

Computation Operations

Learning objectives

2.1 Addition

2.3 Addition and Subtraction together

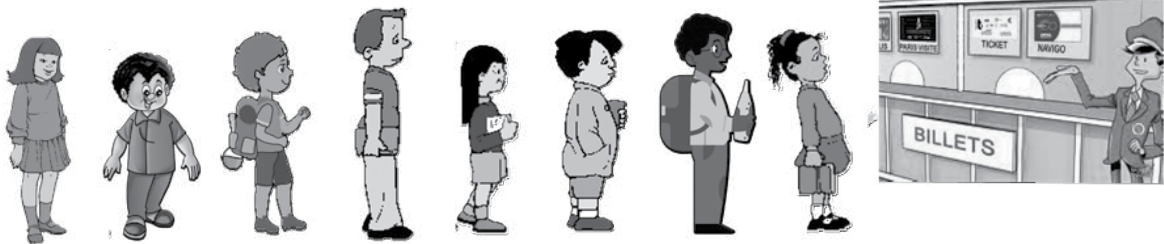
2.5 Division

2.2 Subtraction

2.4 Multiplication

2.1 ADDITION

Addition means two or more quantities are counted together to obtain a single quantity. The total of two or more quantities (addends) together is called their **sum**.



There are 5 boys and 3 girls at the ticket counter.

The total number of children at the ticket counter is

$$\boxed{5} + \boxed{3} = \boxed{8}$$

Addend Addend Sum

Addition of 4-digit Numbers (Without Regrouping)

To add the 4-digit numbers 4351 and 1234, we will follow the below steps :

Step 1 : Arrange the digits in the specific place value column.

Step 2 : Starting from the ones, add ones followed by tens, hundreds and then thousands.

	Th	H	T	O
Addend	4	3	5	1
Addend	+ 1	2	3	4
Sum →	5	5	8	5

Addition of 4-digit Numbers (With Regrouping)

To add 4-digit numbers 5318 and 3869, first arrange the numbers in the columns of thousands, hundreds, tens and ones, then follow the below steps :

Step 1 : Add the **Ones**

$$\begin{aligned} 8 \text{ ones} + 9 \text{ ones} &= 17 \text{ ones} \\ &= 1 \text{ ten} + 7 \text{ ones} \end{aligned}$$

Step 2 : Write 7 in ones column and carry 1 ten to the tens column.

	Th	H	T	O
Addend	5	3	1	8
Addend	+ 3	8	6	9
Sum				7



Olympiad Bite

There are many words that mean addition.

- Sum
- Increase
- Total
- Plus
- More than

Step 3 : Add the Tens

1 ten + 6 tens + 1 ten (carried over) = 8 tens

		①		
	Th	H	T	O
	5	3	1	8
+	3	8	6	9
	8	7		

Step 4 : Add the Hundreds

3 hundreds + 8 hundreds = 11 hundreds

= 1 thousand + 1 hundred

Write 1 in hundreds column and carry 1 thousand to the thousands column.

		①		
	Th	H	T	O
	5	3	1	8
+	3	8	6	9
	1	8	7	

Step 5 : Add the Thousands

5 thousands + 3 thousands + 1 thousand (carried over) = 9 thousand

		①		
	Th	H	T	O
	5	3	1	8
+	3	8	6	9
Sum →	9	1	8	7

Properties of Addition

- ▶ When two or more numbers (addends) are added, the sum is always greater than the numbers being added.

$$2163 + 3247 = 5410$$

Here 2163 (addend) < 5410 (sum) and 3247 (addend) < 5410 (sum)

- ▶ **Order property of addition:**

Changing the order of numbers, does not change the sum.

$$2345 + 4163 = 4163 + 2345$$

- ▶ **Adding Zero:**

Adding zero to the number gives the number itself.

$$5469 + 0 = 5469$$

SELF TEST - 1

1. Find the value of x in the given addition.

	2	1	6	5
+	x	4	5	9
	7	6	2	4

(A) 5

(B) 8

(C) 2

(D) 1

2. The sum of 1481 and 3214 is _____.

(A) Four thousand six hundred ninety

(B) Four thousand ninety five

(C) Four thousand six hundred ninety five

(D) Four thousand nine hundred five

3. The value of $7384 + 0$ is _____.

(A) 0

(B) 7384

(C) 7385

(D) 7383

4. Which of the following is same as $9863 + 2357$?

(A) $9683 + 2357$

(B) $2357 + 9863$

(C) $9863 + 2537$

(D) $9683 + 2735$

5. Addition of two numbers is _____ than both the numbers.

(A) Always less

(B) Always greater

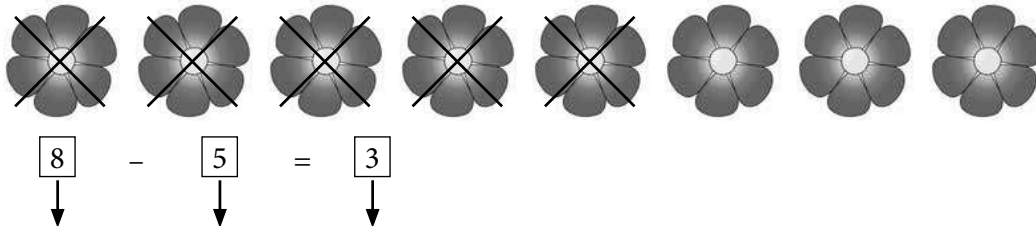
(C) Sometimes less and sometimes greater

(D) Cannot say

2.2 SUBTRACTION

Subtraction means when you take away objects from a group and then count how many are left. When we subtract a smaller number (**subtrahend**) from a larger number (**minuend**), the result obtained is called the **difference**.

For example,



Minuend Subtrahend Difference

Subtraction of 4-digit Numbers (Without Regrouping)

To subtract the 4-digit number 2142 from 8265, we will follow the below steps :

Step 1 : Arrange the digits in the specific place value column.

Step 2 : Starting from the ones, subtract ones, followed by tens, hundreds and thousands.

	Th	H	T	O
Minuend	8	2	6	5
Subtrahend	- 2	1	4	2
Difference →	6	1	2	3

Subtraction of 4-digit Numbers (With Regrouping)

To subtract the number 7191 from 9312, we first arrange them in the columns of ones, tens, hundreds and thousands and then follow the below steps :

Step 1 : Subtract the **Ones**

$$2 \text{ ones} - 1 \text{ ones} = 1 \text{ ones}$$

Th	H	T	O
9	3	1	2
- 7	1	9	1
			1

Step 2 : Subtract the **Tens**

Since 1 is smaller than 9, regroup hundreds and tens as 3 hundred

$$1 \text{ ones} = 2 \text{ hundreds } 11 \text{ ones}$$

$$\text{So, } 11 \text{ tens} - 9 \text{ tens} = 2 \text{ tens}$$

	Th	H	T	O
		②	⑪	
	9	3	1	2
	- 7	1	9	1
				1
	2			

Step 3 : Subtract the **Hundreds**

$$2 \text{ hundreds} - 1 \text{ hundred} = 1 \text{ hundred}$$

	Th	H	T	O
		②	⑪	
	9	3	1	2
	- 7	1	9	1
				1
	1	2		

Step 4 : Subtract the **Thousands**

$$9 \text{ thousands} - 7 \text{ thousands} = 2 \text{ thousands}$$

	Th	H	T	O
		②	⑪	
	9	3	1	2
	- 7	1	9	1
				1
	2	1	2	1

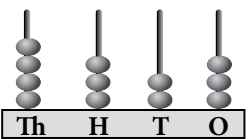
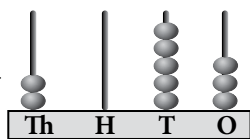
Properties of Subtraction

- ▶ When we subtract two numbers, the difference is always less than the minuend.
 $3245 - 2015 = 1230$
 Here, 1230 (difference) < 3245 (minuend)
- ▶ **Subtracting Zero:**
 Subtracting zero from the number does not change the number.
 $5161 - 0 = 5161$
- ▶ **Difference of Same Numbers:**
 When minuend is equal to subtrahend, the difference is **zero**.
 $3215 - 3215 = 0$.

SELF TEST - 2

1. On subtracting 1234 from 9453, the digit _____ is at the hundreds place in the answer obtained.

(A) 1	(B) 2	(A) 2996	(B) 2969
(C) 4	(D) 9	(C) 2900	(D) 3996
2. The value of

	-		= _____.
Th H T O		Th H T O	

(A) 227 ones	(B) 227 tens	4. Priya climbed 420 steps out of 515. How many more steps she has to climb to reach on the top?	(A) 84
(C) 22 tens	(D) 227 hundreds	(A) 84	(B) 90
		(C) 95	(D) 97
3. How much is 4501 less than 7497?

(A) 0	(B) The number itself	5. When 0 is subtracted from a number the difference is _____.	(A) 0
(C) More than the subtrahend	(D) Less than the subtrahend	(A) 0	(B) The number itself
		(C) More than the subtrahend	(D) Less than the subtrahend

2.3 ADDITION AND SUBTRACTION TOGETHER

To solve the problem having addition and subtraction together, we follow the steps:

$$\begin{array}{c}
 6245 + 2352 - 1468 \\
 \downarrow \\
 8597 - 1468 \\
 \downarrow \\
 7129
 \end{array}$$

Checking Subtraction

For each addition fact, we get two subtraction facts.

$$\begin{array}{c}
 5462 + 2412 = 7874 \\
 \swarrow \quad \searrow \\
 7874 - 2412 = 5462 \quad \text{and} \quad 7874 - 5462 = 2412
 \end{array}$$

After performing the subtraction, we can check the answer by addition.

For example : Subtract 3248 from 8253 and check the answer.

$$\begin{array}{r} 82\cancel{5}\cancel{3} \\ - 3248 \\ \hline 5005 \end{array}$$

Checking the answer:

$$\begin{array}{r} 3248 \\ + 5005 \\ \hline 8253 \end{array}$$

Answer is same as minuend.

SELF TEST - 3

1. Solve : $6245 + 2318 - 1045$




- (A) 7214 (B) 7518
(C) 6324 (D) 6590

2. When we subtract the sum of 200 and 845 from 1500, the result is _____.

- (A) 455 (B) 505
(C) 400 (D) 630

3. The difference between 9245 and 820 is _____ the sum of 6245 and 3104.

- (A) Greater than (B) Less than
(C) Equal to (D) Can't be determined

4. Karan had 7520 . He gave 1765  to poor children and donated 2978  books to a library. How many books is left with him?

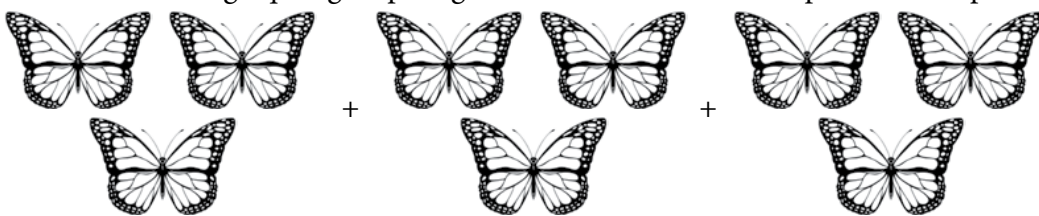
- (A) 4325 (B) 2777
(C) 3210 (D) 1298

5. What should be subtracted from the sum of 3210 and 4200 to make it 1295?

- (A) 3410 (B) 2490
(C) 6115 (D) 4592

2.4 MULTIPLICATION

Multiplication means adding equal groups together. It is also called the process of repeated addition.



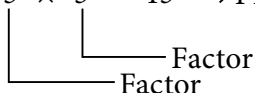
$$3 + 3 + 3 = 9 \text{ or } 3 \times 3 = 9$$

Addition Fact Multiplication Fact

Factors and Product

When two numbers are multiplied together, the result obtained is called the **product**. The numbers multiplied are called **factors**.

For example: $5 \times 3 = 15 \rightarrow$ Product



Properties of Multiplication

► Order of multiplication:

The product of any numbers in any order is same.

$$6 \times 9 = 9 \times 6$$

► Multiplied by zero:

Any number if multiplied by 0, gives the product 0.

$$25 \times 0 = 0$$

► Multiplied by 1:

Any number if multiplied by 1, gives the number itself.

$$12 \times 1 = 12$$

Multiplication without Regrouping

► Multiplication of a 2-digit/3-digit/4-digit number

(1) By 1-digit number

On multiplying a 2-digit/3-digit/ 4-digit number by 1-digit number, we first multiply the ones digit, followed by tens, hundreds and thousands digits.

For example:

<table style="border-collapse: collapse;"> <tr><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="padding: 0 5px;">5</td><td style="padding: 0 5px;">3</td></tr> <tr><td style="padding: 0 5px;">×</td><td style="padding: 0 5px;">3</td></tr> <tr><td colspan="2" style="border-top: 1px solid black; padding-top: 5px;">15 9</td></tr> </table>	T	O	5	3	×	3	15 9			<table style="border-collapse: collapse;"> <tr><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="padding: 0 5px;">5</td><td style="padding: 0 5px;">1</td><td style="padding: 0 5px;">2</td></tr> <tr><td style="padding: 0 5px;">×</td><td style="padding: 0 5px;"></td><td style="padding: 0 5px;">2</td></tr> <tr><td colspan="3" style="border-top: 1px solid black; padding-top: 5px;">10 2 4</td></tr> </table>	H	T	O	5	1	2	×		2	10 2 4				<table style="border-collapse: collapse;"> <tr><td style="padding: 0 5px;">Th</td><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="padding: 0 5px;">1</td><td style="padding: 0 5px;">0</td><td style="padding: 0 5px;">2</td><td style="padding: 0 5px;">1</td></tr> <tr><td style="padding: 0 5px;">×</td><td style="padding: 0 5px;"></td><td style="padding: 0 5px;"></td><td style="padding: 0 5px;">3</td></tr> <tr><td colspan="4" style="border-top: 1px solid black; padding-top: 5px;">3 0 6 3</td></tr> </table>	Th	H	T	O	1	0	2	1	×			3	3 0 6 3			
T	O																																							
5	3																																							
×	3																																							
15 9																																								
H	T	O																																						
5	1	2																																						
×		2																																						
10 2 4																																								
Th	H	T	O																																					
1	0	2	1																																					
×			3																																					
3 0 6 3																																								

(2) By 2-digit number

On multiplying a 2-digit number by a 2-digit number, we follow the below steps :

Multiply 42 by 12

Step 1 : Arrange the digits in specified columns.

T	O
4	2
×	1 2

Step 2 : Multiply the number by ones digit *i.e.*, 2,

$$42 \times 2 \text{ ones} = 84 \text{ ones}$$

and write 84 in the first row

H	T	O
	4	2
×	1	2
8 4		
Row 1		

Step 3 : Multiply the number by the tens digit *i.e.*, 10

$$42 \times 1 \text{ tens} = 42 \text{ tens} = 420$$

and write 420 in the second row.

H	T	O
	4	2
×	1	2
8 4		
Row 1		
4 2 0		
Row 2		

Step 4 : Add first and second rows.

$$84 + 420 = 504$$

So, $42 \times 12 = 504$

H	T	O
	4	2
×	1	2
8 4		
+	4	2 0
5 0 4		

For example:	<table style="border-collapse: collapse; margin: 0 auto;"> <tr><td style="text-align: center;">T O</td></tr> <tr><td style="text-align: center;">2 4</td></tr> <tr><td style="text-align: center;">× 1 2</td></tr> <tr><td style="text-align: center;">4 8</td></tr> <tr><td style="text-align: center;">+ 2 4 0</td></tr> <tr><td style="text-align: center;">2 8 8</td></tr> </table>	T O	2 4	× 1 2	4 8	+ 2 4 0	2 8 8	<table style="border-collapse: collapse; margin: 0 auto;"> <tr><td style="text-align: center;">H T O</td></tr> <tr><td style="text-align: center;">3 2 1</td></tr> <tr><td style="text-align: center;">× 1 3</td></tr> <tr><td style="text-align: center;">9 6 3</td></tr> <tr><td style="text-align: center;">+ 3 2 1 0</td></tr> <tr><td style="text-align: center;">4 1 7 3</td></tr> </table>	H T O	3 2 1	× 1 3	9 6 3	+ 3 2 1 0	4 1 7 3	<table style="border-collapse: collapse; margin: 0 auto;"> <tr><td style="text-align: center;">Th H T O</td></tr> <tr><td style="text-align: center;">4 2 1 1</td></tr> <tr><td style="text-align: center;">× 2 3</td></tr> <tr><td style="text-align: center;">1 2 6 3 3</td></tr> <tr><td style="text-align: center;">+ 8 4 2 2 0</td></tr> <tr><td style="text-align: center;">9 6 8 5 3</td></tr> </table>	Th H T O	4 2 1 1	× 2 3	1 2 6 3 3	+ 8 4 2 2 0	9 6 8 5 3
T O																					
2 4																					
× 1 2																					
4 8																					
+ 2 4 0																					
2 8 8																					
H T O																					
3 2 1																					
× 1 3																					
9 6 3																					
+ 3 2 1 0																					
4 1 7 3																					
Th H T O																					
4 2 1 1																					
× 2 3																					
1 2 6 3 3																					
+ 8 4 2 2 0																					
9 6 8 5 3																					

Multiplication with Regrouping

► Multiplication of a 2-digit/3-digit/4-digit number

(1) By 1-digit number

On multiplying 2-digit number by 1-digit number with regrouping we follow the below steps :
Multiply 32 by 6

Step 1 : Arrange the digit in specific columns.

T O
3 2
× 6

Step 2 : Multiply the ones digit and regroup.

$$2 \times 6 = 12 \text{ ones} = 1 \text{ tens } 2 \text{ ones}$$

Write 2 in ones column and carry 1 to the tens column.

①
T O
3 2
× 6
2

Step 3 : Multiply tens digit and add the carry over.

$$3 \times 6 = 18 \text{ tens}$$

$$\text{and } 18 \text{ tens} + 1 \text{ tens (carry over)} = 19 \text{ tens}$$

For example:

①	<table style="border-collapse: collapse; margin: 0 auto;"> <tr><td style="text-align: center;">H T O</td></tr> <tr><td style="text-align: center;">3 2 1</td></tr> <tr><td style="text-align: center;">× 7</td></tr> <tr><td style="text-align: center;">2 2 4 7</td></tr> </table>	H T O	3 2 1	× 7	2 2 4 7	<table style="border-collapse: collapse; margin: 0 auto;"> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">①</td> </tr> <tr><td style="text-align: center;">Th H T O</td></tr> <tr><td style="text-align: center;">4 1 3 2</td></tr> <tr><td style="text-align: center;">× 8</td></tr> <tr><td style="text-align: center;">3 3 0 5 6</td></tr> </table>	①	②	①	Th H T O	4 1 3 2	× 8	3 3 0 5 6
H T O													
3 2 1													
× 7													
2 2 4 7													
①	②	①											
Th H T O													
4 1 3 2													
× 8													
3 3 0 5 6													

①
T O
3 2
× 6
1 9 2

(2) By 2-digit number

On multiplying 2-digit number by 2-digit number with regrouping we follow the below steps :
Multiply 92 by 36

Step 1 : Arrange the digits in specified columns.

T O
9 2
× 3 6

Step 2 : Multiply the number by the ones digit *i.e.*, 6

$$92 \times 6 \text{ ones} = 552 \text{ ones}$$

and write 552 in the first row

T O
9 2
× 3 6
5 5 2 Row 1

Step 3 : Multiply the number by the tens digit *i.e.*, 30

$$92 \times 3 \text{ tens} = 276 \text{ tens} = 2760$$

and write 2760 in the second row.

T O
9 2
× 3 6
5 5 2 Row 1
2 7 6 0 Row 2

Step 4 : Add both the rows.

$$552 + 2760 = 3312$$

So, $92 \times 36 = 3312$

	T	O
	9	2
×	3	6
	5	5
+	2	7
	3	3
	1	2

For example :

<table style="border-collapse: collapse; margin: auto;"> <tr><td></td><td style="text-align: right;">T</td><td style="text-align: right;">O</td></tr> <tr><td></td><td style="text-align: right;">3</td><td style="text-align: right;">8</td></tr> <tr><td style="text-align: right;">×</td><td style="text-align: right;">1</td><td style="text-align: right;">2</td></tr> <tr><td></td><td style="text-align: right; border-top: 1px solid black;">7</td><td style="text-align: right; border-top: 1px solid black;">6</td></tr> <tr><td style="text-align: right;">+</td><td style="text-align: right;">3</td><td style="text-align: right;">8</td></tr> <tr><td></td><td style="text-align: right; border-top: 1px solid black;">4</td><td style="text-align: right; border-top: 1px solid black;">5</td></tr> </table>		T	O		3	8	×	1	2		7	6	+	3	8		4	5	<table style="border-collapse: collapse; margin: auto;"> <tr><td></td><td style="text-align: right;">H</td><td style="text-align: right;">T</td><td style="text-align: right;">O</td></tr> <tr><td></td><td style="text-align: right;">1</td><td style="text-align: right;">4</td><td style="text-align: right;">9</td></tr> <tr><td style="text-align: right;">×</td><td style="text-align: right;">2</td><td style="text-align: right;">5</td><td></td></tr> <tr><td></td><td style="text-align: right; border-top: 1px solid black;">7</td><td style="text-align: right; border-top: 1px solid black;">4</td><td style="text-align: right; border-top: 1px solid black;">5</td></tr> <tr><td style="text-align: right;">+</td><td style="text-align: right;">2</td><td style="text-align: right;">9</td><td style="text-align: right;">8</td></tr> <tr><td></td><td style="text-align: right; border-top: 1px solid black;">3</td><td style="text-align: right; border-top: 1px solid black;">7</td><td style="text-align: right; border-top: 1px solid black;">2</td></tr> </table>		H	T	O		1	4	9	×	2	5			7	4	5	+	2	9	8		3	7	2	<table style="border-collapse: collapse; margin: auto;"> <tr><td></td><td style="text-align: right;">Th</td><td style="text-align: right;">H</td><td style="text-align: right;">T</td><td style="text-align: right;">O</td></tr> <tr><td></td><td style="text-align: right;">2</td><td style="text-align: right;">3</td><td style="text-align: right;">6</td><td style="text-align: right;">9</td></tr> <tr><td style="text-align: right;">×</td><td></td><td></td><td style="text-align: right;">3</td><td style="text-align: right;">4</td></tr> <tr><td></td><td style="text-align: right; border-top: 1px solid black;">9</td><td style="text-align: right; border-top: 1px solid black;">4</td><td style="text-align: right; border-top: 1px solid black;">7</td><td style="text-align: right; border-top: 1px solid black;">6</td></tr> <tr><td style="text-align: right;">+</td><td style="text-align: right;">7</td><td style="text-align: right;">1</td><td style="text-align: right;">0</td><td style="text-align: right;">7</td></tr> <tr><td></td><td style="text-align: right; border-top: 1px solid black;">8</td><td style="text-align: right; border-top: 1px solid black;">0</td><td style="text-align: right; border-top: 1px solid black;">5</td><td style="text-align: right; border-top: 1px solid black;">4</td></tr> </table>		Th	H	T	O		2	3	6	9	×			3	4		9	4	7	6	+	7	1	0	7		8	0	5	4
	T	O																																																																								
	3	8																																																																								
×	1	2																																																																								
	7	6																																																																								
+	3	8																																																																								
	4	5																																																																								
	H	T	O																																																																							
	1	4	9																																																																							
×	2	5																																																																								
	7	4	5																																																																							
+	2	9	8																																																																							
	3	7	2																																																																							
	Th	H	T	O																																																																						
	2	3	6	9																																																																						
×			3	4																																																																						
	9	4	7	6																																																																						
+	7	1	0	7																																																																						
	8	0	5	4																																																																						



Olympiad Bite

- When a number is multiplied by 10, 20, 30, ..., 90, we multiply the given number by 1, 2, 3, ..., 9 respectively and place one zero to the right of the product.
- To multiply a given number by 100, 200, 300, ..., 900. We multiply the number by 1, 2, 3, ..., 9 respectively and place two zeroes to the right of the product.

SELF TEST - 4

1. $400 \times 5 = \underline{\hspace{2cm}}$.

- (A) 80
 (B) 900
 (C) 2000
 (D) 400

2. What is the missing number in the box given below?

$$7 \times 6 = 42$$

$$17 \times 6 = 42 + \square$$

- (A) 6
 (B) 60
 (C) 50
 (D) 30

3. Fill in the blank.

$$545 \times 13 = 13 \times \underline{\hspace{2cm}}$$

- (A) 343
 (B) 545
 (C) 505
 (D) 430

4. $800 \times 0 = \underline{\hspace{2cm}}$.

- (A) 800
 (B) 8000
 (C) 0
 (D) 100

5. If 3 children can sit on one bench, then how many children can sit on 45 such benches?

- (A) 90
 (B) 105
 (C) 135
 (D) 125

2.5 DIVISION

Division means equal sharing and equal grouping. It is also called the process of repeated subtraction.

Division By Equal Grouping

A teacher has 20 pens. She want to put the equal pens in 5 pen holders, then number of pens in each pen holder is 4.



20 Pens



5 groups of 4 pens each

Division by Repeated Subtraction

Since, total number of pens are 20 and we have to put them in 5 pen holders, So we subtract 5 repeatedly from 20 till we get 0.

Step 1 :
$$\begin{array}{r} 20 \\ - 5 \\ \hline 15 \end{array}$$
 Number of pens
Number of pen holders

Step 2 :
$$\begin{array}{r} 15 \\ - 5 \\ \hline 10 \end{array}$$

Step 3 :
$$\begin{array}{r} 10 \\ - 5 \\ \hline 5 \end{array}$$

Step 4 :
$$\begin{array}{r} 5 \\ - 5 \\ \hline 0 \end{array}$$

Since, we can subtract 5 from 20, four times. So, each pen holder has 4 pens.

Hence,
$$\begin{array}{ccc} \boxed{20} & \div & \boxed{5} = \boxed{4} \\ \downarrow & & \downarrow \\ \text{Dividend} & & \text{Divisor} \quad \text{Quotient} \end{array}$$

Relationship Between Multiplication and Division

Division is the inverse of multiplication. Knowledge of division depends upon the knowledge of multiplication.

For example,

3 times 7 is 21 can be written as $3 \times 7 = 21$.

Now, if 21 is divided into 7 equal parts, then how many are there in each part?

$$21 \div 7 = ?$$

We observe that

$$21 \div 7 = 3 \quad \swarrow \downarrow$$

$3 \times 7 = 21$ (multiplication)

$$21 \div 3 = 7 \quad \longleftarrow \uparrow$$

(division)

Properties of Division

► Division by 1:

When a number is divided by 1, the quotient is the same as the dividend.

$$18 \div 1 = 18$$

► Division by 0:

Division by zero is not defined. So, the divisor can never be zero.

► Division of 0:

When zero is divided by any number, the quotient is always zero.

$$0 \div 35 = 0$$

► Division of a number by itself:

When a number is divided by itself, the quotient is always 1.

$$42 \div 42 = 1$$

Long Division Method

Long division method is another method to divide the numbers.

For example,

If 36 books are divided equally among 9 students, then each student will get 4 books we can express the above fact as :

$$\begin{array}{r} \text{Divisor} \leftarrow 9 \overline{) 36} \rightarrow \text{Dividend} \\ \underline{-36} \\ 0 \rightarrow \text{Remainder} \end{array}$$

Long Division without Remainder

When a number is divided into equal parts and nothing is left over, then remainder is 0.

For example:

$$\begin{array}{r} 5 \\ 5 \overline{) 25} \\ \underline{-25} \\ 0 \rightarrow \text{Remainder} \end{array}$$

Long Division with Remainder

If a number is divided into equal parts and something is left over, then this left over number is called remainder.

For example:

$$\begin{array}{r} 6 \\ 7 \overline{) 48} \\ \underline{-42} \\ 6 \rightarrow \text{Remainder} \end{array}$$



Olympiad Bite

- We can check long division by using the given formula;
Dividend = Divisor \times Quotient + Remainder
- Remainder is always smaller than the divisor and greater than or equal to zero.

Division of a 2-digit and 3-digit number by 1-digit number

On dividing a 2-digit number by a 1-digit number, we follow the below steps :

Step 1 : Arrange the two numbers as below

$$3 \overline{) 95}$$

Step 2 : Compare the divisor and tens digit of dividend. If divisor is less than tens digit of dividend, we divide it by the divisor.

Here $3 < 8$. So, divide 8 by 3.

Since $3 \times 2 = 6 < 8$. So, write 6 just below 8 and subtract it from 8. Also, copy the ones digit of dividend as shown.

$$\begin{array}{r} 2 \\ 3 \overline{) 85} \\ \underline{-6} \downarrow \\ 25 \end{array}$$

Step 3 : Now, again compare the divisor and tens digit of result (*i.e.*, 25). Since tens digit of number 25 is less than divisor, we consider both digits of 25 and divide 25 by 3.

$$\begin{array}{r} 28 \\ 3 \overline{) 85} \\ \underline{-6} \downarrow \\ 25 \\ \underline{-24} \\ 1 \rightarrow \text{Remainder} \end{array}$$

For example: Divisor ← 2) $\begin{array}{r} 187 \rightarrow \text{Quotient} \\ 375 \rightarrow \text{Dividend} \\ -2 \quad \downarrow \quad | \\ \hline 17 \quad \downarrow \\ -16 \quad \downarrow \\ \hline 15 \\ -14 \\ \hline 1 \rightarrow \text{Remainder} \end{array}$

Checking of division : $2 \times 187 + 1 = 374 + 1 = 375 = \text{Dividend}$

SELF TEST - 5

1. Fill in the blank.

$$821 = 117 \times 7 + \underline{\quad ? \quad}$$

(A) 0

(B) 2

(C) 5

(D) 8

2. 46 players are divided into 6 teams. How many players are there in each team? How many players are left?

(A) 7, 4

(B) 4, 8

(C) 6, 3

(D) 7, 2

3. Division is the repeated process of _____.

(A) Addition

(B) Subtraction

(C) Multiplication

(D) None of these

4. Find the value of $8204 \div 1$.

(A) 0

(B) 1

(C) 8204

(D) 820

5. When the largest 3-digit number is divided by 3, we get _____ as a quotient.

(A) 33

(B) 333

(C) 300

(D) 100

EXERCISE

1. Sonia and Sneha are talking about a large number, they are studying in the Maths class, which is 2100 more than 3259. Which of the following is the number?

- (A) 1159 (B) 5462
(C) 5359 (D) 4359

2. Which of the following options has a value greater than $1000 - 850$?

- (A) $10 + 85$ (B) $85 + 15$
(C) $85 + 85$ (D) $100 - 85$

3. There are 15 chairs in a classroom. The total number of legs of the chairs in the classroom is _____, if each chair has 4 legs.

- (A) 42 (B) 84
(C) 60 (D) 105

4. When largest 4-digit number is divided by the largest 3-digit number, then

- (A) Quotient = 10, Remainder = 9
(B) Quotient = 100, Remainder = 99
(C) Quotient = 10, Remainder = 99
(D) Quotient = 100, Remainder = 9

5. If zero is subtracted from 4530, then the difference is _____.

- (A) 0 (B) 4520
(C) 4530 (D) 5000

6. Find the missing number.

$$\boxed{?} \rightarrow \boxed{\times 5} \rightarrow \boxed{+ 8} \rightarrow \boxed{\div 6} \rightarrow \boxed{- 5} = \boxed{3}$$

- (A) 4 (B) 8
(C) 10 (D) 12

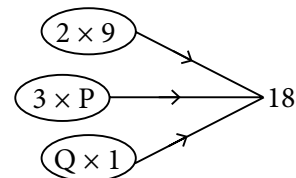
7. Manish is reading a 1800 pages book. He has already read 500 pages. If he reads 50 pages on each day, then how long did he take to read the rest of the book?

- (A) 20 days (B) 32 days
(C) 25 days (D) 26 days

8. Sahil bought 40 white shirts and 48 black shirts. He tied all the shirts into bundles of 8 equally. How many bundles did he have in all?

- (A) 10 (B) 8
(C) 11 (D) 15

9. Study the given number bond carefully. Find the value of $P + Q$.



- (A) 30 (B) 18
(C) 28 (D) 24

10. The difference between the place values of digit 8 in 1892 and 2785 is _____.

- (A) 800 (B) 720
(C) 80 (D) 0

11. What is the missing number in the box?

$$9345 - 2569 = \boxed{} + 4000$$

- (A) 2776 (B) 2105
(C) 2716 (D) 1976

12. Form the smallest 4-digit odd number by using all the digits 3, 1, 0, 5, then subtract 105 from it. What is the result?

- (A) 810 (B) 948
(C) 930 (D) 920

13. Raghav has a bag of toffees. He distributed 850 toffees to the students and 350 toffees to the teachers. He is left with 90 toffees in the bag. How many toffees did Raghav have at first?

- (A) 1200 (B) 1290
(C) 1300 (D) 1390

14. Pooja bought 8 packets of sugar. Each packet of sugar costs ₹ 35. Which expression could be used to find the total amount (in ₹) Pooja spent on sugar?

- (A) $35 \div 8$ (B) $35 + 8$
(C) 35×8 (D) $35 - 8$

15. Shurti has 30 packets and her brother has 50 packets of marbles. If each packet contains 5 marbles, then how many marbles they have altogether?

- (A) 400 (B) 600
(C) 800 (D) 1000

16. Find the value of $L + M + N$, if

$L = 50 \div 5$; $M = 30 \times 5$; $N = 8 + 4$.

- (A) 1250 (B) 1500
(C) 180 (D) 172

17. Which of the following two numbers when added will give the result 8215?

P - 5667 Q - 2548 R - 2105


- (A) P and Q (B) P and R
(C) Q and R (D) None of these

18. Smriti sold 983 apples on first day. Next day, she sold 120 less apples she sold on the first day. How many apples did she sold on both the days?

- (A) 1966 (B) 983
(C) 863 (D) 1846

19. Amit bought 4296 . Kapil bought 250



 more than Amit. Find the number of stamps bought by Kapil.

- (A) 4585 (B) 4046
(C) 4256 (D) 4546

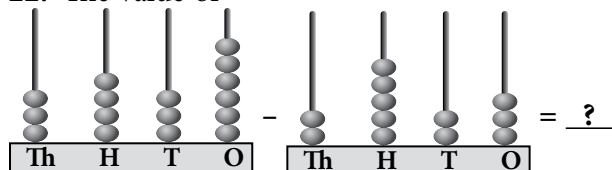
20. A number between 50 and 62 is exactly divisible by 9. What is the result when 7 is subtracted from that number?

- (A) 40 (B) 47
(C) 56 (D) 63

21. Find the product of the sum of 430 and 6 and the remainder of $920 \div 7$.

- (A) 442 (B) 592
(C) 1308 (D) 1452

22. The value of



- (A) 9 tens (B) 9 ones
(C) 91 hundreds (D) 913 ones

23. What number should be added to 9990 to get the largest four digit even number?

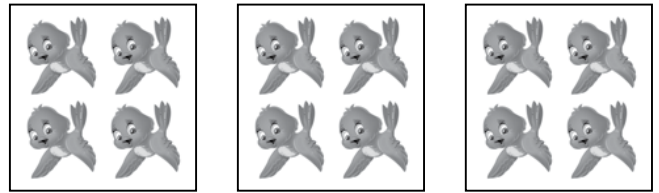
- (A) 8 (B) 9
(C) 10 (D) 0

24. Compare and fill the box.

$4863 + 3689 - 2105$ $6254 + 2100 - 1005$

- (A) > (B) <
(C) = (D) Can't be determined




25. Which number sentence describes the given number of birds?



- (A) $4 \times 3 = 12$ (B) $4 + 3 = 7$
(C) $4 \times 5 = 20$ (D) $2 \times 4 = 8$

26. A 2-digit number is multiplied by a 1-digit number. The maximum number of digits in the product is _____.

- (A) 2 (B) 3
(C) 4 (D) 5

27. A fishermen caught 3216  in the morning and 1245  in the evening. How many  he caught on that day?

- (A) 4251 (B) 3000
(C) 4461 (D) 4000

28. The difference between the greatest and the smallest 4-digit numbers formed by using the digits 4, 0, 2 and 5 (without repetition) is _____.

- (A) 3333 (B) 5175
(C) 3375 (D) 3275

29. Find the value of X and Y respectively.

$$\begin{array}{r} 4 \ 1 \ 8 \ 2 \\ \times \quad \quad \quad 5 \\ \hline 2 \ 0 \ Y \ X \ 0 \end{array}$$

- (A) 1, 2 (B) 1, 9
(C) 1, 8 (D) 9, 1

30. The product of 5 and X is 600. Find the value of $X \div 3$.

- (A) 45 (B) 40
(C) 48 (D) 30

Achievers Section (HOTS)

31. Read the given information carefully.



- A number is less than 90 but more than 60.
- It is divisible by 8.
- Sum of the digits of the number is 9.

When the number is added to 10, then what will be the resulting number?

- (A) 82 (B) 63
(C) 72 (D) 48

32. Match the following:

Column A

Column B









- (a) Kanika has 3162 mango candies and 2184 orange candies. Total number of candies she has, is (p) 4343
- (b) In a plane, there are 1234 first class seats and 2946 second class seats. The total number of seats in the plane is (q) 5346
- (c) Sahil bought 4489 bats. Sneha bought 146 bats less than Sahil. The number of bats Sneha bought is (r) 4180

- (A) (a) → (q), (b) → (r), (c) → (p)
(B) (a) → (q), (b) → (p), (c) → (r)
(C) (a) → (p), (b) → (q), (c) → (r)
(D) (a) → (r), (b) → (q), (c) → (p)

33. Fill in the blanks and select the correct option.

- (a) $5260 \times 0 = \underline{\text{P}}$
(b) $8200 \div 41 = \underline{\text{Q}}$ tens
(c) $7652 = 588 \times 13 + \underline{\text{R}}$

- | | P | Q | R |
|-----|----------|----------|----------|
| (A) | 0 | 2 | 8 |
| (B) | 5260 | 20 | 7 |
| (C) | 5260 | 10 | 7 |
| (D) | 0 | 20 | 8 |

34. If  +  = 623;  +  = 557 and  +  +  = 976, then find the value of .

- (A) 200 (B) 204
(C) 206 (D) 208

35. Select the CORRECT statement.

P : Kavya painted 1060 candles to sell during the Diwali mela. If she puts them in packets of 4 each, then 265 packets will be made.

Q : There are 27 roses in a bouquet. If Meena sold 108 such bouquets. Then she sold 2916 roses.

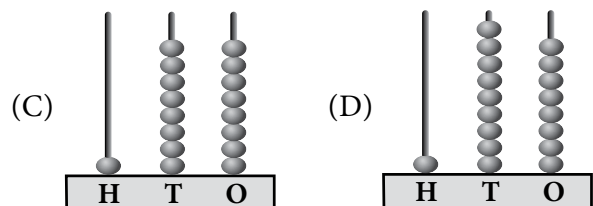
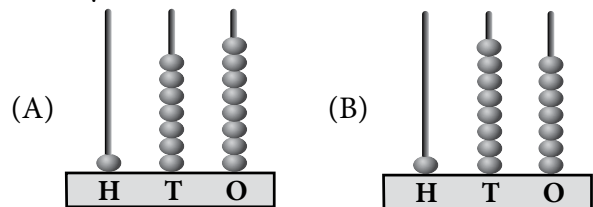
- (A) Only P (B) Only Q
(C) Both P and Q (D) Neither P nor Q

SOF IMO 2019 QUESTIONS

1. Mr Arjun wants to divide 108 sweets among 9 students. Which of the following can be used to find how many sweets will each student get?

- (A) $108 + 9$ (B) $108 - 9$
(C) 108×9 (D) $108 \div 9$ (Level-1)

2. Five hundred sixty three - Three hundred seventy five = ____? ____.



(Level-1)

3. 833 apples were packed in 7 cartons. If each carton contains same number of apples, then how many apples are kept in each carton?

- (A) 19 (B) 119
(C) 109 (D) 5831 (Level-1)

4. There are 462 people in a train. 98 people deboarded the train. If 29 more people boarded the train, then how many people are there in the train now?

- (A) 531 (B) 631
(C) 393 (D) 383 (Level-1)

5. Ishaan has 3865 marbles and Dhristi has 378 less marbles than Ishaan. Find the total number of marbles they have altogether.

- (A) 7352 (B) 3487
(C) 8108 (D) 4243 (Level-1)

6. Find the missing digit in the box, if remainder is equal to 2.

(A) 6 (B) 2
(C) 3 (D) 4 (Level-1)

$$\begin{array}{r} 49 \\ \square \overline{) 149} \end{array}$$

7. Which of the following signs will replace the (?) in the box?

(A) + (B) -
(C) × (D) ÷ (Level-1)

$$56 \times 2 = 106 \square 6$$

8. Manoj sells 26 packets of 6 mangoes each and is left with 430 mangoes. How many mangoes did Manoj have at first?

- (A) 586 (B) 155
(C) 117 (D) 585 (Level-1)

9. Priyanka buys 21 cupcakes for her friends every day. How many cupcakes does she buy in the month of December?


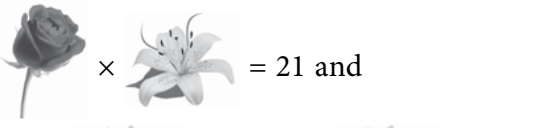

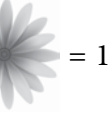
- (A) 652 (B) 741
(C) 651 (D) 630 (Level-1)




10. Identify the four digit number.



Its ones digit is the smallest one digit odd number.
Its hundreds digit is $96 \div 12$.
Its tens digit is 4 times its ones digit.
Its thousands digit is two more than its tens digit.

- (A) 6841 (B) 6542
(C) 8641 (D) 9482 (Level-1)

11. If  +  = 35,  ×  = 21 and

 +  = 11, then  = ?

(A) 9 (B) 8
(C) 7 (D) 6 (Level-1)

12. Radhika made 10 dozen cupcakes. She gave 22 cupcakes to her mother and ate 6 cupcakes. How many cupcakes are left with her?

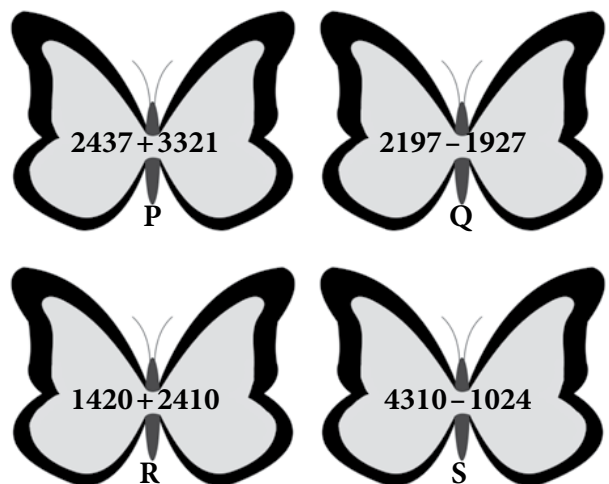
- (A) 92 (B) 96
(C) 82 (D) 86 (Level-2)

13. Put the correct signs in the boxes below in the same order as in the options so that the given statement becomes true.




84 \square 8 \square 62 \square 3 = 33

(A) -, +, + (B) +, +, -
(C) -, +, - (D) +, -, + (Level-2)

14. Find the value of $(P + S) - (R + Q)$.



- (A) 4944 (B) 4020
(C) 3784 (D) 4140 (Level-2)

15. 3465  are to be packed. If 4  are to be packed in one packet, then how many packets will be there and how many  will be left?

- (A) 866, 1 (B) 866, 0
(C) 867, 0 (D) 867, 2 (Level-2)

16. Aaryan thought of a four digit number. Find the number, using the given clues.

- Its ones digit is largest one-digit odd number.
- Its tens digit is difference of 22 tens and 220.
- Its hundreds digit is tens digit of 12×6 .
- Its thousands digit is unit digit of greatest 4-digit even number.

- (A) 8609 (B) 8709
(C) 8708 (D) 8789 (Level-2)

17. Which of the following options gives the maximum value?

- (A) 3 hundreds + 42 tens
(B) 1 thousand + 60 ones
(C) 9 hundreds + 2 tens
(D) 7 hundreds + 56 tens (Level-2)




18. Aman has 8 jars to keep candies. Each jar can contain 14 candies. If Aman has 140 candies, then how many candies will be left after keeping the candies in 8 jars?

- (A) 37 (B) 22
(C) 28 (D) 29 (Level-2)




19. Find the missing number in the box.


$$\boxed{?} \times \boxed{12} \rightarrow \boxed{42} \div \boxed{6} = \boxed{20} = \boxed{707}$$

- (A) 360 (B) 280
(C) 320 (D) 380 (Level-2)

20. If  \times  = 100,  $\div 2 =$

 and  +  +  +

 +  = 100 \div , then

find the value of .

- (A) 25 (B) 10
(C) 5 (D) 4 (Level-2)

HINTS & EXPLANATIONS

SELF TEST - 1

$$\begin{array}{r}
 1. \text{ (A): } \quad 2 \ 1 \ 6 \ 5 \\
 \quad \quad \quad + \ 5 \ 4 \ 5 \ 9 \\
 \quad \quad \quad \hline
 \quad \quad \quad 7 \ 6 \ 2 \ 4
 \end{array}$$

So, $x = 5$

$$\begin{array}{r}
 2. \text{ (C): } \quad 1 \ 4 \ 8 \ 1 \\
 \quad \quad \quad + \ 3 \ 2 \ 1 \ 4 \\
 \quad \quad \quad \hline
 \quad \quad \quad 4 \ 6 \ 9 \ 5
 \end{array}$$

4695 is written as four thousand six hundred ninety five

3. (B): $7384 + 0 = 7384$

4. (B): Since, the number can be added in any order, the sum does not change.

So, $9863 + 2357 = 2357 + 9863$

5. (B): Addition of two numbers is always greater than both the numbers.

SELF TEST - 2

1. (B): $9453 - 1234 = 8219$

In 8219, digit 2 is at the hundreds place.

2. (B): $4323 - 2053 = 2270$

And, $2270 = 227$ tens.

3. (A): $7497 - 4501 = 2996$

\therefore 4501 is 2996 less than 7497.

4. (C): Total number of steps to climb = 515

Number of steps Priya climbed = 420

Number of more steps she has to climb

$$= 515 - 420 = 95$$

5. (B): If 0 is subtracted from a number, the difference is the number itself.

SELF TEST - 3

$$\begin{array}{r}
 1. \text{ (B): } \quad \begin{array}{cccc} & & \textcircled{1} & \\ 6 & 2 & 4 & 5 \end{array} \text{ and } \begin{array}{cccc} & & \textcircled{5} & \textcircled{13} \\ 8 & 5 & \cancel{4} & \cancel{5} \end{array} \\
 \quad \quad \quad + \begin{array}{cccc} 2 & 3 & 1 & 8 \\ \hline 8 & 5 & 6 & 3 \end{array} \quad \quad \quad - \begin{array}{cccc} 1 & 0 & 4 & 5 \\ \hline 7 & 5 & 1 & 8 \end{array}
 \end{array}$$

2. (A): Sum of 200 and 845 = $200 + 845 = 1045$

\therefore Required difference = $1500 - 1045 = 455$

3. (B): Difference between 9245 and 820 = $\begin{array}{r} \textcircled{8} \textcircled{12} \\ 9245 \\ - 820 \\ \hline 8425 \end{array}$

$$\begin{array}{r}
 \text{Sum of } 6245 \text{ and } 3104 = \begin{array}{r} 6 \ 2 \ 4 \ 5 \\ + 3 \ 1 \ 0 \ 4 \\ \hline 9 \ 3 \ 4 \ 9 \end{array}
 \end{array}$$

Now, $8425 < 9349$.

4. (B): Total number of books Karan had = 7520

Total number of books he gave to children and library together = $1765 + 2978 = 4743$

So, number of books left with him

$$= 7520 - 4743 = 2777$$

5. (C): Sum of $3210 + 4200 = 7410$.

Let X be the required number.

So, $7410 - X = 1295$

$$\Rightarrow 7410 - 6115 = 1295$$

So, $X = 6115$

SELF TEST - 4

1. (C): $400 \times 5 = 2000$

2. (B)

3. (B): $545 \times 13 = 13 \times 545$

4. (C): $800 \times 0 = 0$

5. (C): Number of children can sit on 1 bench = 3

Number of children can sit on 45 benches = 3×45

$$= 135$$

SELF TEST - 5

$$\begin{array}{r}
 1. \text{ (B): } \begin{array}{r} \overline{) 8 \ 2 \ 1} \\ - 7 \\ \hline \\ - \\ \hline \\ - \\ \hline \\ \hline \end{array}
 \end{array}$$

So, $821 = 117 \times 7 + \boxed{2}$

$$\begin{array}{r}
 2. \text{ (A): } \begin{array}{r} \overline{) 4 \ 6} \\ - 4 \\ \hline \\ - \\ \hline \end{array}
 \end{array}$$

So, there are 7 players in each of 6 teams and 4 players are left.

3. (B)

4. (C): $8204 \div 1 = 8204$

5. (B): Largest 3-digit number = 999

$$\begin{array}{r} 3\ 3\ 3 \rightarrow \text{Quotient} \\ 3 \overline{)9\ 9\ 9} \\ \underline{-9\ \downarrow} \\ 0\ 9\ \downarrow \\ \underline{-9\ \downarrow} \\ 0\ 9 \\ \underline{-9} \\ 0 \end{array}$$

EXERCISE

1. (C): Required number = 2100 more than 3259
 $= 3259 + 2100 = 5359$

2. (C): Since $1000 - 850 = 150$

(A) $10 + 85 = 95 < 150$

(B) $85 + 15 = 100 < 150$

(C) $85 + 85 = 170 > 150$

(D) $100 - 85 = 15 < 150$

3. (C): Number of chairs in the classroom = 15

Number of legs 1 chair has = 4

So, number of legs 15 chairs have = $15 \times 4 = 60$

4. (A): Largest 4-digit number = 9999

Largest 3-digit number = 999

$$\begin{array}{r} 1\ 0 \rightarrow \text{Quotient} \\ 999 \overline{)9\ 9\ 9\ 9} \\ \underline{-9\ 9\ 9\ \downarrow} \\ 0\ 9 \rightarrow \text{Remainder} \end{array}$$

5. (C): Subtracting zero from any number does not change the number.

$\therefore 4530 - 0 = 4530$

6. (B): $\boxed{8} \times 5 \rightarrow 40 \xrightarrow{+8} 48 \xrightarrow{\div 6} 8 \xrightarrow{-5} 3$

So, missing number = 8

7. (D): Number of pages in the book = 1800

Number of pages already read = 500

Number of pages left to be read

$= 1800 - 500 = 1300$

Number of pages read in 1 day = 50

\therefore Number of days required to read the rest of the book = $1300 \div 50 = 26$

8. (C): Total number of shirts = $40 + 48 = 88$

Number of shirts in 1 bundle = 8

Number of bundles of 8 shirts each = $88 \div 8 = 11$

9. (D): We have, $2 \times 9 = 18$

$3 \times P = 18$ or $3 \times \boxed{6} = 18$

So, $P = 6$

Also, $Q \times 1 = 18$ or $\boxed{18} \times 1 = 18$

So, $Q = 18$

$\therefore P + Q = 6 + 18 = 24$

10. (B): Place value of 8 in 1892 = 800

Place value of 8 in 2785 = 80

Required difference = $800 - 80 = 720$

11. (A): $9345 - 2569 = \boxed{} + 4000$

$\Rightarrow 6776 = \boxed{} + 4000$

or, $6776 = \boxed{2776} + 4000$

So, missing value is 2776.

12. (C): Smallest 4-digit odd number formed from the digits 3, 1, 0, 5 = 1035

\therefore Required number = $1035 - 105 = 930$

13. (B): Number of toffees distributed to students = 850

Number of toffees distributed to teachers = 350

Total number of toffees distributed = $850 + 350 = 1200$

Number of toffees left in the bag = 90

So, number of toffees Raghav have at first

$= 1200 + 90 = 1290$

14. (C): Number of packets of sugar bought = 8

Cost of each packet = ₹ 35

So, total amount spent on sugar = ₹ (35×8)

15. (A): Number of packets of marbles Shruti has = 30

Number of packets of marbles Shruti's brother has = 50

\therefore Total number of packets they both have

$= 30 + 50 = 80$

Number of marbles in one packet = 5

So, number of marbles in 80 packets = $5 \times 80 = 400$

16. (D): We have, $L = 50 \div 5 = 10$, $M = 30 \times 5 = 150$

$N = 8 + 4 = 12$,

$\therefore L + M + N = 10 + 150 + 12 = 172$

17. (A): (A) $P + Q = 5667 + 2548 = 8215$

(B) $P + R = 5667 + 2105 = 7772 \neq 8215$

(C) $Q + R = 2548 + 2105 = 4653 \neq 8215$

18. (D): Number of apples sold on first day = 983

Number of apples sold on next day = $983 - 120 = 863$

So, number of apples sold on both the days

$= 983 + 863 = 1846$

19. (D): Number of stamps bought by Amit = 4296

Number of stamps bought by Kapil = $4296 + 250 = 4546$

20. (B): Between 50 and 62 only 54 is exactly divisible by 9. After subtracting 7 from 54 we get $54 - 7 = 47$.

21. (C):
$$\begin{array}{r} 131 \\ 7 \overline{) 920} \\ \underline{-7} \\ 22 \\ \underline{-21} \\ 10 \\ \underline{-7} \\ 3 \end{array}$$
 3 → Remainder

Sum of 430 and 6 = $430 + 6 = 436$

So, product of 436 and 3 = $436 \times 3 = 1308$

22. (D): $3436 - 2523 = 913 = 913$ ones

23. (A): Largest 4-digit even number = 9998

Let x be the required number, then $9990 + x = 9998$

or, $9990 + \boxed{8} = 9998$

$\Rightarrow x = 8$

24. (B): $4863 + 3689 - 2105 = 8552 - 2105 = 6447$


and, $6254 + 2100 - 1005 = 8354 - 1005 = 7349$

Now, $6447 < 7349$

25. (A)

26. (B)

27. (C): Number of  caught in the morning = 3216

Number of  caught in the evening = 1245
Total number of fish caught on the day = $3216 + 1245 = 4461$

28. (C): Greatest 4-digit number formed by using 4, 0, 2 and 5 (without repetition) = 5420

Smallest 4-digit number formed by using 4, 0, 2 and 5 (without repetition) = 2045

Required difference = $5420 - 2045 = 3375$

29. (B):
$$\begin{array}{r} \textcircled{4} \quad \textcircled{1} \\ 4 \quad 1 \quad 8 \quad 2 \\ \times \\ \hline 20910 \end{array}$$

So, $X = 1, Y = 9$

30. (B): As, $5 \times X = 600$

or, $5 \times 120 = 600$

$\Rightarrow X = 120$

So, $120 \div 3 = 40$

31. (A): Numbers which are divisible by 8 and lies between 60 and 90 are, 64, 72, 80 and 88.

Also, sum of digits of 72 = $7 + 2 = 9$

So, required number = 72

Now, $72 + 10 = 82$

32. (A): (a) Number of mango candies Kanika has = 3162

Number of orange candies she has = 2184

Total number of candies she has = $3162 + 2184 = 5346$

(b) Number of first class seats = 1234

Number of second class seats = 2946

Total number of seats = $1234 + 2946 = 4180$

(c) Number of bats Sahil bought = 4489

Number of bats Sneha bought = $4489 - 146 = 4343$



33. (D): (a) $5260 \times 0 = 0$

(b) $8200 \div 41 = 200 = 20$ tens

(c)
$$\begin{array}{r} 588 \\ 13 \overline{) 7652} \\ \underline{-6} \\ 115 \\ \underline{-10} \\ 112 \\ \underline{-10} \\ 8 \end{array}$$
 8 → Remainder

So, $7652 = 588 \times 13 + 8$

34. (B): We have,

 +  = 623 ... (1)

 +  = 557 ... (2)

 +  +  = 976 ... (3)

Using (2) in (3), we get

$\Rightarrow 557 + \text{banana} = 976$

$\Rightarrow \text{banana} = 976 - 557 = 419$

So, from (1),  + 419 = 623

$\Rightarrow \text{apple} = 623 - 419 = 204$

35. (C): P: Total number of candles = 1060

Number of candles in each packet = 4

\therefore Number of packets made = $1060 \div 4 = 265$

So, P is true

Q. Number of roses in a bouquet = 27

Total number of bouquet sold = 108

\therefore Number of roses sold = $108 \times 27 = 2916$

So, Q is true

SOF IMO 2019 QUESTIONS

1. (D)

2. (C): $563 - 375 = 188$

3. (B): Total number of apples = 833

Number of cartons = 7

So, number of apples in each carton

= $833 \div 7 = 119$.

4. (C): Total number of people in the train

= 462

Number of people deboarded the train = 98

So, number of people left in the train

= $462 - 98 = 364$

Also, 29 more people boarded the train.

So, total number of people in the train now

= $29 + 364 = 393$.

5. (A): Number of marbles Ishaan has = 3865

Dhristi has 378 less marbles than Ishaan.

So, number of marbles Dhristi has

= $3865 - 378 = 3487$

So, total number of marbles they both have

= $3865 + 3487 = 7352$.

6. (C):
$$\begin{array}{r} 49 \\ 3 \overline{) 149} \\ \underline{-12} \\ 29 \\ \underline{-27} \\ 2 \end{array}$$

2 → Remainder

∴ Missing digit is 3.

7. (A): $56 \times 2 = 112$

Also, $106 \boxed{+} 6 = 112$

8. (A): Number of mangoes in each packet = 6

Number of packets sold = 26

∴ Number of mangoes sold = $26 \times 6 = 156$

Number of mangoes left with Manoj = 430

So, number of mangoes Manoj have at first

= $156 + 430 = 586$

9. (C): Number of cupcakes bought on one day = 21

Number of days in December = 31

∴ Number of cupcakes bought in December

= $21 \times 31 = 651$

10. (A): Smallest one digit odd number is 1.

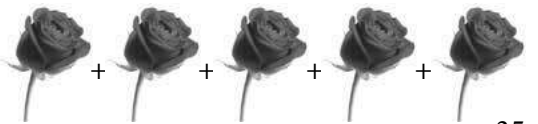
∴ Ones digit is 1.

Tens digit = $4 \times \text{ones digit} = 4 \times 1 = 4$


Hundreds digit = $96 \div 12 = 8$

Thousands digit = $2 + \text{tens digit} = 2 + 4 = 6$

So, required number is 6841.

11. (B):  = 35



⇒ $5 \times \text{rose} = 35$ or $5 \times 7 = 35$

∴  = 7

Also,  \times  = 21

⇒ $7 \times \text{lily} = 21$ or $7 \times 3 = 21$

∴  = 3

Now,  +  = 11

⇒ $3 + \text{sunflower} = 11$ or $3 + 8 = 11$

∴  = 8

12. (A): Number of cupcakes made by Radhika

= $10 \times 12 = 120$

Number of cupcakes she gave to her mother = 22

Number of cupcakes she ate = 6

∴ Number of cupcakes used = $22 + 6 = 28$

So, number of cupcakes left = $120 - 28 = 92$

13. (D): $84 \boxed{+} 8 \boxed{-} 62 \boxed{+} 3 = 33$

⇒ $92 - 62 + 3 = 33$

⇒ $30 + 3 = 33$

⇒ $33 = 33$ (correct)

14. (A): $P = 2437 + 3321 = 5758$

$Q = 2197 - 1927 = 270$


$R = 1420 + 2410 = 3830$

$S = 4310 - 1024 = 3286$

$P + S = 5758 + 3286 = 9044$

and $R + Q = 3830 + 270 = 4100$

So, $(P + S) - (R + Q) = 9044 - 4100 = 4944$

15. (A): Total number of  = 3465

Number of  in one packet = 4

On dividing 3465 by 4, quotient is 866 and remainder is 1.

So, number of packets formed = 866
and number of  left = 1

16. (B): Largest one-digit odd number is 9

∴ Ones digit is 9

Tens digit = 22 tens - 220 = 220 - 220 = 0

Hundreds digit = Tens digit of (12×6)
= Tens digit of $72 = 7$

Greatest 4-digit even number is 9998.

Thousands digit = units digit of 9998 = 8

∴ Required number is 8709.

17. (D): (A) 3 hundreds + 42 tens = $300 + 420 = 720$

(B) 1 thousand + 60 ones = $1000 + 60 = 1060$

(C) 9 hundreds + 2 tens = $900 + 20 = 920$

(D) 7 hundreds + 56 tens = $700 + 560 = 1260$ (maximum)

18. (C): Number of candies Aman have = 140

Number of candies each jar can contain = 14

Number of candies 8 jars can contain = $14 \times 8 = 112$

∴ Number of candies left = $140 - 112 = 28$



19. (A): $\boxed{360} \times 12 \rightarrow \boxed{4320} + 42 \rightarrow \boxed{4362} \div 6 \rightarrow \boxed{727}$
 $- 20 \rightarrow \boxed{707}$


∴ Missing number is 360.

20. (D): We have,  \times  = 100



or $10 \times 10 = 100$



∴  = 10


and  $\div 2 =$ 


$\Rightarrow 10 \div 2 =$ 


\Rightarrow  = 5

Also,  +  +  + 

+  = 100 \div 

$\Rightarrow 5 + 5 + 5 + 5 + 5 = 100 \div$ 

$\Rightarrow 25 = 100 \div$  or $25 = 100 \div 4$

∴  = 4