CBSE NCERT Solutions for Class 6 Mathematics Chapter 2

Back of Chapter Questions

Exercise 2.1

1. Write the next three natural numbers after 10999.

Solution:

Given any natural number, the next number is obtained by adding 1 to the given number.

Therefore, the successors of 10999 are obtained as follows:

$10,999 + 1 = 11,000$

$11,000 + 1 = 11,001$

$11,001 + 1 = 11,002$

Hence, the next three natural numbers after 10999 are 11,000, 11,001 and 11,002.

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

Solution:

Given any whole number, its predecessor is obtained by subtracting 1 from the given number.

Therefore, the three predecessors of 10001 are obtained as follows:

$10,001 - 1 = 10,000$

$10,000 - 1 = 9,999$

$9,999 - 1 = 9,998$

Hence, the three whole numbers occurring just before 10001 are 10,000, 9,999 and 9,998.

3. Which is the smallest whole number?

Solution:

The set of whole numbers start with Zero.

Therefore, zero (0) is the smallest whole number.

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

Solution:

The count of whole numbers between a and b is given by $b - a - 1$.

Here, $b = 53, a = 32$

Hence,

$53 - 32 - 1 = 20$

Therefore, there are 20 whole numbers between 32 and 53.

5. Write the successor of:

(A) 2440701

(B) 100199

(C) 1099999

(D) 2345670

Solution:

The successor of a natural or whole number is obtained by adding 1 to the given number.

(A) Successor of 2440701 is $2440701 + 1 = 2440702$

(B) Successor of 100199 is $100199 + 1 = 100200$

(C) Successor of 1099999 is $1099999 + 1 = 1100000$

(D) Successor of 2345670 is $2345670 + 1 = 2345671$

6. Write the predecessor of:

(A) 94

(B) 10000

(C) 208090

(D) 7654321

Solution:

The predecessor of a number can be obtained by subtracting 1 from the given number.

Therefore,

(A) Predecessor of 94 is $94 - 1 = 93$

(B) Predecessor of 10000 is $10000 - 1 = 9999$

(C) Predecessor of 208090 is $208090 - 1 = 208089$

(D) Predecessor of 7654321 is $7654321 - 1 = 7654320$

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

(A) $530, 503$

(B) $370, 307$

(C) $98765, 56789$

(D) $9830415, 10023001$

Solution:

Given two whole numbers, the number on the right of the other on the number line is the greater number.

(A) $530 > 503$

So 503 appears on left side of 530 on number line.

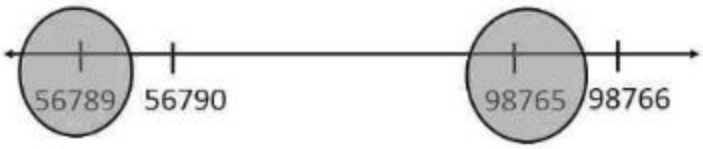
Hence, 530 is greater than 503.

(B) $370 > 307$

So 307 appears on left side of 370 on number line.

Hence, 370 is greater than 307.

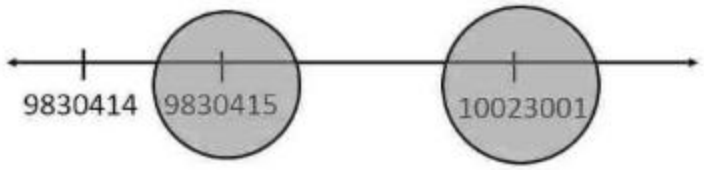
(C) $98765 > 56789$



So 56789 appears on left side of 98765 on the number line.

Hence, 98765 is greater than 56789.

(D) $9830415 < 10023001$



So 9830415 appears on left side of 10023001 on number line.

Hence, 9830415 is lesser than 10023001.

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

(a) Zero is the smallest natural number.

(A) True

(B) False

Solution:(B)

Natural number starts from 1.

So, zero is not a part of the natural number set.

Hence, it is false.

(b) 400 is the predecessor of 399.

(A) True

(B) False

Solution:(B)

Predecessor of 399 is obtained by subtracting 1 from 399.

Therefore, predecessor of 399 is:

$399 - 1 = 398$

Hence, it is false.

(c) Zero is the smallest whole number.

(A) True

(B) False

Solution:(A)

The set of whole numbers begin with a zero.

Therefore, zero is the smallest whole number.

Hence, it is true.

(d) 600 is the successor of 599.

(A) True

(B) False

Solution:(A)

The successor of a given number is obtained by adding 1 to the given number.

Therefore, successor of 599 is:

$599 + 1 = 600$

Hence, the given statement is true.

(e) All-natural numbers are whole numbers.

(A) True

(B) False

Solution:(A)

The set of whole numbers consists of all the natural numbers and zero.

Natural numbers are 1,2,3,4, 5, ….

Whole numbers are 0,1,2,3,4,5, ….

Since, 1,2,3,4, 5, …. is in whole number.

Therefore, all-natural numbers are whole numbers.

Hence, the given statement is true.

(f) All whole numbers are natural numbers.

(A) True

(B) False

Solution:(B)

Natural numbers are 1,2,3,4, 5, ….

Whole numbers are 0,1,2,3,4,5, ….

The set of natural numbers does not contain zero.

Hence, the given statement is false.

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

(A) True

(B) False

Solution:(B)

For example, consider the number 10. Predecessor of 10 is obtained by subtracting 1 from 10.

$\therefore 10 - 1 = 9$

Clearly 10 is a two-digit number while its predecessor 9, is a single digit number.

Hence, the given statement is false.

(h) 1 is the smallest whole number.

(A) True

(B) False

Solution:(B)

The set of whole numbers begin with zero.

Whole numbers are 0,1,2,3,4,5, ……

Hence, zero is the smallest whole number.

Therefore, the given statement is false.

(i) The natural number 1 has no predecessor.

(A) True

(B) False

Solution:(A)

The set of natural numbers start with 1.

Natural numbers are 1,2,3,4, 5, ……

Hence the natural number 1 has no predecessor.

Therefore, the given statement is true.

(j) The whole number 1 has no predecessor.

(A) True

(B) False

Solution:(B)

The set of whole numbers begin with zero.

Whole numbers are 0,1,2,3,4,5, ……

Hence zero precedes the whole number one.

Therefore, the given statement is false.

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

(A) True

(B) False

Solution:(B)

On the number line of whole numbers, we can clearly observe that there exists no whole number between 11 and 12.

So, 13 lies after 11 and 12.

Hence, 13 cannot lie between 11 and 12.

Therefore, the given statement is false.

(l) The whole number 0 has no predecessor.

(A) True

(B) False

Solution:(A)

The set of whole numbers begin with zero.

Hence there exists no number that precedes zero.

Therefore, the given statement is true.

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

(A) True

(B) False

Solution:(B)

For example, consider a two-digit number 99.

The successor of 99 is obtained by adding 1 to it.

Therefore, the successor of 99 is:

$99 + 1 = 100$.

Clearly, 99 is a two-digit number while its successor 100, is a three-digit number.

Hence, the given statement is false.

Exercise 2.2

1. Find the sum by suitable rearrangement:

(A) $837 + 208 + 363$

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

Solution:

(A) Given, $837 + 208 + 363$

By using associativity of addition, we can rewrite the question as follows:

$= (837 + 363) + 208$

$= 1200 + 208$

$= 1408$

Hence, the required sum is 1408

(B) Given,$1962 + 453 + 1538 + 647$

By using associativity of addition, we can rewrite the question as follows:

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

$= 3500 + 1100$

$= 4600$

Hence, the required sum is 4600

2. Find the product by suitable arrangement:

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

Solution:

(A) Given, $2 \times 1768 \times 50$

By using the associativity of multiplication, the above question can be rewritten as follows:

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

$= 100 \times 1768$

$= 176800$

Hence, the required product is 176800

(B) Given, $4 \times 166 \times 25$

By using the associativity of multiplication, the above question can be rewritten as follows:

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

$= 100 \times 166$

$= 16600$

Hence, the required product is 16600

(C) Given, $8 \times 291 \times 125$

By using the associativity of multiplication, the above question can be rewritten as follows:

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

$= 1000 \times 291$

$= 291000$

Hence, the required product is 291000

(D) Given, $625 \times 279 \times 16$

By using the associativity of multiplication, the above question can be rewritten as follows:

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

$= 10000 \times 279$

$= 2790000$

Hence, the required product is 2790000

(E) Given, $285 \times 5 \times 60$

By using the associativity of multiplication, the above question can be rewritten as follows:

$=284 \times (5 \times 60)$

$= 284 \times 300$

$= 85500$

Hence, the required product is 85500

(F) Given, $125 \times 40 \times 8 \times 25$

By using the associativity of multiplication, the above question can be rewritten as follows:

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

$= 1000 \times 1000$

$= 1000000$

Hence, the required product is 1000000

3. Find the value of the following:

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

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

(C) $8126 \times 169 - 81265 \times 69$

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

Solution:

(A) Given, $297 \times 17 + 297 \times 3$

By using the principle of distributivity of multiplication over addition, we can rewrite the given question as follows:

$= 297 \times (17 + 3)$

$= 297 \times 20$

$= 5940$

Hence, the required value is 5940

(B) Given, $54279 \times 92 + 8 \times 542379$

By using the principle of distributivity of multiplication over addition, we can rewrite the given question as follows:

$= 54279 \times (92 + 8)$

$= 54279 \times 100$

$= 5427900$

Hence, the required value is 5427900

(C) Given, $81265 \times 169 - 81265 \times 69$

By using the principle of distributivity of multiplication over subtraction, we can rewrite the given question as follows:

$= 81265 \times (169 - 69)$

$= 81265 \times 100$

$= 8126500$

Hence, the required value is 8126500

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

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

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

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

$= 3845 \times 5 \times 1000$

$= 19225000$

Hence, the required value is 19225000

4. Find the product using suitable properties:

(A) 738×103

(B) 854×102

(C) 258×1008

(D) 1005×168

Solution:

(A) Given, 738×103

$= 738 \times (100 + 3)$ [Using distributive property]

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

$= 73800 + 2214$

$= 76014$

Hence, the required product is 76014

(B) Given, 854×102

$= 854 \times (100 + 2)$ [Using distributive property]

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

$= 85400 + 1708$

$= 87108$

Hence, the required product is 87108

(C) Given, 258×1008

$= 258 \times (1000 + 8)$ [Using distributive property]

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

$= 258000 + 2064$

$= 260064$

Hence, the required product is 260064

(D) Given, 1005×168

$= (1000 + 5) \times 168$ [Using distributive property]

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

$= 168000 + 840$

$= 168840$

Hence, the required product is 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?

Solution:

Given,

Quantity of petrol filled on Monday= 40 litres

Quantity of petrol filled on next day = 50 litres

Total petrol filled = 40 + 50 = 90 litres

Now,

Cost of 1 litre petrol = ₹ 44

Cost of 90 litres petrol = 44×90

$= 44 \times (100 - 10)$ [Using distributive property]

$= 44 \times 100 - 44 \times 10$

$= 4400 - 440$

$=$ ₹ 3960

Therefore, he spent ₹ 3960 on petrol.

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

Solution:

Given,

Milk supplied in the morning = 32 litres

Milk supplied in the evening = 68 litres

Total supply = 32 + 68 = 100 litres

Now

Cost of 1 litre of milk = ₹ 15

Cost of 100 litres milk = 15×100 = ₹ 1500

Therefore, ₹ 1500 is due to the vendor per day.

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

Solution:

(i) We know that, Distributivity of multiplication over addition:

$a \times (b + c) = a \times b + a \times c$

Similarly,

$a \times (b + c + d) = a \times b + a \times c + a \times d$

Therefore, $425 \times 136 = 425 \times (6 + 30 + 100)$ follows distributivity of multiplication over addition property.

(ii) We know that, Commutativity under multiplication:

$a \times b = b \times a$

Similarly,

$a \times b \times c = a \times c \times b = b \times c \times a$

Therefore, $2 \times 49 \times 50 = 2 \times 50 \times 49$ follows commutativity under multiplication property.

(iii) We know that, Commutativity under addition:

$a + b = b + a$

Similarly,

$a + b + c = c + b + a = c + a + b$

Therefore, $80 + 2005 + 20 = 80 + 20 + 2005$ follows commutativity under addition property.

(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

1. Which of the following will not represent zero?

(A) $1 + 0$

(B) 0×0

(C) $\frac{0}{2}$

(D) $\frac{10-10}{2}$

Solution:

(A) Given, $1 + 0$

Clearly, $1 + 0 = 1$.

(B) Given, 0×0

$\therefore 0 \times 0 = 0$

(C) Given, $\frac{0}{2}$

$\frac{0}{2}$ is nothing but 0

(D) Given, $\frac{10-10}{2}$

$\frac{10-10}{2} = \frac{0}{2}$, which is nothing but 0

Hence, option (A) do not 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:

If the product of two numbers is zero, then either one of them or both ought to be zero.

This is because, zero multiplied with any other number gives zero.

Example: $2 \times 0 = 0, 5 \times 0 = 0, 9 \times 0 = 0$

If both numbers are zero, then the result is zero.

$0 \times 0 = 0$.

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

Solution:

1 being the multiplicative identity of whole numbers, the number remains unchanged when multiplied by 1.

Hence, a product of 1 can be obtained only when both the whole numbers multiplied are ones.

If only one number be 1 then the product cannot be 1.

Examples: $5 \times 1 = 5, 4 \times 1 = 4, 8 \times 1 = 8$

If both numbers are 1, then the product is 1

$1 \times 1 = 1$

4. Find using distributive property:

(A) 728×101

(B) 5437×1001

(C) 824×25

(D) 4275×125

(E) 504×35

Solution:

(A) Given, 728×101

$= 728 \times (100 + 1)$

$= 72800 + 728$

$= 73528$

Hence, the required answer is 73528

(B) Given, 5437×1001

$= 5437 \times (1000 + 1)$

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

$= 5437000 + 5437$

$= 5442437$

Hence, the required answer is 5442437

(C) Given, 824×25

$= 824 \times (20 + 5)$

$= 824 \times 20 + 824 \times 5$

$= 16480 + 4120$

$= 20600$

Hence, the required answer is 20600

(D) Given, 4275×125

$= 4275 \times (100 + 20 + 5)$

$= 4275 \times 100 + 4275 \times 20 + 4275 \times 5$

$= 427500 + 85500 + 21375$

$= 534375$

Hence, the required answer is 534375

(E) Given, 504×35

$= (500 + 4) \times 35$

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

$= 17500 + 140$

$= 17640$

Hence, the required answer is 17640

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

Solution:

From the given data, the next two steps can be written as follows:

$123456 \times 8 + 6 = 987654$

$1234567 \times 8 + 7 = 9876543$

Pattern works like this:

$1 \times 8 + 1 = 9$

$12 \times 8 + 2 = 98$

$123 \times 8 + 3 = 987$

$1234 \times 8 + 4 = 9876$

$12345 \times 8 + 5 = 98765$

$123456 \times 8 + 6 = 987654$

$1234567 \times 8 + 7 = 9876543$

The explanation to the pattern is as follows:

$1 \times 8 + 1 = 9$

$12 \times 8 + 2 = 98$

$= (11 + 1) \times 8 + 2$

$= 11 \times 8 + 1 \times 8 + 2$

$= 88 + 8 + 2$

$= 98$

$123 \times 8 + 3 = 987$

$(111 + 11 + 1) \times 8 + 3 = 111 \times 8 + 11 \times 8 + 1 \times 8 + 2$

$= 888 + 88 + 8 + 3$

$= 987$

$1234 \times 8 + 4 = 9876$

$= (1111 + 111 + 11 + 1) \times 8 + 4$

$= 1111 \times 8 + 111 \times 8 + 11 \times 8 + 1 \times 8 + 4$

$= 8888 + 888 + 88 + 8 + 4$

$= 9876$

$12345 \times 8 + 5 = 98765$

$(11111 + 1111 + 111 + 11 + 1) \times 8 + 5$

$= 11111 \times 8 + 1111 \times 8 + 111 \times 8 + 11 \times 8 + 1 \times 8 + 5$

$= 88888 + 8888 + 888 + 88 + 8 + 5$

$= 98765$

Extending the pattern, we have

$123456 \times 8 + 6$

$= (111111 + 11111 + 1111 + 111 + 11 + 1) \times 8 + 5$

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

$+ 1 \times 8 + 5$

$= 888888 + 88888 + 8888 + 888 + 88 + 8 + 6$

$= 987654$

$1234567 \times 8 + 7$

$= (1111111 + 111111 + 11111 + 1111 + 111 + 11 + 1) \times 8 + 7$

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

$+ 11 \times 8 + 1 \times 8 + 7$

$= 8888888 + 888888 + 88888 + 8888 + 888 + 88 + 8 + 7$

$= 9876543$

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