + Remainder = 47 × 148 + 15

= 6971

= Dividend

∴ Dividend = Divisor × Quotient + Remainder

Verified.

(ii) 4178 ÷ 35

$$\begin{array}{r} 119 \\ 35\overline{)4178} \\ -35 \\ \hline 67 \\ -35 \\ \hline 328 \\ -315 \\ \hline 13 \end{array}$$

Dividend = 119 and Remainder = 13

Check: Divisor × Quotient + remainder = 35 × 119 + 13

= 4178

= Dividend

∴ Dividend= Divisor × Quotient + Remainder

Verified.

(iii) 36195 ÷ 153

$$\begin{array}{r} 236 \\ 153\overline{)36195} \\ -306 \\ \hline 559 \\ -459 \\ \hline 1005 \\ -918 \\ \hline 87 \end{array}$$

Quotient = 236 and Remainder = 87

Check: Divisor × Quotient + Remainder = 153 × 236 + 87

= 36195

= Dividend

∴ Dividend= Divisor × Quotient +Remainder

Verified.

(iv) 93575 ÷ 400

$$\begin{array}{r} 233 \\ 400\overline{)93575} \\ -800 \\ \hline 1357 \\ -1200 \\ \hline 1575 \\ -1200 \\ \hline 375 \end{array}$$

Quotient = 233 and Remainder = 375
Check: Divisor × Quotient + Remainder = 400 × 233 + 375
= 93575
= Dividend
∴ Dividend= Divisor × Quotient + Remainder
Verified.

(v) 23025 ÷ 1000

$$\begin{array}{r} 23 \\ 1000\overline{)23025} \\ -2000 \\ \hline 3025 \\ -3000 \\ \hline 25 \end{array}$$

Quotient = 23 and remainder = 25
Check: Divisor × Quotient + Remainder =1000 × 23 + 25
= 23025
= Dividend
∴ Dividend= Divisor × Quotient +Remainder
Verified.

(vi) 16135 ÷ 875

$$\begin{array}{r} 18 \\ 875\overline{)16135} \\ -875 \\ \hline 7385 \\ -7000 \\ \hline 385 \end{array}$$

Quotient = 18 and Remainder = 385
Check: Divisor × Quotient + Remainder =875 × 18 + 385
= 16135
= Dividend
∴ Dividend= Divisor × Quotient +Remainder
Verified.

Q3

Answer :

(i) 65007 ÷ 1 = 65007

(ii) 0 ÷ 879 = 0

(iii) 981 + 5720 ÷ 10
= 981 + (5720 ÷ 10) (Following DMAS property)
= 981 + 572
= 1553

(iv) 1507 − (625 ÷ 25) (Following BODMAS property)
= 1507 − 25
= 1482

(v) 32277 ÷ (648 − 39) (Following BODMAS property)
= 32277 ÷ (609)
= 53

(vi) (1573 ÷ 1573) − (1573 ÷ 1573) (Following BODMAS property)
= 1 − 1
= 0

Q4

Answer :

Given: $n \div n = n$

$\Rightarrow \frac{n}{n} = n$

$\Rightarrow n = n^2$

i.e., the whole number n is equal to n^2.

∴ The given whole number must be 1.

Q5

Answer :

Let x and y be the two numbers.

Product of the two numbers = $x \times y = 504347$

If $x = 317$, we have:

$317 \times y = 504347$

$\Rightarrow y = 504347 \div 317$

```
      1591
317 ) 504347
     -317
     ----
      1873
     -1585
     -----
       2884
      -2853
      -----
        317
       -317
       ----
          0
```

$y = 1591$

∴ The other number is 1591.

Q6

Answer :

Dividend = 59761, quotient = 189, remainder = 37 and divisor = ?

Dividend = divisor × quotient + remainder

⇒ 59761 = divisor × 189 + 37

⇒ 59761 − 37 = divisor × 189

⇒ 59724 = divisor × 189

⇒ Divisor = 59724 ÷ 189

```
      316
189 ) 59724
     -567
     ----
      302
     -189
     ----
      1134
     -1134
     -----
         0
```

Hence, divisor =316

Q7

Answer :

Here, Dividend = 55390, Divisor = 299 and Remainder = 75
We have to find the quotient.
Now, Dividend = Divisor × Quotient + Remainder
⇒ 55390 = 299 × Quotient + 75
⇒ 55390 − 75 = 299 × Quotient
⇒ 55315 = 299 × Quotient
⇒ Quotient = 55315 ÷ 299

$$
\begin{array}{r}
185 \\
299\overline{)55315} \\
\underline{299} \\
2541 \\
\underline{2392} \\
1495 \\
\underline{1495} \\
0
\end{array}
$$

Hence, quotient =185

Q8

Answer :

First, we will divide 13601 by 87.

$$
\begin{array}{r}
156 \\
87\overline{)13601} \\
\underline{-87} \\
490 \\
\underline{-435} \\
551 \\
\underline{-522} \\
29
\end{array}
$$

Remainder = 29

So, 29 must be subtracted from 13601 to get a number exactly divisible by 87.
i.e., 13601 − 29 = 13572

Now, we have:

$$
\begin{array}{r}
156 \\
87\overline{)13572} \\
\underline{-87} \\
487 \\
\underline{-435} \\
522 \\
\underline{-522} \\
0
\end{array}
$$

∴ 29 must be subtracted from 13601 to make it divisible by 87.

Q9

Answer :

First, we will divide 1056 by 23.

$$\begin{array}{r} 45 \\ 23\overline{)1056} \\ -92 \\ \hline 136 \\ -115 \\ \hline 21 \end{array}$$

Required number = 23 − 21 = 2
So, 2 must be added to 1056 to make it exactly divisible by 23.
i.e., 1056 + 2 = 1058

Now, we have:

$$\begin{array}{r} 46 \\ 23\overline{)1058} \\ -92 \\ \hline 138 \\ -138 \\ \hline 0 \end{array}$$

∴ 1058 is exactly divisible by 23.

Q10

Answer :

We have to find the largest four digit number divisible by 16 .
The largest four-digit number = 9999
Therefore, dividend =9999
Divisor =16

$$\begin{array}{r} 62 \\ 16\overline{)9999} \\ -96 \\ \hline 39 \\ -32 \\ \hline 79 \\ -64 \\ \hline 15 \end{array}$$

Here, we get remainder =15
Therefore, 15 must be subtracted from 9999 to get the largest four digit number that is divisible by 16.
i.e., 9999 − 15 = 9984

Thus, 9984 is the largest four-digit number that is divisible by 16.

Q11

Answer :

Largest five-digit number =99999

$$\begin{array}{r} \mathbf{153} \\ \mathbf{653}\overline{)\mathbf{99999}} \\ \mathbf{-653} \\ \hline \mathbf{3469} \\ \mathbf{-3265} \\ \hline \mathbf{2049} \\ \mathbf{-1959} \\ \hline \mathbf{90} \end{array}$$

Dividend = 99999, Divisor = 653, Quotient = 153 and Remainder = 90
Check: Divisor ×Quotient + Remainder
= 653 × 153 + 90
= 99909 + 90
= 99999
= Dividend

∴ Dividend = Divisor × Quotient + Remainder
Verified.

Q12

Answer :

Least six-digit number = 100000
Here, dividend = 100000 and divisor = 83

$$\begin{array}{r} 1204 \\ 83\overline{)99932} \\ \underline{-\,83} \\ 169 \\ \underline{-\,166} \\ 332 \\ \underline{-\,332} \\ 0 \end{array}$$

In order to find a number exactly divisible by 83, we have to subtract the remainder from the dividend.
i.e., 100000 − 68 = 99932

So, 99932 is the least six-digit number exactly divisible by 83.

$$\begin{array}{r} 1204 \\ 83\overline{)99932} \\ \underline{-83} \\ 169 \\ \underline{-166} \\ 332 \\ \underline{-332} \\ 0 \end{array}$$

Q13

Answer :

Cost of 1 dozen bananas = Rs 29
Number of dozens purchased for Rs 1392 = 1392 ÷ 29

$$\begin{array}{r} 48 \\ 29\overline{)1392} \\ \underline{-116} \\ 232 \\ \underline{-232} \\ 0 \end{array}$$

Hence, 48 dozen of bananas can be purchased with Rs. 1392.

Q14

Answer :

Number of trees planted in 157 rows = 19625
Trees planted in 1 row = 19625 ÷ 157

$$\begin{array}{r} 125 \\ 157\overline{)19625} \\ \underline{-157} \\ 392 \\ \underline{-314} \\ 785 \\ \underline{-785} \\ 0 \end{array}$$

∴ 125 trees are planted in each row.

Q15

Answer :

Population of the town = 517530

$\left(\frac{1}{15}\right)$ of the population is reported to be literate, i.e., $\left(\frac{1}{15}\right)$ × 517530 = 517530 ÷ 15

$$
\begin{array}{r}
34502 \\
15\overline{)517530} \\
-45 \\
\hline
67 \\
-60 \\
\hline
75 \\
-75 \\
\hline
030 \\
-30 \\
\hline
0
\end{array}
$$

∴ There are 34502 illiterate persons in the given town.

Q16

Answer :

Cost price of 23 colour TV sets = Rs 5,70,055

Cost price of 1 TV set = Rs 570055 ÷ 23

$$
\begin{array}{r}
24785 \\
23\overline{)570055} \\
-46 \\
\hline
110 \\
-92 \\
\hline
180 \\
-161 \\
\hline
195 \\
-184 \\
\hline
115 \\
-115 \\
\hline
0
\end{array}
$$

∴ The cost price of one TV set is Rs 24,785.

Whole Numbers
Ex 3F

Q1

Answer :

(b) 0

The smallest whole number is 0.

Q2

Answer :

(d) 1008

(a)

$$\begin{array}{r} 113 \\ 9\overline{)1018} \\ -\,9 \\ \hline 11 \\ -\,9 \\ \hline 28 \\ -\,27 \\ \hline 1 \end{array}$$

Hence, 1018 is not exactly divisible by 9.

(b)

$$\begin{array}{r} 114 \\ 9\overline{)1026} \\ -9 \\ \hline 12 \\ -9 \\ \hline 36 \\ -36 \\ \hline 1 \end{array}$$

Hence, 1026 is exactly divisible by 9.

(c)

$$\begin{array}{r} 112 \\ 9\overline{)1009} \\ -9 \\ \hline 10 \\ -9 \\ \hline 19 \\ -18 \\ \hline 1 \end{array}$$

Hence, 1009 is not exactly divisible by 9.

(d)

$$\begin{array}{r} 112 \\ 9\overline{)1008} \\ -9 \\ \hline 10 \\ -9 \\ \hline 18 \\ -18 \\ \hline 0 \end{array}$$

Hence, 1008 is exactly divisible by 9.

(b) and (d) are exactly divisible by 9, but (d) is the least number which is exactly divisible by 9.

(b)

$$\begin{array}{r} 62498 \\ 16\overline{)999982} \\ -96 \\ \hline 39 \\ -32 \\ \hline 79 \\ -64 \\ \hline 158 \\ -144 \\ \hline 142 \\ -128 \\ \hline 14 \end{array}$$

Hence, 999982 is not exactly divisible by 16.

(c)

$$\begin{array}{r} 62499 \\ 16\overline{)999984} \\ -96 \\ \hline 39 \\ -32 \\ \hline 79 \\ -64 \\ \hline 158 \\ -144 \\ \hline 144 \\ -144 \\ \hline 0 \end{array}$$

Hence, 999984 is exactly divisible by 16.

(d)

$$\begin{array}{r} 62497 \\ 16\overline{)\,999964} \\ -\,96 \\ \hline 39 \\ -\,32 \\ \hline 79 \\ -\,64 \\ \hline 156 \\ -\,144 \\ \hline 124 \\ -\,112 \\ \hline 12 \end{array}$$

Hence, 999964 is not exactly divisible by 16.

The largest six-digit number which is exactly divisible by 16 is 999984.

Q4

Answer :

(c) 8

Here we have to tell what least number should be subtracted from 10004 to get a number exactly divisible by 12

So, we will first divide 10004 by 12.

$$\begin{array}{r} 833 \\ 12\overline{)\,10004} \\ -\,96 \\ \hline 40 \\ -\,36 \\ \hline 44 \\ -\,36 \\ \hline 8 \end{array}$$

Remainder = 8

So, 8 should be subtracted from 10004 to get the number exactly divisible by 12.

i.e., 10004 − 8 = 9996

$$\begin{array}{r} 833 \\ 12\overline{)\,9996} \\ -\,96 \\ \hline 39 \\ -\,36 \\ \hline 36 \\ -\,36 \\ \hline 0 \end{array}$$

Hence, 9996 is exactly divisible by 12.

Q5

Answer :

(a) 18

Here , we have to tell that what least number must be added to 10056 to get a number exactly divisible by 23

So, first we will divide 10056 by 23

$$\begin{array}{r} 437 \\ 23\overline{)10056} \\ -92 \\ \hline 85 \\ -69 \\ \hline 166 \\ -161 \\ \hline 5 \end{array}$$

Remainder = 5

Required number = 23 − 5 = 18

So, 18 must be added to 10056 to get a number exactly divisible by 23.

i.e., 10056 + 18 = 10074

$$\begin{array}{r} 438 \\ 23\overline{)10074} \\ -92 \\ \hline 87 \\ -69 \\ \hline 184 \\ -184 \\ \hline 0 \end{array}$$

Hence, 10074 is exactly divisible by 23 .

Q6

Answer :

(d) 462

(a)

$$\begin{array}{r} 4 \\ 11\overline{)450} \\ -44 \\ \hline 10 \end{array}$$

Hence, 450 is not divisible by 11.

(b)

$$\begin{array}{r} 41 \\ 11\overline{)451} \\ -44 \\ \hline 11 \\ -11 \\ \hline 0 \end{array}$$

Hence, 451 is divisible by 11.

(c)

$$\begin{array}{r} 41 \\ 11\overline{)460} \\ -44 \\ \hline 20 \\ -11 \\ \hline 9 \end{array}$$

Hence, 460 is not divisible by 11.

(d)

$$\begin{array}{r} 42 \\ 11\overline{)462} \\ -44 \\ \hline 22 \\ -22 \\ \hline 0 \end{array}$$

Hence, 462 is divisible by 11.

Here, the numbers given in options (b) and (d) are divisible by 11. However, we want a whole number nearest to 457 which is divisible by 11.
So, 462 is whole number nearest to 457 and divisible by 11.

Q7

Answer :

(c) 184

Number of whole numbers = (1203 – 1018) – 1
= 185 – 1
= 184

Q8

Answer :

(b) 521

Divisor = 46
Quotient = 11
Remainder = 15
Dividend = divisor × quotient + remainder
= 46 × 11 + 15
= 506 + 15
= 521

Q9

Answer :

(c) 12

Dividend = 199
Quotient = 16
Remainder = 7
According to the division algorithm, we have:
Dividend = divisor × quotient + remainder
⇒ 199 = divisor × 16 + 7
⇒ 199 – 7 = divisor × 16
⇒ Divisor = 192 ÷ 16

$$\begin{array}{r} 12 \\ 16\overline{)192} \\ -16 \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$$

Q10

Answer :

(a) 11023

7589 – ? = 3434
⇒ 7589 – x = 3434
⇒ x = 7589 + 3434
⇒ x = 11023

Q11

Answer :

(c) 58113

587 × 99
= 587 × (100 – 1)
= 587 × 100 – 587 × 1 [Using distributive property of multiplication over subtraction]
= 58700 – 587
= 58113

Q12

Answer :

(c) 53800

4 × 538 × 25
= (4 × 25) × 538
= 100 × 538
= 53800

Q13

Answer :

(c) 2467900

By using the distributive property, we have:
24679 × 92 + 24679 × 8
= 24679 × (92 + 8)
= 24679 × 100
= 2467900

Q14

Answer :

(a) 1625000

By using the distributive property, we have:

1625 × 1625 – 1625 × 625
= 1625 × (1625 – 625)
=1625 × 1000
= 1625000

Q15

Answer :

(c) 156800

By using the distributive property, we have:
1568 × 185 – 1568 × 85
= 1568 × (185 – 85)
= 1568 × 100
= 156800

Q16

Answer :

(c) 20

(888 + 777 + 555) = (111 × ?)
⇒ (888 + 777 + 555) = 111 × (8 + 7 + 5) [By taking 111 common]
= 111 × (20) = 2220

Q17

Answer :

(b) an even number

The sum of two odd numbers is an even number.

Example: 5 + 3 = 8

Q18

Answer :

(a) an odd number

The product of two odd numbers is an odd number.

Example: 5 × 3 = 15

Q19

Answer :

(d) none of these

Given: a is a whole number such that $a + a = a$.

If $a = 1$, then $1+ 1 = 2 \neq 1$
If $a = 2$, then $2 + 2 = 4 \neq 2$
If $a = 3$, then $3 + 3 = 6 \neq 3$

Q20

Answer :

(b) 9999

Predecessor of 10000 = 10000 − 1 = 9999

Q21

Answer :

(b) 1002

Successor of 1001 = 1001 + 1 = 1002

Q22

Answer :

(b) 2

The smallest even whole number is 2. Zero (0) is neither an even number nor an odd number.