



Chapter 2:

Whole Numbers

SOLUTIONS

Exercise 2.1

1. Write the next three natural numbers after 10999.

Solution:

The next three natural numbers are

$$10999 + 1 = 11000$$

$$10999 + 2 = 11001$$

$$10999 + 3 = 11002$$

2. Write the three whole numbers occurring just before 10001.

Solution:

The three whole numbers occurring just before 10001 are

$$10001 - 1 = 10000$$

$$10001 - 2 = 9999$$

$$10001 - 3 = 9998$$

3. Which is the smallest whole number?

Solution:

The smallest whole number is 0 (zero)

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

Solution:

The whole numbers between 32 and 53 are

33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52. Therefore there are 20 whole numbers between 32 and 53.

5. Write the successor of (a) 2440701 (b) 100199 (c) 1099999

Solutions:

2440701

Successor = $2440701 + 1 = 2440702$

100199

Successor = $100199 + 1 = 100200$

1099999

Successor = $1099999 + 1 = 1100000$

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

Solutions:

94

Predecessor = $94 - 1 = 93$

10000

Predecessor = $10000 - 1 = 9999$

208090

Predecessor = $208090 - 1 = 208089$

7654321

Predecessor = $7654321 - 1 = 7654320$

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:

530, 503

On the number line the whole number 503 is on the left of 530.

Therefore $530 > 503$

370, 307

On the number line the whole number 307 is on the left of 370.

Therefore $370 > 307$

98765, 56789

On the number line the whole number 56789 is on the left of 98765.

Therefore $98765 > 56789$

9830415, 10023001

On the number line the whole number 9830415 is on the left of 10023001.

Therefore $10023001 > 9830415$

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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Exercise 2.2

1. Find the sum by suitable rearrangement:

(a) $837 + 208 + 363$

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

Solutions:

(a) $837 + 208 + 363$

$= (837 + 363) + 208$

$= 1200 + 208$

$= 1408$

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

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

$= 3500 + 1100$

$= 4600$

2. Find the product by suitable rearrangement:

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

Solution:

The product $= 2 \times 1768 \times 50$

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

$= 100 \times 1768$

$= 176800$

b) $4 \times 166 \times 25$

Solution:

The product $= 4 \times 166 \times 25$

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

$= 100 \times 166$

$= 16600$



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

Solution:

The product = $8 \times 291 \times 125$
= $(8 \times 125) \times 291$
= 1000×291
= 291000

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

Solution:

The product = $625 \times 279 \times 16$
= $(625 \times 16) \times 279$
= 10000×279
= 2790000

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

Solution:

The product = $285 \times 5 \times 60$
= $(5 \times 60) \times 285$
= 300×285
= 85500

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

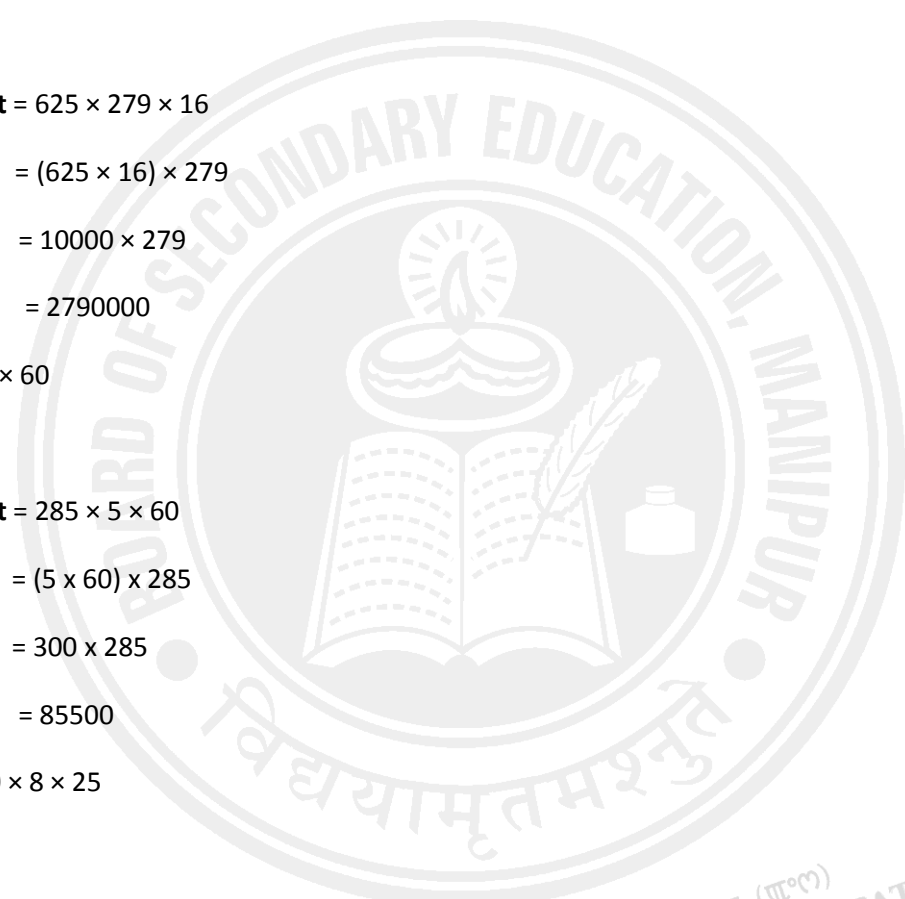
Solution:

The product = $125 \times 40 \times 8 \times 25$
= $125 \times 8 \times 40 \times 25$
= 1000×1000
= 1000000

3. Find the value of the following:

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

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



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

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

Solutions:

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

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

$$= 297 \times 20$$

$$= 5940$$

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

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

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

$$= 54279 \times 100$$

$$= 5427900$$

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

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

$$= 81265 \times 100$$

$$= 8126500$$

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

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

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

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

$$= 19225 \times 1000$$

$$= 19225000$$

4. Find the product using suitable properties.

(a) 738×103

(b) 854×102

(c) 258×1008

(d) 1005×168



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5. A taxidriver 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?

Solution:

Quantity of petrol filled on Monday = 40 litres

Quantity of petrol filled on Tuesday = 50 litres

Cost of petrol per litre = Rs 44

Therefore the money he spent = Rs 44 x 40 + Rs 44 x 50

$$= \text{Rs } 44 \times (40 + 50)$$

$$= \text{Rs } 44 \times 90$$

$$= \text{Rs } 3960$$

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

Solution:

Milk quantity supplied in the morning = 32 litres

Milk quantity supplied in the evening = 68 litres

Cost of milk per litre = Rs 45

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

$$= 45 \times 100$$

$$= \text{Rs } 4500$$

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.

Exercise 2.3

1. Which of the following will not represent zero:

(a) $1 + 0$

(b) 0×0

(c) $0 / 2$

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

Solution:

(a) $1 + 0 = 1$

It does not represent zero

(b) $0 \times 0 = 0$

It represents zero

(c) $0 / 2 = 0$

It represents zero

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

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.

Solution:

We know that the product of any whole numbers and zero is always equal to zero.

I.e. $0 \times 0 = 0$

$1 \times 0 = 0$

$2 \times 0 = 0$

$3 \times 0 = 0$ etc

Yes, one or both of the whole number 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.

Solution:

Examples: $1 \times 1 = 1$ (product is 1)

$$3 \times 1 = 3 \text{ (product is 3)}$$

$$4 \times 1 = 4 \text{ (product is 4)}$$

Thus, the product of two whole numbers is 1 if both the number is 1.

4. Find using distributive property:

(a) 728×101

(b) 5437×1001

(c) 824×25

(d) 4275×125

(e) 504×35

Solution:

(a) 728×101

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

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

$$= 72800 + 728$$

$$= 73528$$

(b) 5437×1001

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

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

$$= 5437000 + 5437$$

$$= 5442437$$

(c) 824×25

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

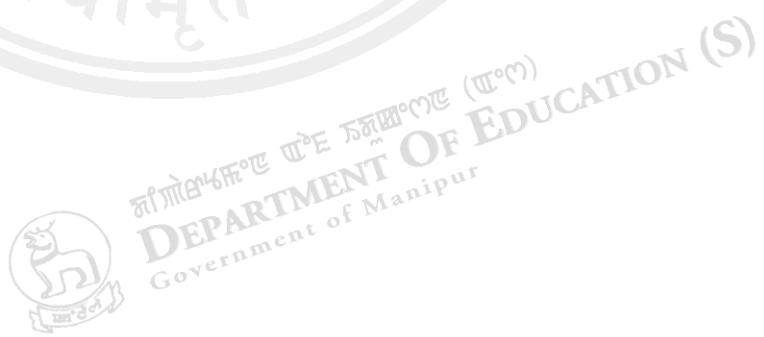
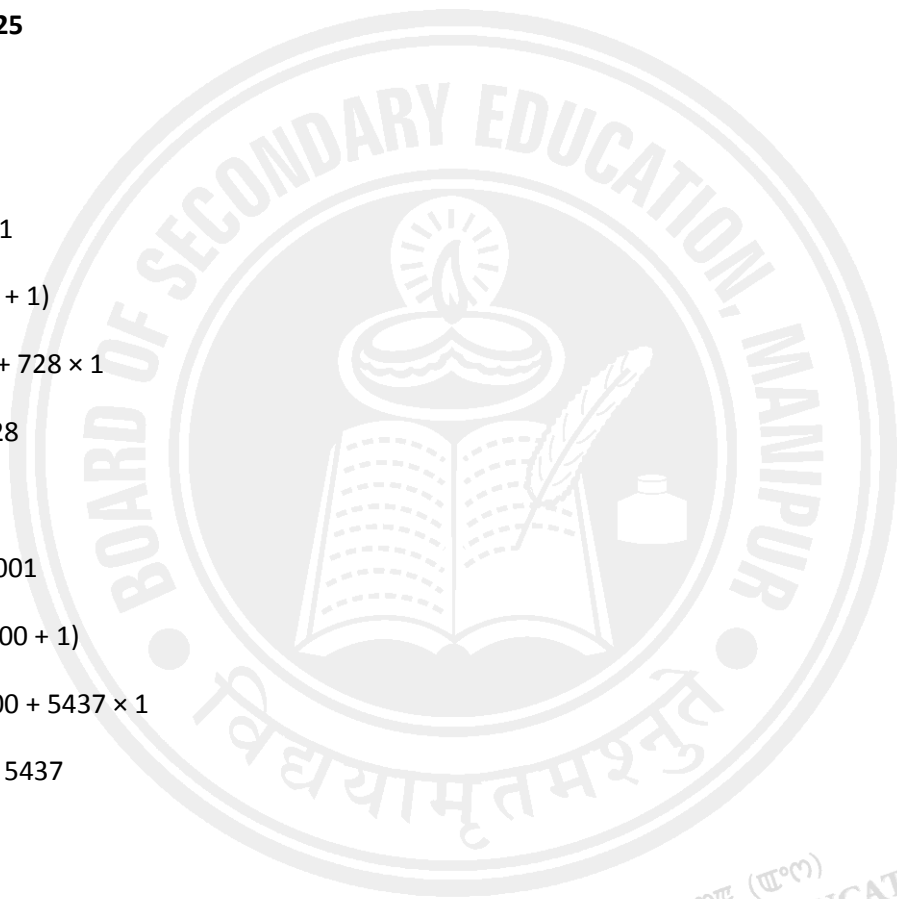
$$= (800 + 25 - 1) \times 25$$

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

$$= 20000 + 625 - 25$$

$$= 20000 + 600$$

$$= 20600$$



$$\begin{aligned}
 & \text{(d) } 4275 \times 125 \\
 & = (4000 + 200 + 100 - 25) \times 125 \\
 & = (4000 \times 125 + 200 \times 125 + 100 \times 125 - 25 \times 125) \\
 & = 500000 + 25000 + 12500 - 3125 \\
 & = 534375
 \end{aligned}$$

$$\begin{aligned}
 & \text{(e) } 504 \times 35 \\
 & = (500 + 4) \times 35 \\
 & = 500 \times 35 + 4 \times 35 \\
 & = 17500 + 140 \\
 & = 17640
 \end{aligned}$$

5. Study the pattern:

$$\begin{aligned}
 1 \times 8 + 1 &= 9 \\
 12 \times 8 + 2 &= 98 \\
 123 \times 8 + 3 &= 987 \\
 1234 \times 8 + 4 &= 9876 \\
 12345 \times 8 + 5 &= 98765
 \end{aligned}$$

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

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

Solution:

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

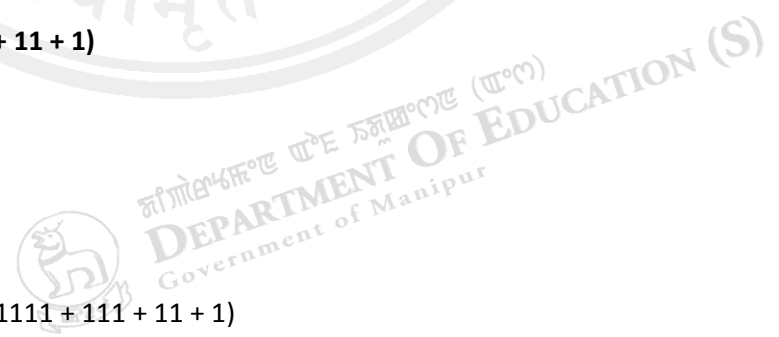
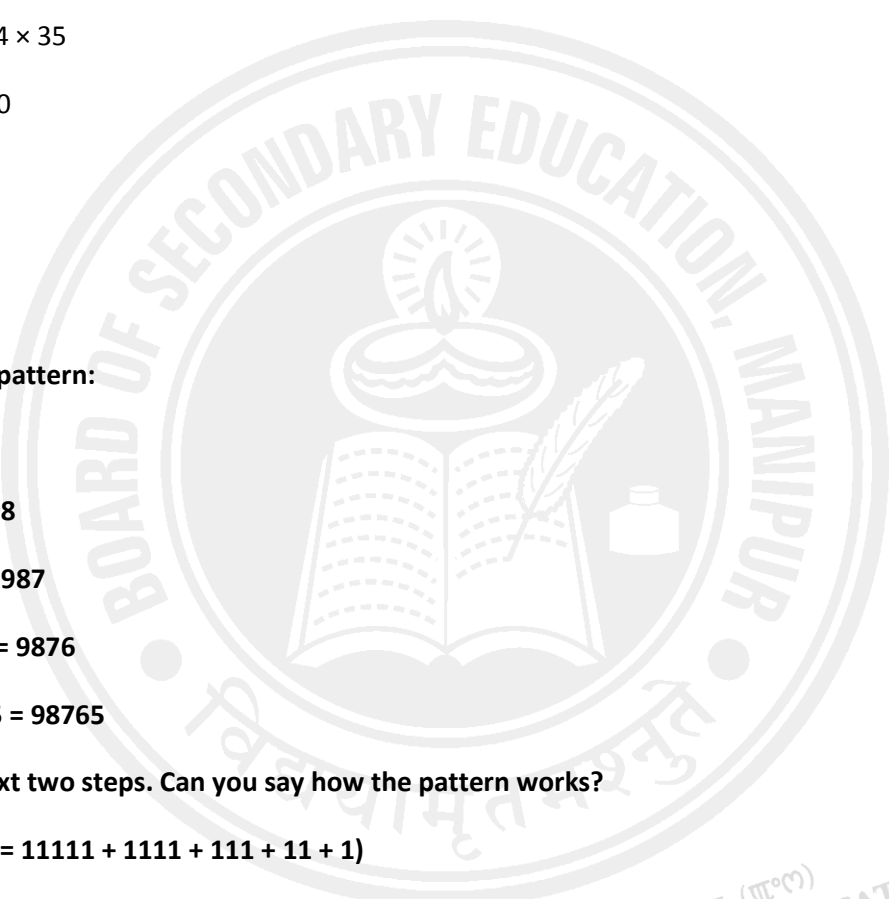
$$1234567 \times 8 + 7 = 9876543$$

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

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

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

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



$$= 987648$$

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

$$= 987654$$

Yes, here the pattern works **by adding next digit in the ones place multiplied by 8 and adding numbers in ascending order.**

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

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

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

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

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

$$= 9876536$$

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

$$= 9876543$$

Yes, here the pattern works **by adding next digit in the ones place multiplied by 8 and adding numbers in ascending order.**

