

NCERT solution for Whole Numbers

Exercise – 2.1

Question 1

Write the next three natural numbers after 10999.

Answer

Next three natural numbers after 10999 can be obtained by adding 1 to them

| | |
|---------------|-------|
| $10999 + 1 =$ | 11000 |
| $11000 + 1 =$ | 11001 |
| $11001 + 1 =$ | 11002 |

So the numbers are 11000, 11001, 11002

Question 2:

Write the three whole numbers occurring just before 10001.

Answer:

3 whole numbers just before 10001 can be obtained by subtracting 1 from them

| | |
|---------------|-------|
| $10001 - 1 =$ | 10000 |
|---------------|-------|

| | |
|---------------|------|
| $10000 - 1 =$ | 9999 |
| $9999 - 1 =$ | 9998 |

So the numbers are 10000,9999,9998

Question 3

Which is the smallest whole number?

Answer

The smallest whole number is 0.

Question 4

How many whole numbers are there between 32 and 53?

Answer

Whole numbers between 32 and 53 can be find using subtracting the smaller number from bigger number, but it will include the highest number also, so subtracting 1 more. So it will be $= 53 - 32 - 1 = 20$

We can alternatively verify the answer by writing down all the whole number between them and counting them

33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51,
52

Question 5

Write the successor of:

(a) 2440701

(b) 100199

(c) 1099999

(d) 2345670

Answer

Successor are obtained by adding 1 to the number

| | | |
|-----------|-----------------|---------|
| a) | $2440701 + 1 =$ | 2440702 |
| b) | $100199 + 1 =$ | 100200 |
| c) | $1099999 + 1 =$ | 1100000 |
| d) | $2345670 + 1 =$ | 2345671 |

Question 6

Write the predecessor of:

(a) 94

(b) 10000

(c) 208090

(d) 7654321

Answer

Predecessor is obtained by subtracting 1 from the Number

| | | |
|----|-----------------|---------|
| a) | $94 - 1 =$ | 93 |
| b) | $10000 - 1 =$ | 9999 |
| c) | $208090 - 1 =$ | 208089 |
| d) | $7654321 - 1 =$ | 7654320 |

Question 7

In each of the following pairs of numbers, state which whole number is on the left of the other number on the number line. Also write them with the appropriate sign ($>$, $<$) between them.

(a) 530, 503

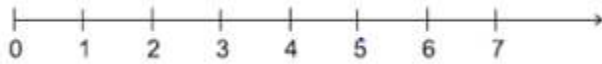
(b) 370, 307

(c) 98765, 56789

(d) 9830415, 10023001

Answer

The Number line can be represented as



The smaller is left side of the larger Number

(a) 530, 503

As $530 > 503$,

503 is on the left side of 530 on the number line.

(b) 370, 307

As $370 > 307$,

307 is on the left side of 370 on the number line.

(c) 98765, 56789

As $98765 > 56789$,

56789 is on the left side of 98765 on the number line.

(d) 9830415, 10023001

Since $98,30,415 < 1,00,23,001$, $98,30,415$ is on the left side of $1,00,23,001$ on the number line.

Question 8

Which of the following statements are true (T) and which are false (F)?

- (a) Zero is the smallest natural number.
- (b) 400 is the predecessor of 399.
- (c) Zero is the smallest whole number.
- (d) 600 is the successor of 599.
- (e) All natural numbers are whole numbers.
- (f) All whole numbers are natural numbers.
- (g) The predecessor of a two-digit number is never a single digit number.
- (h) 1 is the smallest whole number.
- (i) The natural number 1 has no predecessor.
- (j) The whole number 1 has no predecessor.
- (k) The whole number 13 lies between 11 and 12.
- (l) The whole number 0 has no predecessor.
- (m) The successor of a two-digit number is always a two-digit number.

Answer

- (a) False, 0 is not a natural number. It is a smallest whole number
- (b) False, as predecessor of 399 is 398 ($399 - 1 = 398$).
- (c) True
- (d) True, as $599 + 1 = 600$
- (e) True
- (f) False, as 0 is a whole number but it is not a natural number.
- (g) False. Example would be two-digit number 10 whose predecessor is 9.
- (h) False, 0 is the smallest whole number.
- (i) True, as 0 is the predecessor of 1 but it is not a natural number.
- (j) False, as 0 is the predecessor of 1 and it is a whole number.
- (k) False, 13 does not lie in between 11 and 12.
- (l) True, predecessor of 0 is -1 , which is not a whole number.
- (m) False, as successor of 99 is 100.

Exercise 2.2**Question 1**

Find the sum by suitable rearrangement:

(a) $837 + 208 + 363$

(b) $1962 + 453 + 1538 + 647$

Answer

Rearranging the terms to make the addition simpler

(a) $837 + 208 + 363 = (837 + 363) + 208 = 1200 + 208 = 1408$

(b) $1962 + 453 + 1538 + 647 = (1962 + 1538) + (453 + 647) = 3500 + 1100 = 4600$

Question 2

Find the product by suitable rearrangement:

(a) $2 \times 1768 \times 50$

(b) $4 \times 166 \times 25$

(c) $8 \times 291 \times 125$

(d) $625 \times 279 \times 16$

(e) $285 \times 5 \times 60$

(f) $125 \times 40 \times 8 \times 25$

Answer

We can make the product calculation easier by making it multiples of 10,100 etc.

(a) $2 \times 1768 \times 50$

Here in this product, the product of 2 and 50 makes multiples of 100 which is easier to multiple with other number

$$= 2 \times 50 \times 1768 = 100 \times 1768 = 176800$$

(b) $4 \times 166 \times 25$

Here in this product, the product of 4 and 25 makes multiples of 100 which is easier to multiple with other number

$$= 4 \times 25 \times 166 = 100 \times 166 = 16600$$

(c) $8 \times 291 \times 125$

Here in this product, the product of 8 and 125 makes multiples of 1000 which is easier to multiple with other number

$$= 8 \times 125 \times 291 = 1000 \times 291 = 291000$$

(d) $625 \times 279 \times 16 = 625 \times 16 \times 279 = 10000 \times 279 = 2790000$

(e) $285 \times 5 \times 60 = 285 \times 300 = 85500$

(f) $125 \times 40 \times 8 \times 25 = 125 \times 8 \times 40 \times 25 = 1000 \times 1000 = 1000000$

Question 3:

Find the value of the following:

(a) $297 \times 17 + 297 \times 3$

(b) $54279 \times 92 + 8 \times 54279$

(c) $81265 \times 169 - 81265 \times 69$

(d) $3845 \times 5 \times 782 + 769 \times 25 \times 218$

Answer

Here in these question, we can see a quantity common, so we can take it out of bracket and make the calculation easier

(a) $297 \times 17 + 297 \times 3$

Here 297 is common in both the term

$$= 297 \times (17 + 3) = 297 \times 20 = 5940$$

(b) $54279 \times 92 + 8 \times 54279 = 54279 \times 92 + 54279 \times 8$

Here 54279 is common in both the term

$$= 54279 \times (92 + 8)$$

$$= 54279 \times 100 = 5427900$$

(c) $81265 \times 169 - 81265 \times 69$

Here 81265 is common in both the term

$$= 81265 \times (169 - 69) = 81265 \times 100 = 8126500$$

(d) $3845 \times 5 \times 782 + 769 \times 25 \times 218$

Here we don't common term as of now, so rearranging little bit as
 $769 \times 5 = 3845$

$$= 3845 \times 5 \times 782 + 769 \times 5 \times 5 \times 218$$

$$= 3845 \times 5 \times 782 + 3845 \times 5 \times 218$$

$$= 3845 \times 5 \times (782 + 218)$$

$$= 19225 \times 1000 = 19225000$$

Question 4:

Find the product using suitable properties.

(a) 738×103

(b) 854×102

(c) 258×1008

(d) 1005×168

Answer

We know that

Distributive property

If a, b and c are any two whole numbers, then $a(b+c) = a \times b + a \times c$.

$$(a) 738 \times 103 = 738 \times (100 + 3)$$

$$= 738 \times 100 + 738 \times 3 \text{ (Distributive property)}$$

$$= 73800 + 2214$$

$$= 76014$$

$$(b) 854 \times 102 = 854 \times (100 + 2)$$

$$= 854 \times 100 + 854 \times 2 \text{ (Distributive property)}$$

$$= 85400 + 1708 = 87108$$

$$(c) 258 \times 1008 = 258 \times (1000 + 8)$$

$$= 258 \times 1000 + 258 \times 8 \text{ (Distributive property)}$$

$$= 258000 + 2064 = 260064$$

$$(d) 1005 \times 168 = (1000 + 5) \times 168$$

$$= 1000 \times 168 + 5 \times 168 \text{ (Distributive property)}$$

$$= 168000 + 840 = 168840$$

Question 5

A taxi driver filled his car petrol tank with 40 litres of petrol on Monday. The next day, he filled the tank with 50 litres of petrol. If the petrol costs Rs 44 per litre, how much did he spend in all on petrol?

Answer

Quantity of petrol filled on Monday = 40 litres

Quantity of petrol filled on Tuesday = 50 litres

Total quantity filled = $(40 + 50)$ litres = 90 Litres

Cost of petrol (per l) = Rs 44

Total money spent = $44 \times 90 =$ Rs 3960

Question 6

A vendor supplies 32 litres of milk to a hotel in the morning and 68 litres of milk in the evening. If the milk costs Rs 15 per litre, how much money is due to the vendor per day?

Answer

Quantity of milk supplied in the morning = 32 l

Quantity of milk supplied in the evening = 68 l

Total of milk per litre = $(32 + 68)$ l

Cost of milk per litre = Rs 15

$$\text{Total cost per day} = 15 \times (32 + 68)$$

$$= 15 \times 100 = \text{Rs } 1500$$

Question 7

Match the following:

| | |
|--|---|
| (i) $425 \times 136 = 425 \times (6 + 30 + 100)$ | (a) Commutativity under multiplication. |
| (ii) $2 \times 49 \times 50 = 2 \times 50 \times 49$ | (b) Commutativity under addition. |
| (iii) $80 + 2005 + 20 = 80 + 20 + 2005$ | (c) Distributivity of multiplication over addition. |

Answer

We Know that

| | |
|-----------------------------|---|
| Closure Property | If a and b are any two whole numbers, then $a+b$, $a \times b$ are also whole numbers. |
| Commutative property | If a and b are any two whole numbers, then $a+b = b+a$ and $a \times b = b \times a$. |
| Associative property | If a, b and c are any two whole numbers, then $(a+b)+c = a+(b+c)$ and $(a \times b) \times c = a \times (b \times c)$. |

| | |
|------------------------------|--|
| Distributive property | If a, b and c are any two whole numbers, then $a(b+c) = a \times b + a \times c$. |
|------------------------------|--|

(i) $425 \times 136 = 425 \times (6 + 30 + 100)$ which is Distributivity of multiplication over addition Hence, (c)

(ii) $2 \times 49 \times 50 = 2 \times 50 \times 49$ which is Commutativity under multiplication Hence, (a)

(iii) $80 + 2005 + 20 = 80 + 20 + 2005$ which is Commutativity under addition Hence, (b)

| | |
|--|---|
| (i) $425 \times 136 = 425 \times (6 + 30 + 100)$ | (c) Distributivity of multiplication over addition. |
| (ii) $2 \times 49 \times 50 = 2 \times 50 \times 49$ | (a) Commutativity under multiplication. |
| (iii) $80 + 2005 + 20 = 80 + 20 + 2005$ | (b) Commutativity under addition. |

Exercise 2.3

Question 1

Which of the following will not represent zero?

(a) $1 + 0$

(b) 0×0

(c) $0/2$

(d) $(10-10)/2$

Answer

| | | |
|----|-------------------|-------------------------------|
| a) | $1+0=1$ | So it does not represent zero |
| b) | $0 \times 0=0$ | So it represents zero |
| c) | $0/2=0$ | So it represents zero |
| d) | $(10-10)/2=0/2=0$ | So it represents zero |

Question 2

If the product of two whole numbers is zero, can we say that one or both of them will be zero? Justify through examples.

Answer

If the product of 2 whole numbers is zero, then one of them is definitely zero.

We can take examples to justify it

For example,

$$0 \times 11 = 0$$

$$968 \times 0 = 0$$

$$0 \times 0 = 0$$

If the product of 2 whole numbers is zero, then both of them may be zero.

Now if we take non zero numbers,

$$6 \times 8 = 48$$

(Since numbers to be multiplied are not equal to zero, the result of the product will also be non-zero.)

Question 3

If the product of two whole numbers is 1, can we say that one of both of them will be 1? Justify through examples.

Answer

If the product of 2 numbers is 1, then both the numbers have to be equal to 1.

For example, $1 \times 1 = 1$

However, $1 \times 9 = 9$ or $12 \times 1 = 12$

Clearly, the product of two whole numbers will be 1 in the situation when both numbers to be multiplied are 1.

Question 4

Find using distributive property:

(a) 728×101

(b) 5437×1001

(c) 824×25

(d) 4275×125

(e) 504×35

Answer

We know that

| | |
|------------------------------|--|
| Distributive property | If a, b and c are any two whole numbers, then $a(b+c) = a \times b + a \times c$. |
|------------------------------|--|

(a) $728 \times 101 = 728 \times (100 + 1)$

$= 728 \times 100 + 728 \times 1$

$= 72800 + 728 = 73528$

(b) $5437 \times 1001 = 5437 \times (1000 + 1)$

$= 5437 \times 1000 + 5437 \times 1$

$= 5437000 + 5437 = 5442437$

$$(c) 824 \times 25 = (800 + 24) \times 25$$

$$= (800 + 25 - 1) \times 25$$

$$= 800 \times 25 + 25 \times 25 - 1 \times 25$$

$$= 20000 + 625 - 25$$

$$= 20000 + 600 = 20600$$

$$(d) 4275 \times 125 = (4000 + 200 + 100 - 25) \times 125$$

$$= 4000 \times 125 + 200 \times 125 + 100 \times 125 - 25 \times 125$$

$$= 500000 + 25000 + 12500 - 3125$$

$$= 534375$$

$$(e) 504 \times 35 = (500 + 4) \times 35$$

$$= 500 \times 35 + 4 \times 35$$

$$= 17500 + 140 = 17640$$

Question 5

Study the pattern:

$$1 \times 8 + 1 = 9$$

$$12 \times 8 + 2 = 98$$

$$123 \times 8 + 3 = 987$$

$$1234 \times 8 + 4 = 9876$$

$$12345 \times 8 + 5 = 98765$$

Write the next two steps. Can you say how the pattern works?

(Hint: $12345 = 11111 + 1111 + 111 + 11 + 1$).

Answer

Let's start with first sequence to see how pattern works here

$$1 \times 8 + 1 = 9$$

$$12 \times 8 + 2 = 98$$

$$\text{i.e. } (11 + 1) \times 8 + 2 = 11 \times 8 + 1 \times 8 + 2 = 88 + 8 + 2 = 98$$

$$123 \times 8 + 3 = 987;$$

$$\text{i.e. } (111 + 11 + 1) \times 8 + 3 = 111 \times 8 + 11 \times 8 + 1 \times 8 + 3 = 888 + 88 + 8 + 3 = 987$$

$$1234 \times 8 + 4 = 9876;$$

$$\text{i.e. } (1111 + 111 + 11 + 1) \times 8 + 4 = 1111 \times 8 + 111 \times 8 + 11 \times 8 + 1 \times 8 + 4 = 8888 + 888 + 88 + 8 + 4 = 9876$$

$$12345 \times 8 + 5 = 98765$$

$$\text{i.e. } (11111 + 1111 + 111 + 11 + 1) \times 8 + 5 = 11111 \times 8 + 1111 \times 8 + 111 \times 8 + 11 \times 8 + 1 \times 8 + 5 = 88888 + 8888 + 888 + 88 + 8 + 5 = 98765$$

Extending the pattern, we have

$$123456 \times 8 + 6 =$$

$$\begin{aligned} & (111111 + 11111 + 1111 + 111 + 11 + 1) \times 8 + 6 \\ & = 111111 \times 8 + 11111 \times 8 + 1111 \times 8 + 111 \times 8 \\ & + 11 \times 8 + 1 \times 8 + 6 \\ & = 888888 + 88888 + 8888 + 888 + 88 + 8 + 6 = \end{aligned}$$

$$987654$$

$$1234567 \times 8 + 7 =$$

$$\begin{aligned} & (1111111 + 111111 + 11111 + 1111 + 111 + 11 + 1) \times 8 + 7 \\ & = 1111111 \times 8 + 111111 \times 8 + \\ & 11111 \times 8 + 1111 \times 8 + 111 \times 8 + 11 \times 8 + 1 \times 8 + 7 \end{aligned}$$

$$= 8888888 + 888888 + 88888 + 8888 + 888 + 88$$

$$+ 8 + 7 = 9876543$$

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