NCERT Exercises (Questions-Solutions)

Exercise 2.1

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1. Write the next three natural numbers after 10999.

Sol. The next three natural numbers, after 10999 are as follows:
10999+1 =11000; 11000+1 =11001; 11001+1 =11002
i.e. 11000, 11001 and 11002.

2. Write the three whole numbers occurring just before10001.

Sol. The three whole numbers occurring just before 10001 are as follows:
10001 – 1=10000; 10000 – 1=9999; 9999 – 1=9998
i.e. 10000, 9999 and 9998.

3. Which is the smallest whole number?

Sol. The smallest whole number is zero (0).

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

Sol. 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, 51and 52.
Hence, total number of whole numbers between 32 and 53 is 20.
Alternate Method
We can find the total number by using $(b–a) – 1$.
Where, a = First number and b = Last number
Here, a =32, b=53
Whole numbers between 32 and 53 = $(b–a) – 1$= (53 – 32) – 1 [putting the values of a and$b$]
=21 – 1=20

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

Sol. We know that, successor is the next value of any number which isobtained by adding 1 on that number.
Hence, the successor of given number is as follows:

Given number	Successor
(a) 2440701	2440701 + 1 = 2440702
(b) 100199	100199 + 1 = 100200
(c) 1099999	1099999 + 1 = 1100000
(d) 2345670	2345670 + 1 = 2345671

6. Write the predecessor of

(a) 94 **(b) 10000** **(c) 208090** **(d) 7654321**

Sol. We know that, predecessor is the previous value of any numberwhich is obtained by subtracting 1 from that number.

Hence, the predecessor of given number is as follows:

Given number	Successor
(a) 94	94 – 1 – 93
(b) 10000	10000 – 1 = 9999
(c) 208090	208090 – 1 = 208089
(d) 7654321	7654321 – 1 = 7654320

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

(a) 530,503 **(b) 370,307** **(c) 98765,56789** **(d) 9830415,10023001**

TIPS

The smaller number is to the left of bigger number on the number line and the bigger number is to the right of smaller number on the number line.

Sol. (a) On the number line, whole number 503 is on the left of 530.
Because 530 is greater than 503 i.e. 530 > 503.
(b) On the number line, whole number 307 is on the left of 370.
Because 370 is greater than 307 i.e. 370 > 307.
(c) On the number line, whole number 56789 is on the left of98765.
Because 98765 is greater than 56789 i.e. 98765 > 56789.
(d) On the number line, whole number 9830415 is on the left of10023001.
Because 9830415 is less than 10023001 i.e. 9830415 < 10023001.

8. Which of the following statements are true (T) andwhich 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 singledigit 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.
(I) The whole number 0 has no predecessor.
(m) The successor of a two digit number is always a twodigit number.

Sol. (a) False, because zero is not a natural number. It is a wholenumber.
(b) False, because predecessor of 399 is 399 – 1= 398.
(c) True, because whole numbers start with zero (0).
(d) True, because successor of 599 is 599 + 1 = 600.
(e) True.
(f) False, because 0 is not a natural number.

(g) False, because predecessor of 10 is 10 – 1= 9, which is a singledigit number.
(h) False, because 0 is the smallest whole number.
(i) True, because if we subtract 1 from 1, then we get 0 (1 – 1 = 0),which is not a natural number.
(j) False, because predecessor of 1 is 1 – 1=0 and 0 is a wholenumber.
(k) False, because 13 is greater than 12.
(l) True.
(m) False, because successor of two digit number 99 is 99 + 1 = 100,which is a three digit number.

Exercise 2.2

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1. Find the sum by suitable rearrangement.
(a) 837 + 208 + 363
(b) 1962 + 453 + 1538 + 647

TIPS
Sum of three or more than three whole numbers remains same on changing the grouping of the numbers and we group the numbers for convenience of adding. This property is known as associativity of addition for whole numbers.

Sol. (a) We have, 837 + 208 + 363 = (837 + 363) + 208 [by associative property]
=1200+208=1408
(b) We have, 1962 + 453 + 1538 + 647 = (1962 + 1538) + (453 + 647)
=3500+1100=4600
Note *We rearrange the number in such a way that new number obtained after rearrangement has zero.*

2. Find the product by suitable rearrangement.
(a) 2 x 1768 x 50 **(b) 4 x 166 x 25** **(c) 8 x 291 x 125** **(d) 625 x 279 x 16**
(e) 285 x 5 x 60 **(f) 125 x 40 x 8 x 25**

TIPS
First, we multiply those two numbers, which can give us zero (0) like 100,1000 etc. Because, to multiply any number with these numbers is simple.

Sol. (a) We have, 2 x 1768 x 50 = (2 x 50) x 1768
=100x1768=176800
(b) Wehave, 4x166x25 =(4x25) x 166 =100x166 =16600
(c) We, have, 8x291 x 125 =(8x125) x 291
=1000x291=291000
(d) We have, 625 x 279 x 16 = (625 x 16) x 279
=10000x279=2790000
(e) We have, 285 x 5x 60 = (5x 60) x 285 =300x285 =85500
(f) We have, 125 x 40 x 8 x 25 = (125 x 40) x (8 x 25)
=5000x200=1000000

3. Find the value of the following.

(a) 297 x 17 + 297 x 3
(b) 54279 x 92 + 8 x 54279
(c) 81265 x 169 – 81265 x 69
(d) 3845 x 5 x 782 + 769 x 25 x 218

Sol. (a) We have,297x 17+297x3=297x(17+3)=297x20=5940
[taking 297 as a common term]
(b) We have, 54279 x 92 + 8 x 54279 = 54279 x (92 + 8)
[taking 54279 as a common term]
= 54279 x100 = 5427900
(c) We have, 81265 x 169 – 81265 x 69 =81265 x (169 – 69)
[Taking 81265 as a common term]
=81265x100=8126500
(d) We have, 3845 x 5 x 782 + 769 x 25 x 218
=3845x5x782+(769x5)x5x218 [∵ 25 = 5 x 5]
=3845 x5 x 782 + 3845 x5 x218=3845 x5 x (782 + 218)
=3845x5x1000=19225x1000=19225000

4. Find the product using suitable properties.
(a) 738 x 103 (b) 854 x 102 (c) 258 x 1008 (d) 1005 x 168

Sol. (a) We have, 738 x 103 = 738 x (100 + 3) = 738 x 100 + 738 x 3
[by distributive property of multiplication over addition]
=73800+2214=76014
(b) We have, 854 x 102 = 854 x (100 + 2) = 854 x 100 + 854 x 2
[by distributive property of multiplication over addition]=85400+1708=87108
(c) We have, 258 x 1008 = 258 x (1000 + 8) = 258 x 1000 + 258 x 8
[by distributive property of multiplication over addition]=258000+2064=260064
(d) We have, 1005 x 168 = (1000 + 5) x 168 = 168 x (1000 + 5)=168x1000+168x5
[by distributive property of multiplication over addition]=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. Rs. 44 per litre, how much did he spend in all on petrol?

Sol. Given, quantity of petrol filled on Monday = 40 L
Quantity of petrol filled on the next day i.e. Tuesday = 50 L
Total quantity of petrol = 40 + 50 = 90 L
Cost of petrol =Rs. 44 per litre
Total cost of petrol = Cost per litre x Total quantity of petrol
=44x90 = Rs. 3960
Hence, total cost of petrol is Rs. 3960.

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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?

Sol. Given, milk supplied in the morning= 32 L
Milk supplied in the evening = 68 L
Total milk supplied to a hotel in the morning and evening= 32+68 =100 L
Money due to vendor per day = Total quantity of milk x Cost per litre=100x15=Rs. 500

7. Match the following.

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

Sol. (i) We have,425 x 136 =425 x (6 + 30 + 100)
= 425 x 6 + 425 x 30 + 425 x 100
It is distributivity of multiplication over addition.
Hence, (i) belongs to (c).
(ii) We have, 2 x 49 x 50 = 2 x 50 x 49
Here, we have changed the place of 49 and 50.
So, it comes under Commutativity under multiplication.
Hence, (ii) belongs to (a).
(iii) We have, 80+2005+20=80+20+2005
Here, we have changed the place of 20 and 2005.
So, it comes under Commutativity under addition.
Hence, (iii) belongs to (b).

Exercise 2.3

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1. Which of the following will not represent zero?

(a) 1 + 0 **(b) 0 x 0** **(c)** $\frac{0}{2}$ **(d)** $\frac{10-10}{2}$

Sol. (a) $1+0=1\neq 0$ (b) $0\times 0=0$ (c) $\frac{0}{2}=0\times\frac{1}{2}=0$ (d) $\frac{10-10}{2}=\frac{0}{2}=0$

Thus, only option (a) does not represent zero.

2. If the product of two whole numbers is zero, can we saythat one or both of them will be zero? Justify throughexamples.

Sol. Yes, if the product of two whole numbers is zero, then one or both ofthem will be zero. Since, we know that the product of any wholenumber with zero is always zero i.e. $a\times 0=0$, where a is any wholenumber and $0\times 0=0$. Some examples are as follows:

Whole number	Product		Is the product zero?
	$(a\times 0)$	$(0\times a)$	
5	$5\times 0=0$	$0\times 5=0$	Yes
3	$3\times 0=0$	$0\times 3=0$	Yes
0	$0\times 0=0$	$0\times 0=0$	Yes
4	$4\times 0=0$	$0\times 4=0$	Yes
25	$25\times 0=0$	$0\times 25=0$	Yes

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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.

Sol. We know that, on multiplying any whole number by 1, we get the same whole number.
i.e. $5\times1=5;20\times1=20;1\times0=0;1\times1=1$
Hence, the product of two whole numbers will be equal to 1, if and only if both whole numbers are 1.

4. Find using distributive property.
(a) 728x101 (b) 5437x1001 (c) 824x25 (d) 4275 x 125
(e) 504 x 35

Sol. (a) We have,728 x 101 = 728 x (100 + 1) = 728 x 100 + 728 x 1
[by distributive property of multiplication over addition]
=72800+728=73528
(b) We have, 5437 x 1001 = 5437 x (1000 + 1)
= 5437 x 1000 + 5437 x 1
[by distributive property of multiplication over addition]
=5437000+5437=5442437
(c) We have, 824 x 25 = 824 x (20 + 5) = 824 x 20 + 824 x 5
[by distributive property of multiplication over addition]
=16480+4120=20600
(d) We have, 4275 x 125 =4275 x (100 + 20 +5)
=4275x100+4275x20+4275x5
[by distributive property of multiplication over addition]
= 427500 + 85500 + 21375 =513000 + 21375 = 534375
(e) We have, 504 x 35 = 35 x 504 [by commutative property]
= 35 x (500 + 4) = 35 x 500 + 35 x 4
[By distributive property of multiplication over addition]
=17500+140=17640

5. Study the pattern.
1x8+1=9
1234x8+4=9876
12x8+2=98
12345x8+5=98765
123x8+3=987
Write the next two steps. Can you say how the pattern works?
(Hint 12345 =11111+1111+111+11+1)

Sol. It is clear that the next two steps will be
123456 x 8 + 6 = 987654 and 1234567 x 8 + 7 = 9876543
Pattern of the working is given below
11+1=12
111+11+1=123
1111+111+11+1=1234
11111+1111+111+11+1=12345
∴ 1x8+1=9=1x8+1
12x8+2=98= (11+1)x8+2
123 x 8 + 3 = 987 = (111 + 11 + 1) x 8 + 3
1234x8+4=9876=(1111+111+11+1)x8+4
12345 x 8+5= 98765= (11111 + 1111 + 111 + 11 + 1) x8 + 5
and the next two steps will be work as 123456 x 8 + 6 = 987654

= (111111 + 11111 + 1111 + 111 + 11 + 1) x8 + 6
1234567x8+7=9876543
=(1111111+111111+11111+ 1111 + 111 + 11 + 1)x8+7

NCERT
Exercises & Exemplar Problems

NCERT
Exemplar (Problems-Solutions)

Directions In questions 1 to 5 out of the four options, only one is correct. Write the correct answer.

1. **The product of successor and predecessor of 999 is**
(a) 999000 **(b) 998000** **(c) 989000** **(d) 1998**

Sol. Successor of 999 =999+1=1000
Predecessor of 999 = 999 – 1= 998
∴ Product = 1000 x 998 = 998000
Hence, option (b) is correct.

2. **The product of a non-zero whole number and its successor is always**
(a) an even number **(b) an odd number** **(c) a prime number** **(d) divisible by 3**

Sol. The product of a non-zero whole number and its successor is always an even number.
e.g.
A non-zero whole number
= 1
Successor of 1
=1+1=2
Product
=1x2=2 (even)
Hence, option (a) is correct.

3. **A whole number is added to 25 and the same number is subtracted from 25. The sum of the resulting numbers is**
(a) 0 **(b) 25** **(c) 50** **(d) 75**

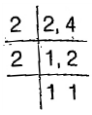
Sol. Let, a whole number = 2
According to the question,
A whole number is added to 25 = 2.5 + 2 = 27
and a whole number is subtracted from 25 = 25 – 2= 23
∴ The sum of resulting numbers = 27 + 23 = 50
Hence, option (c) is correct.

4. **Which of the following statements is not true?**
(a) 0+0=0 **(b) 0-0=0** **(c) 0 x 0 = 0** **(d) 0 – 0= 0**

Sol. We know that, if a is a whole number then a - 0 is not defined.
So, option (d) is not true.

5. **The greatest number, which always divides the product of the predecessor and successor of an odd natural number other than 1, is**
(a) 6 **(b) 4** **(c) 16** **(d) 8**

Sol. Let, an odd natural number other than 1 be 3.



Predecessor of 3 =3 – 1=2
Successorof3 =3+1= 4
∴ Product =2x4= 8
Now, LCM of predecessor and successor = 2 x2 = 4
∴ The greatest number which always divides the product of predecessor and successor of an odd natural number other than 1 is4.
Hence, option (b) is correct.

Directions In questions 6 to 14, state whether the given statement is, true (T) or false (F).

6. Successor of a one digit number is always a one digit number.

Sol. False, because successor of a one-digit number is not always a one digit number.
e.g. Let one digit number be 9.
∴ Successor of 9 = 9 + 1 = 10, which is a two digit number.

7. Predecessor of a two digit number is always a two digit number.

Sol. False, because predecessor of a two digit number is not always a two digit number.
e.g. Let a two digit number be 10.
∴ Predecessor of 10 = 10 – 1= 9, which is a one digit number.

8. Between any two natural numbers, there is one natural numbers.

Sol. False, because between any two natural numbers, there are many (one or more than one) natural numbers.

9. The smallest 4-digit number is the successor of the largest 3-digit number.

Sol. True, the smallest 4-digit number is the successor of the largest3-digit number. e.g. Largest 3-digit number =999
∴ successor of 999 = 999 + 1
=1000 (smallest four digit number)

10. There is a whole number which when added to a whole number, gives the number itself.

Sol. True, because there is a whole number which when added to a whole number, gives the number itself.
e.g. Let a whole number be 0.
Other whole number be 1.
∴ 0+1=1+0=1

11. If a whole number is divided by another whole number, which is greater than the first one, the quotient is not equal to zero.

Sol. True, if a whole number is divided by another whole number which is greater than the first one, the quotient is not equal to zero.

12. A whole number divided by another whole number greater than 1 never gives the quotient equal to the former.

Sol. True, a whole number divided by another whole number greater than 1 never gives the quotient equal to the former.

13. **Sum of two whole numbers is always less than their product.**

Sol. False, because sum of two whole numbers is not always less than their product.
e.g. (i) Let two whole numbers be 2 and 3.
Sum=2+3=5 Product=2x3=6
∴ Sum of two whole numbers < Product of two whole numbers
Again, let two whole numbers be 1 and 2.
∴ Sum =1+2=3 Product =1x2=2
∴ Sum of two whole numbers > Product of two whole numbers
It is clear that the sum of two whole numbers is not always less than their product.

14. **If the sum of two distinct whole numbers is odd, then their difference also must be odd.**

Sol. True, if the sum of two distinct whole numbers is odd then their difference also must be odd.
e.g., Let two distinct whole numbers be 5 and 8
∴ Sum =5+8= 13 Difference = 8 – 5= 3

Directions In questions 15 to 19, fill in the blanks to make the statements true.

15. **..... is the successor of the largest 3-digit number.**

Sol. Largest 3-digit number = 999
∴ Successor of 999 = 999 + 1 = 1000
Hence, **1000** is the successor of the largest 3-digit number.
It is clear that, if 0 is subtracted from a whole number, then the result is the number itself.

16. **The smallest 6-digit natural number ending in 5 is …**

Sol. Smallest 6-digit number = 100000
∴ Smallest 6-digit number ending in 5 = 100000 + 5 = 100005
It is clear that the smallest 6-digit numb

17. **1001 x 2002= 1001 x (1001+.....).**

Sol. 1001 x 2002 = 1001 x (1001 + 1001).

18. **786x3+786x7=.....**

Sol. 786 x 3 + 786 x 7 = 786 x (3 + 7) = 786 x 10=7860.

19. **24 x 25 = 24 x $\bar{4}$ = 600**

Sol. $24\times 25 = 24\times\frac{100}{4} = 600$

20. **Determine the sum of the four numbers as given below:**
(a) successor of 32
(b) predecessor of 49
(c) predecessor of the predecessor of 56
(d) successor of the successor of 67

Sol. (a) Successor of 32 = 32 +1 = 33
(b) Predecessor of 49 = 49 – 1= 48
(c) Predecessor of 56 = 56 – 1= 55
Again, predecessor of 55 = 55 – 1= 54
(d) Successor of 67 = 67 +1 = 68
Again, successor of 68 =68 + 1 = 69

∴ Sum =33+48+54+69 =204