

**EXERCISE 2.1****PAGE NO: 31****1. Write the next three natural numbers after 10999.****Solutions:**

The next three natural numbers after 10999 are 11000, 11001 and 11002.

**2. Write the three whole numbers occurring just before 10001.****Solutions:**

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

**3. Which is the smallest whole number?****Solutions:**

The smallest whole number is 0.

**4. How many whole numbers are there between 32 and 53?****Solutions:**

The whole numbers between 32 and 53 are as follows:

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

Hence, there are 20 whole numbers between 32 and 53

**5. Write the successor of:****(a) 2440701 (b) 100199 (c) 1099999 (d) 2345670****Solutions:**

The successors are

(a)  $2440701 + 1 = 2440702$

(b)  $100199 + 1 = 100200$

(c)  $1099999 + 1 = 1100000$

(d)  $2345670 + 1 = 2345671$

**6. Write the predecessor of:****(a) 94 (b) 10000 (c) 208090 (d) 7654321****Solutions:**

The predecessors are

(a)  $94 - 1 = 93$

(b)  $10000 - 1 = 9999$

(c)  $208090 - 1 = 208089$

(d)  $7654321 - 1 = 7654320$

**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**

**Solutions:**

(a)  $530 > 503$

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

(b)  $370 > 307$

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

(c)  $98765 > 56789$

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

(d)  $9830415 < 10023001$

Hence, 9830415 is on the left side of 10023001 on the number line

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

**(a) Zero is the smallest natural number.**

**Solution:**

False

0 is not a natural number.

**(b) 400 is the predecessor of 399.**

**Solution:**

False

The predecessor of 399 is 398 because  $(399 - 1 = 398)$

**(c) Zero is the smallest whole number.**

**Solution:**

True

Zero is the smallest whole number.

**(d) 600 is the successor of 599.**

**Solution:**

True

Since  $(599 + 1 = 600)$

**(e) All natural numbers are whole numbers.**

**Solution:**

True

All natural numbers are whole numbers.

**(f) All whole numbers are natural numbers.**

**Solution:**

False

0 is a whole number but is not a natural number.

**(g) The predecessor of a two-digit number is never a single-digit number.**

**Solution:**

False

For example, the predecessor of 10 is 9.

**(h) 1 is the smallest whole number.**

**Solution:**

False

0 is the smallest whole number.

**(i) The natural number 1 has no predecessor.**

True

The predecessor of 1 is 0, but it is not a natural number.

**(j) The whole number 1 has no predecessor.**

**Solution:**

False

0 is the predecessor of 1 and is a whole number.

**(k) The whole number 13 lies between 11 and 12.**

**Solution:**

False

13 does not lie between 11 and 12.

**(l) The whole number 0 has no predecessor.**

**Solution:**

True

The predecessor of 0 is -1 and is not a whole number.

**(m) The successor of a two-digit number is always a two-digit number.**

**Solution:**

False

For example, the successor of 99 is 100

## EXERCISE 2.2

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**1. Find the sum by suitable rearrangement:**

(a)  $837 + 208 + 363$

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

**Solutions:**

(a) Given  $837 + 208 + 363$

$$= (837 + 363) + 208$$

$$= 1200 + 208$$

$$= 1408$$

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

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

$$= 3500 + 1100$$

$$= 4600$$

**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)  $125 \times 40 \times 8 \times 25$

**Solutions:**

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

$$= 2 \times 50 \times 1768$$

$$= 100 \times 1768$$

$$= 176800$$

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

$$= 4 \times 25 \times 166$$

$$= 100 \times 166$$

$$= 16600$$

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

$$= 8 \times 125 \times 291$$

$$= 1000 \times 291$$

$$= 291000$$

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

$$= 625 \times 16 \times 279$$

$$= 10000 \times 279$$

$$= 2790000$$

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

$$= 285 \times 300$$

$$= 85500$$

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

$$= 125 \times 8 \times 40 \times 25$$

$$= 1000 \times 1000$$

$$= 1000000$$

**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)  $3845 \times 5 \times 782 + 769 \times 25 \times 218$

**Solutions:**

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

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

$$= 297 \times 20$$

$$= 5940$$

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

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

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

$$= 54279 \times 100$$

$$= 5427900$$

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

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

$$= 81265 \times 100$$

$$= 8126500$$

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

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

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

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

$$= 19225 \times 1000$$

$$= 19225000$$

**4. Find the product using suitable properties.**

(a)  $738 \times 103$

(b)  $854 \times 102$

(c)  $258 \times 1008$

(d)  $1005 \times 168$

**Solutions:**

(a) Given  $738 \times 103$

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

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

$$= 73800 + 2214$$

$$= 76014$$

(b) Given  $854 \times 102$

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

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

$$= 85400 + 1708$$

$$= 87108$$

(c) Given  $258 \times 1008$

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

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

$$= 258000 + 2064$$

$$= 260064$$

(d) Given  $1005 \times 168$

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

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

$$= 168000 + 840$$

$$= 168840$$

**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 ₹ 44 per litre, how much did he spend in all on petrol?**

**Solutions:**

Petrol quantity filled on Monday = 40 litres

Petrol quantity filled on Tuesday = 50 litres

Total petrol quantity filled =  $(40 + 50)$  litre

Cost of petrol per litre = ₹ 44

Total money spent =  $44 \times (40 + 50)$

$$= 44 \times 90$$

$$= ₹ 3960$$

**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 ₹ 45 per litre, how much money is due to the vendor per day?**



**Solutions:**

Milk quantity supplied in the morning = 32 litres

Milk quantity supplied in the evening = 68 litres

Cost of milk per litre = ₹ 45

Total cost of milk per day =  $45 \times (32 + 68)$

=  $45 \times 100$

= ₹ 4500

Hence, the money due to the vendor per day is ₹ 4500

**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.

**Solutions:**

(i)  $425 \times 136 = 425 \times (6 + 30 + 100)$  (c) Distributivity of multiplication over addition.

Hence (c) is the correct answer

(ii)  $2 \times 49 \times 50 = 2 \times 50 \times 49$  (a) Commutativity under multiplication

Hence, (a) is the correct answer

(iii)  $80 + 2005 + 20 = 80 + 20 + 2005$  (b) Commutativity under addition

Hence, (b) is the correct answer

## EXERCISE 2.3

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1. Which of the following will not represent zero?

(a)  $1 + 0$

(b)  $0 \times 0$

(c)  $0 / 2$

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

**Solutions:**

(a)  $1 + 0 = 1$

Hence, it does not represent zero.

(b)  $0 \times 0 = 0$

Hence, it represents zero.

(c)  $0 / 2 = 0$

Hence, it represents zero.

(d)  $(10 - 10) / 2 = 0 / 2 = 0$

Hence, it represents zero.

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.

**Solutions:**

If the product of two whole numbers is zero, definitely one of them is zero

Example:  $0 \times 3 = 0$  and  $15 \times 0 = 0$

If the product of two whole numbers is zero, both of them may be zero

Example:  $0 \times 0 = 0$

Yes, if the product of two whole numbers is zero, then both of them will be zero.

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

**Solutions:**

If the product of two whole numbers is 1, both numbers should be equal to 1

Example:  $1 \times 1 = 1$

But  $1 \times 5 = 5$

Hence, it's clear that the product of two whole numbers will be 1, only in situations when both numbers to be multiplied are 1.

**4. Find using distributive property:**

(a)  $728 \times 101$

(b)  $5437 \times 1001$

(c)  $824 \times 25$

(d)  $4275 \times 125$

(e)  $504 \times 35$

**Solutions:**

(a) Given  $728 \times 101$

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

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

$$= 72800 + 728$$

$$= 73528$$

(b) Given  $5437 \times 1001$

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

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

$$= 5437000 + 5437$$

$$= 5442437$$

(c) Given  $824 \times 25$

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

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

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

$$= 20000 + 625 - 25$$

$$= 20000 + 600$$

$$= 20600$$

(d) Given  $4275 \times 125$

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

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

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

$$= 534375$$

(e) Given  $504 \times 35$

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

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

$$= 17500 + 140$$

$$= 17640$$

**5. Study the pattern:**

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

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

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

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

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

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

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

**Solutions:**

$$123456 \times 8 + 6 = 987654$$

$$1234567 \times 8 + 7 = 9876543$$

$$\text{Given } 123456 = (111111 + 11111 + 1111 + 111 + 11 + 1)$$

$$123456 \times 8 = (111111 + 11111 + 1111 + 111 + 11 + 1) \times 8$$

$$= 111111 \times 8 + 11111 \times 8 + 1111 \times 8 + 111 \times 8 + 11 \times 8 + 1 \times 8$$

$$= 888888 + 88888 + 8888 + 888 + 88 + 8$$

$$= 987648$$

$$123456 \times 8 + 6 = 987648 + 6$$

$$= 987654$$

Yes, here the pattern works

$$1234567 \times 8 + 7 = 9876543$$

$$\text{Given } 1234567 = (1111111 + 111111 + 11111 + 1111 + 111 + 11 + 1)$$

$$1234567 \times 8 = (1111111 + 111111 + 11111 + 1111 + 111 + 11 + 1) \times 8$$

$$= 1111111 \times 8 + 111111 \times 8 + 11111 \times 8 + 1111 \times 8 + 111 \times 8 + 11 \times 8 + 1 \times 8$$

$$= 8888888 + 888888 + 88888 + 8888 + 888 + 88 + 8$$

$$= 9876536$$

$$1234567 \times 8 + 7 = 9876536 + 7$$

$$= 9876543$$

Yes, here the pattern works.

**Disclaimer:**

**Dropped Topics – 2.4 Properties of whole numbers, 2.5 Patterns in whole numbers.**

