CHAPTER 5: SUBTRACTION

SUBTRACTION

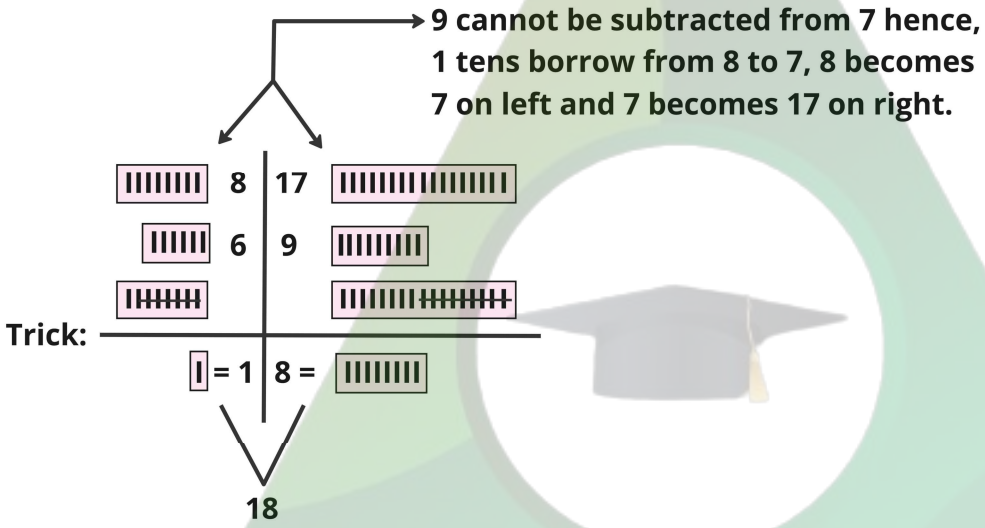
➢ INTRODUCTION

Subtraction of Two Numbers

When one quantity is taken away from another, the result is called subtraction or difference.

Example:

87 - 69 = 18



Properties Of Subtraction

- When zero is subtracted from a number, we get number itself.
- 3 - 0 = 3
- Order of numbers affects the subtraction.
- 3 - 2 ≠ 2 - 3
- Sign of subtraction is'-'.

Methods of Subtraction

- Subtraction without regrouping:

For Example:

For, 37 - 14

First write 37 and 14 in columns.

step (1) subtract ones

step (2) subtract tens

36 →	tens	ones
- 14 →	tens	ones
	tens	ones = 23

❖ Subtraction with regrouping (Carry over method):

For example:

For, 36 - 19

First write 36 and 19 in columns

Since 6 < 9. we have to borrow 1 ten from 3 tens of 36 3 tens becomes 2 tens. 6 ones becomes 16.

36 →	tens	+	ones →	2 ten 16 ones
- 19 →	ten	+	ones →	1 ten 9 ones
				tens + ones

Thus, 36 - 19 = 17

Let us consider another **Example:**

Subtract 19 from 47.

Arrange in columns

Here, 7 < 9, we borrow 1 tens from 4 tens of

47 : 7 ones of 47 becomes 17.

Tens	Ones
4	7
- 1	9

Tens	Ones
3	17
- 1	9
2	8

Subtraction of two numbers (Without borrow)

❖ **Two 1 - digit numbers:** Subtract the numbers and write the difference.

Example: Subtract 3 from 8.

Note: The number after 'from' is written first. Then The number before 'from' is written and subtracted.

8 - 3 = 5 (Horizontal subtraction)

8
-3
5
_____ (Vertical subtraction)

❖ **Two 2 - digit numbers:** (i) First subtract the ones and (ii) then subtract the tens.

Example: Find 67 - 42.

(i)

	T	O
	6	7
-	4	2
		5

(ii)

	T	O
	6	7
-	4	2
	2	5

❖ **Two 3 - digit numbers:** (i) First subtract the ones, (ii) then tens and (iii) then hundreds.

Example: Subtract 103 from 216.

(i)

	H	T	O
	2	1	6
-	1	0	3
			3

(ii)

	H	T	O
	2	1	6
-	1	0	3
		1	3

(iii)

	H	T	O
	2	1	6
-	1	0	3
	1	1	3

Subtraction with borrow:

When the subtrahend is larger than the minuend, subtraction cannot be done. Then we borrow from the next place.

Example 1: Subtract 38 from 54.

We cannot subtract 8 from 4. So we borrow 1 from the tens place

T	O
5	4
3	8

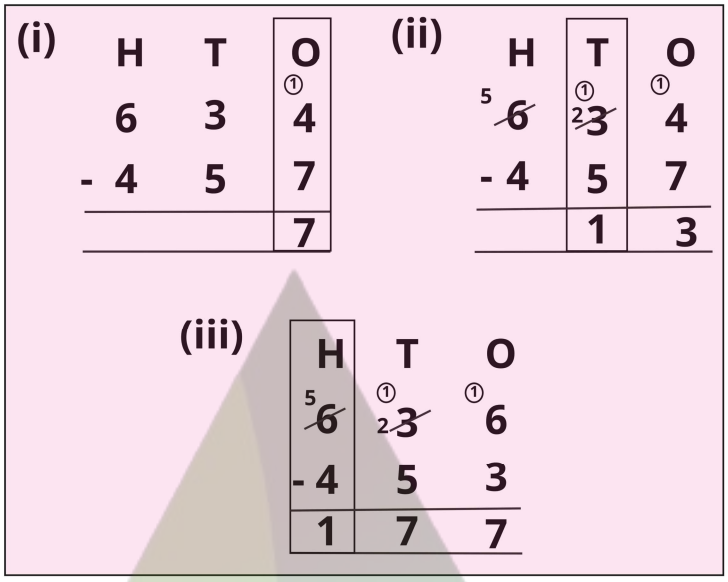
In the ones place, 1 ten is added to 4 ones. So it becomes 14 ones. Now subtract 8 from 14 and write the difference 6 in ones place.

In the tens place, the minuend becomes 5-1=4. Now subtract 3 from 4 and write the difference under tens.

	T	O
4		①
	~~5~~	4
-	3	8
		6

So, 54 - 38 = 16.

Example 2: Subtract 457 from 634.



So, 634 - 457 = 177.

Every addition sentence has two subtraction facts.

Example: 7 + 4 = 11 →| a) 11 - 7 = 4 and b) 11 - 4 = 7

Every subtraction sentence has two addition facts.

Example: 16 - 3 = 13 →| (a) 13 + 3 = 16 and (b) 3 + 13 = 16

Questions:

1. Fill the gap.

10
-3
_____ (Vertical subtraction)

2. Fill the gap

30
-6

_____ (Vertical subtraction)

3. **[30] – [50] = [?]**

   (a) 30

   (b) 20

   (c) 10

   (d) 15

4. **[54] – [21] = [?]**

   (a) 33

   (b) 32

   (c) 22

   (d) 16

5. **[79] – [33] = [?]**

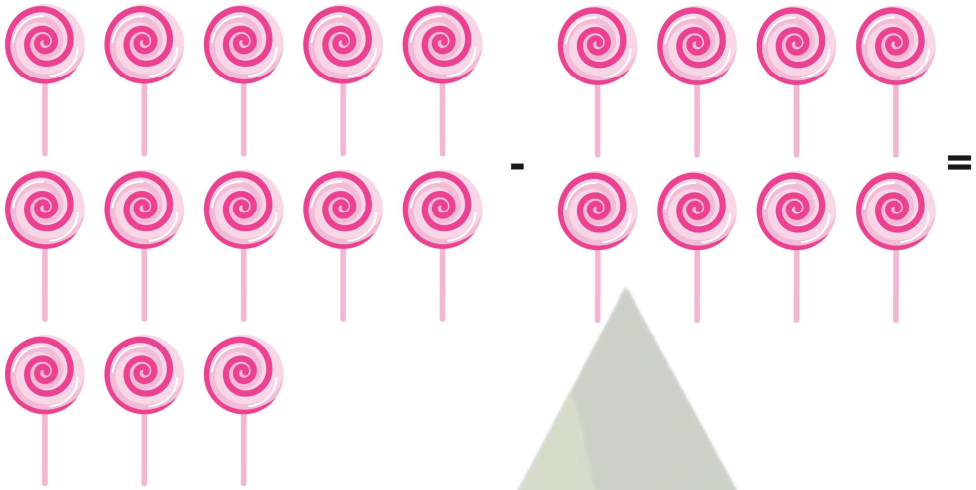
   (a) 40

   (b) 30

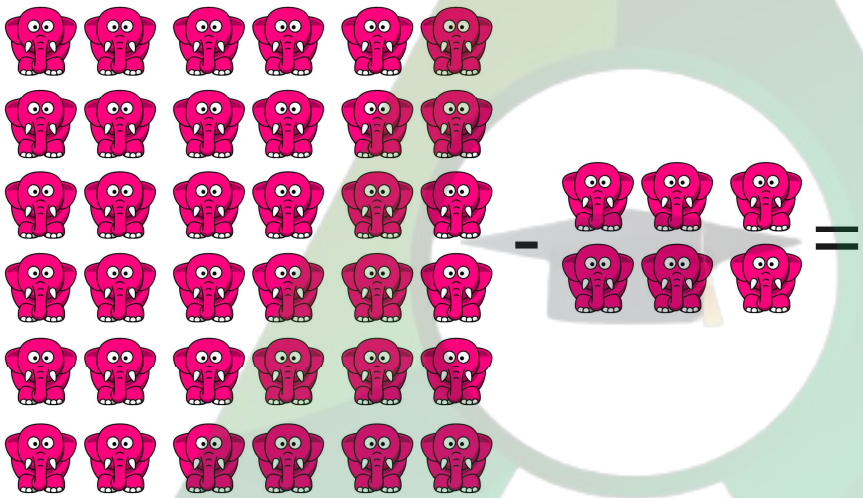
   (c) 46

   (d) 50

6. Count and minus:



7. Count and minus



Answer-

1:

10
-3
7 (Vertical subtraction)

2:

30

-6
34 (Vertical subtraction)

3: (b)

4: (a)

5: (c)

6: 13 – 8 = 5

7: 36 – 6 = 30

Mental Arithmetic

If you have not been given any pen, pencil or paper to do addition or subtraction than how will you do the calculation?

You can do calculations on finger-tips for 1-diait numbers,

Examples:

Adding 3 and 4

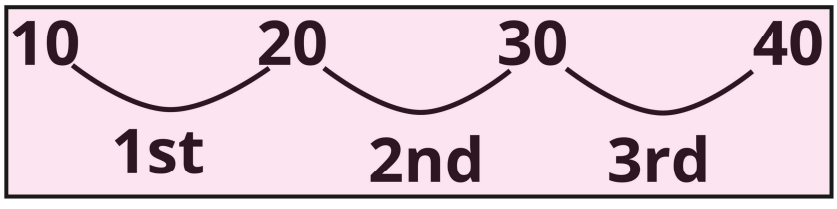
Count fingers starting after 3. It will be 4 then 5 then 6 and then 7. So, the answer is 7.

3 + 4 = 7

We can also do addition by following ways using our finger tips.

(a) Add 10 and 30.

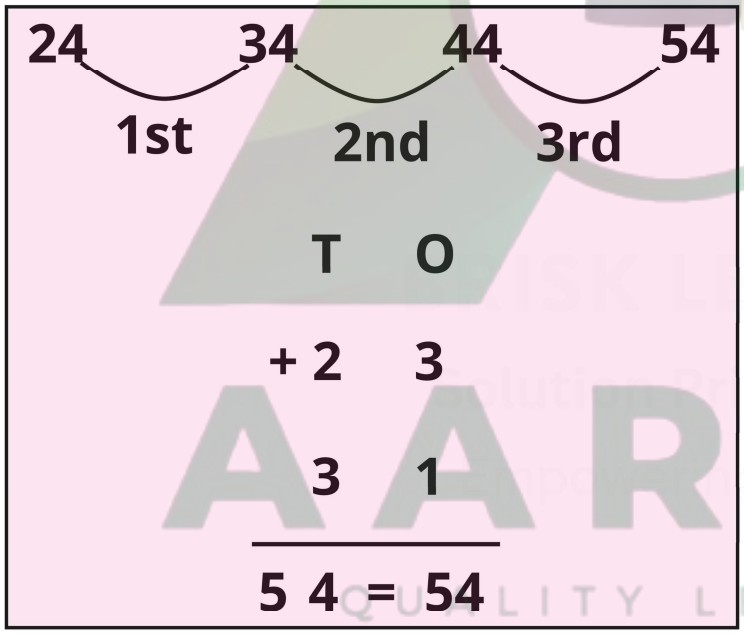
You can do addition by skip counting on fingers starting from 10.



	T	O
+	1	0
	3	0
	4	0 = 40

(b) Add 23 + 31

First add ones digit of 31 which is 1 to 23 It will give 24 and then do skip counting three times of tens digit.



Historical Preview

- Addition sign (+) was invented by Michael stiple in 1544.
- A few seventh century books used two dots or three dots for subtraction.

Real Life Examples:

- When you count your money you add one by one.
- We use addition and subtraction when we shop many things, give payment and receive balance.

Subtraction of Three Numbers

Remember the steps for the subtraction:

Step I: Add the numbers having '-'(minus) sign and write the result with-sign.

Step II: Add the numbers having ?+? (plus) sign and write the result with + sign. This method is applied when addition and subtraction are given. Simultaneously.

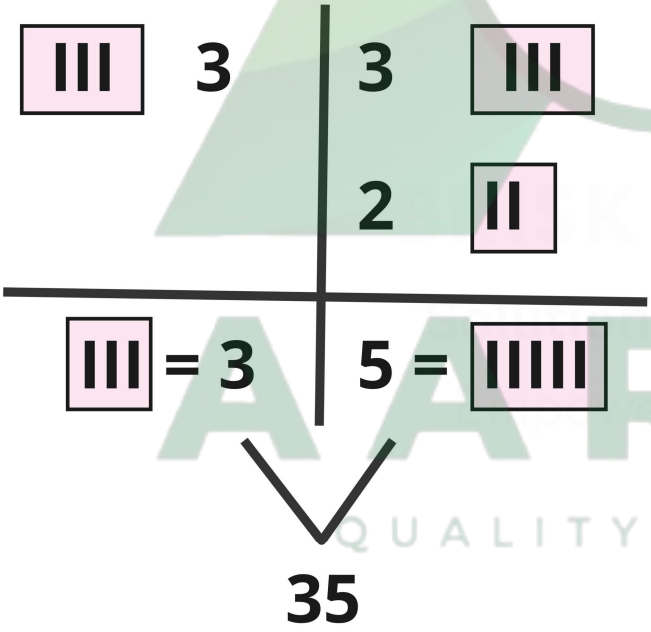
Step III: Finally subtract the numbers.

Example:

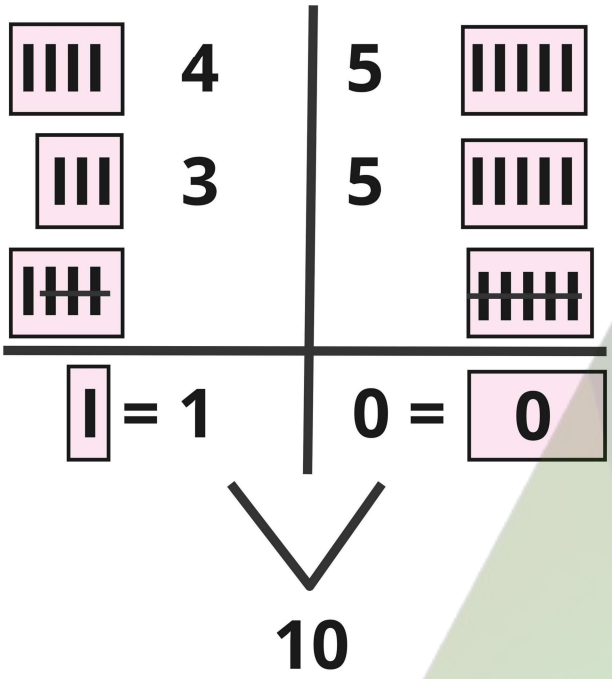
[45] – [33] – [2] = [10]

Trick:

Step I: [33] + [2]



Step II: is not applicable here.



Step III: [45] - [35]

NOTE: This method goes same for any subtraction. No matter, how many numbers are involved in the given subtraction problem. In another words this method is applied for the subtraction of 2 numbers; 3 numbers; 4 numbers; 5 numbers and so on.

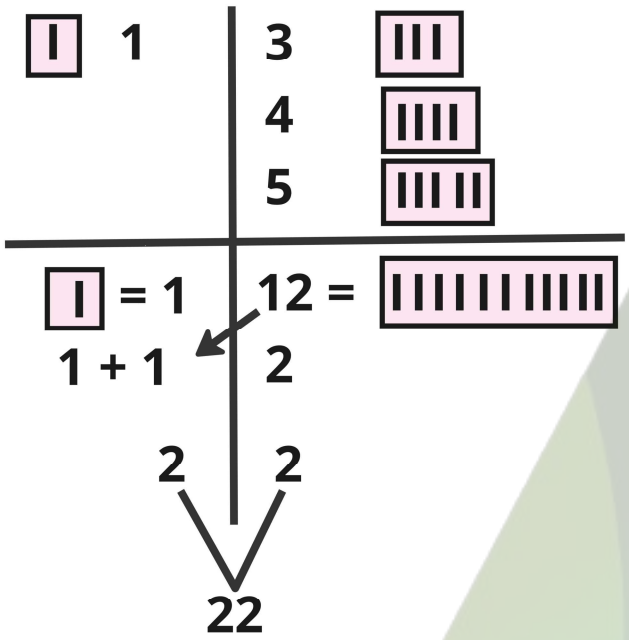
Subtraction of Four Numbers

Let's understand it through an example:

Example:

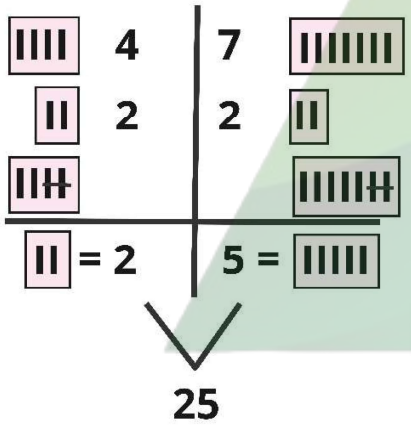
[47] – [3] – [5] = [25]

Trick:



We add 1st **[3], [14]** and **[5]** as **[3] + [14] + [5]**

Now subtract **[47] - [22]**



Subtraction of Fine Numbers

To subtract the five numbers, the subtraction pattern remains same as discussed in the previous topic.

Word Problems

Example:

There were 56 students in a school for class test. How many students have passed the test if 32 students were not appeared for the test?

(a) 23

(b) 24

(c) 22

(d) 26

(e) None of these

Answer- (b)

$$\begin{array}{r} 56 \\ -\,32 \\ \hline 24 \end{array}$$

Therefore, option (b) is correct:

Subtraction of Figures

Numbers are: [2], [4], [6], [8] _____ etc.

Figures are: [2] hours, [4] apples.

[6] minutes, [8] rupees etc.

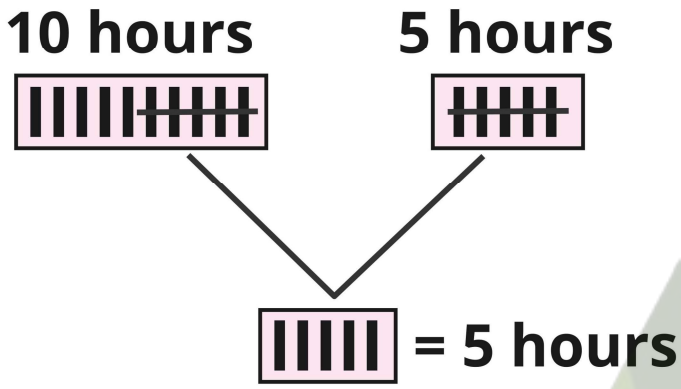
Thus, it is clear that when a number represents something particular then it becomes a figure.

For subtracting figure, let's see the example given below:

Example:

10 hours - 5 hours = 5 hours

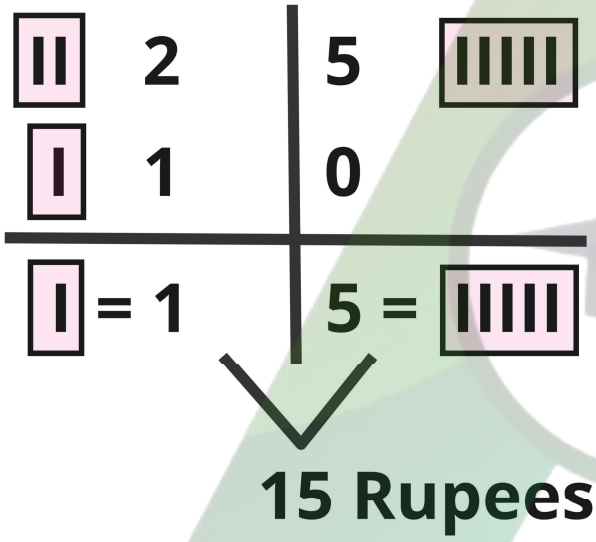
Trick:



Similarly:

[25] rupees ? [10] rupees = [15] rupees.

Trick:



Example:

(a) 4

(b) 5

(c) 3

(d) 2

(e) None of these

Answer- (a) **Explanation:** 6 - 2 = 4. Therefore, option (a) is correct.

Word Problems

In this section, we will learn about some real life examples based on subtraction.

There are **[3]** students in a class. **[8]** students were absent on Monday. How many students were present on Monday?

(a) **[400]**

(b) **= [400] ÷ [8] = [50]**

(c) **[7]**

(d) **[28]**

Answer- (b) **Explanation: [392]**

Example:

Smith buys two dozen of eggs from a shop. Later he finds that **[8]** eggs are broken. How many eggs are in good condition?

(a) **[8]**

(b) **[16]**

(c) **[7]**

(d) **[20]**

Answer (b) Explanation: Two Dozen eggs 12 + 12 = 24 – 8 = 16 eggs are remaining in good condition.

Example:

Williams has **[50]** pens. He gives **[1]** pens to Steve and **[5]** pens to Jack. How many pens have left with him now?

(a) **[44]**

(b) **[41]**

(c) **[40]**

(d) **[35]**

Answer- (a) **Explanation: [1] + [5] - [50] = [44]**

Example:

The distance between two cities is **[75]** kilometre. The train that runs between these two cities stops after every **[50]** kilometre. How much distance the train will have to travel after 3rd stop to reach the final destination?

(a) **[45]** km

(b) **[30]** km

(c) **[25]** km

(d) **[50]** km

Answer- (b) **Explanations:** Distance covered till third stop = **[45]** km Total distances = **[75]** km. Therefore, **[75] – [45] = [30]** km

Subtraction of Figures

When a number represents something particular, then it becomes a figure.

For Example:

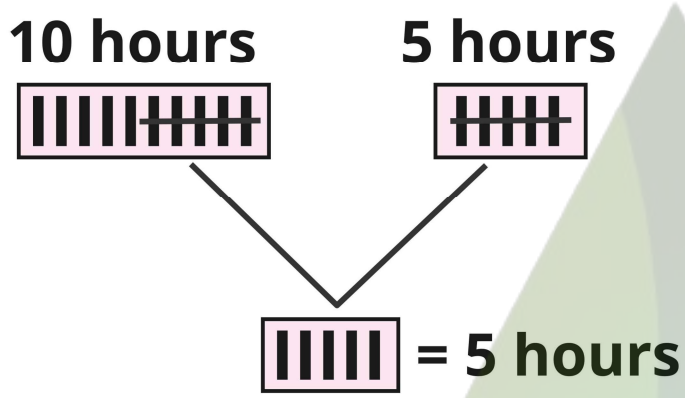
[2] hours, **[4]** apples.

[6] minutes, **[8]** rupees etc.

Example:

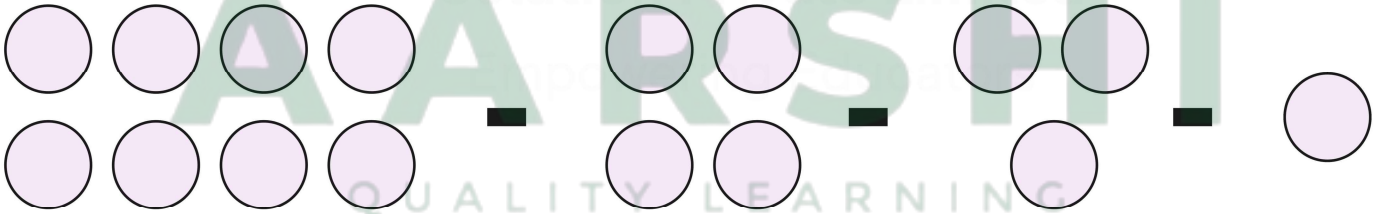
[10] hours - **[5]** hours = **[5]** hours

Solution:



Subtraction of Images

Similarly,



Now it is clear how images are subtracted.

Summary

- Subtraction is the process of taking away something from larger unit.

- '-' (or minus) is the sign for subtraction.
- Any numbers 0 = The number itself.
- 0 - 0 = 0
- Same number - Same number = 0 (5 - 5 = 0)
- Subtraction means taking away a number of objects from a given collection.

Subtraction of two Numbers

Let's understand it by the examples given below:

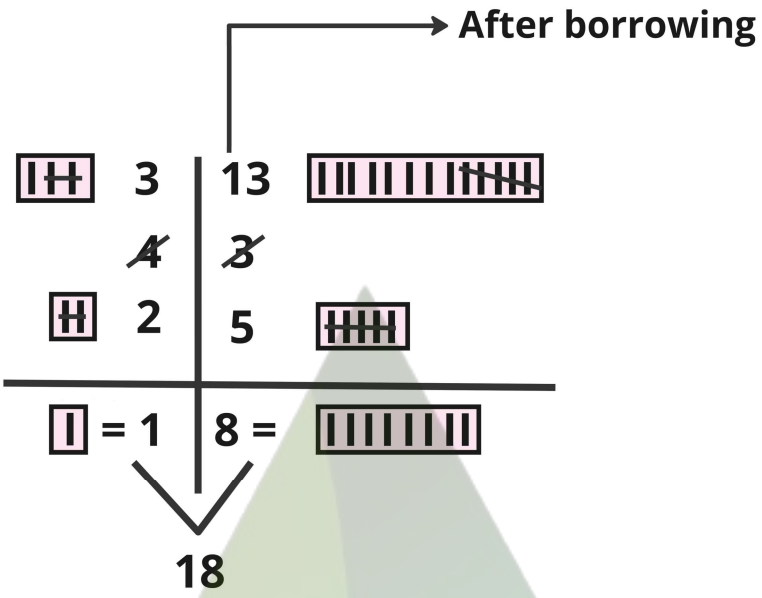
Example:

[43] – [25] = [?]

Solution:

4	3
=	
2	5

Here, we cannot subtract **[5]** from **[2]** (or **[5]** ones from **[1]** ones) so we borrow **[1]** (or **[1]** ten) leaving behind **[3]** (or **[3]** tens) and then the format becomes as below:

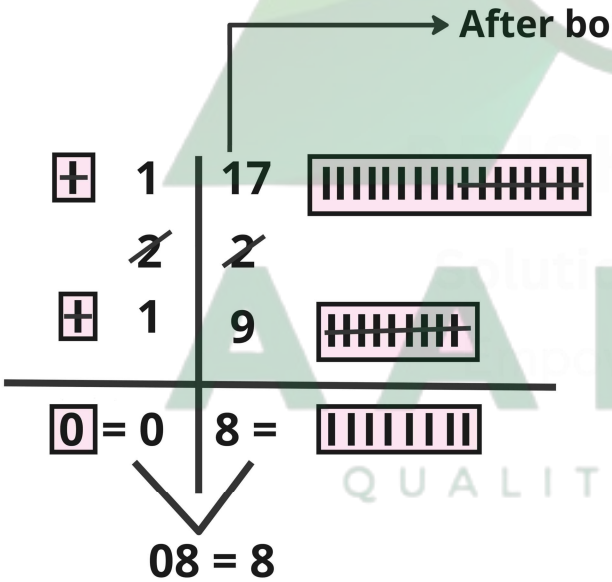


Thus the process goes for any subtraction where ones of the greater number is less than ones of the smaller number.

Example:

[27] – [19] = [?]

Solution:



Subtraction of Three Numbers

Remember the steps for the subtraction:

Step I: Add the numbers having '-' (minus) sign and write the result with - sign.

Step II: Add the numbers having '+' (plus) sign and write the result with + sign. This method is applied when addition and subtraction are given simultaneously.

Step III: Finally subtract the numbers.

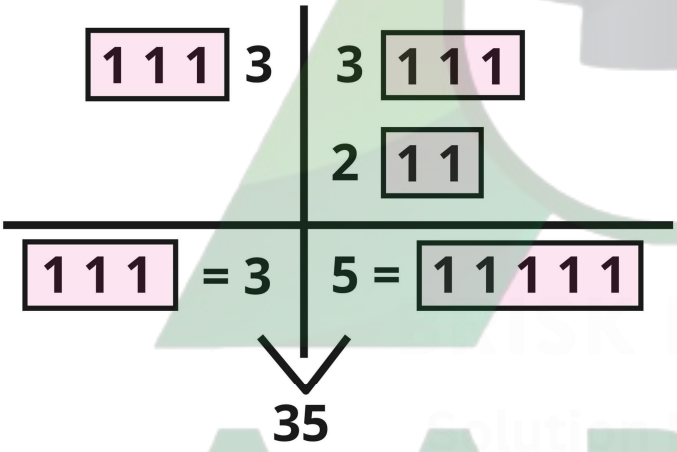
Note: This method goes same for any subtraction. No matter, how many numbers are involved in the given subtraction problem. In another words this method is applied for the subtraction of **[2]** numbers; **[3]** numbers; **[4]** numbers; **[5]** numbers and so on.

Example:

[45] – [33] – [2] = [10]

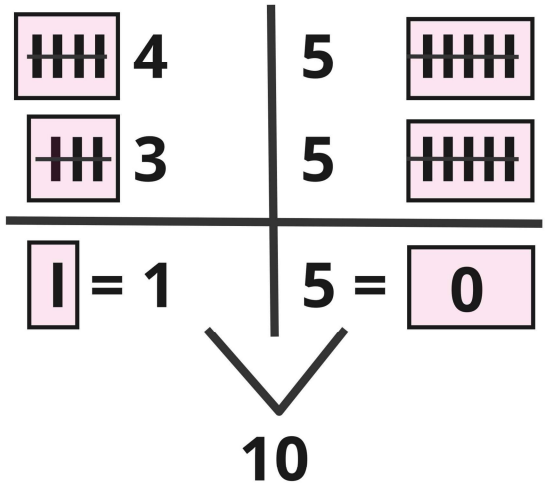
Solution:

Step I: [33] + [2]



Step II is not applicable here.

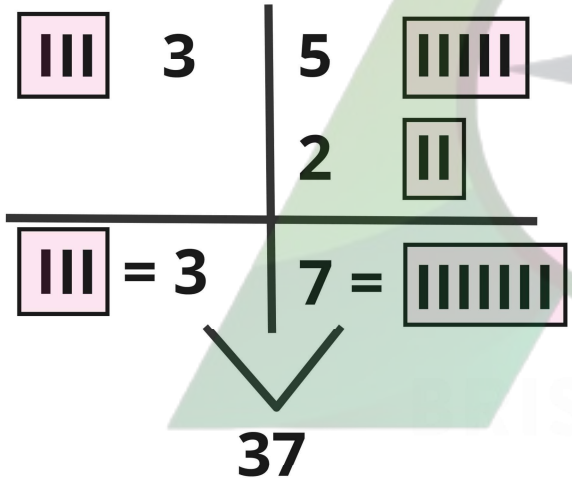
Step III: [45] – [35]



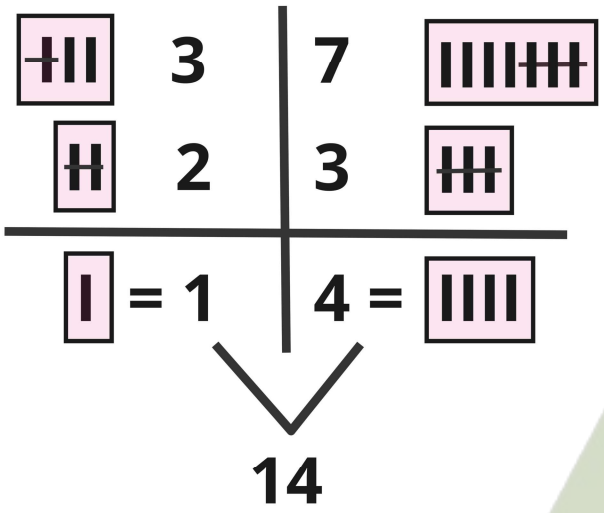
Example:

[35] – [23] + [2]

Here, step I is not applicable, so we move towards the Step II as **[35] + [2]**



Now step III goes as **[37] – [23]**



Subtraction of Four Numbers

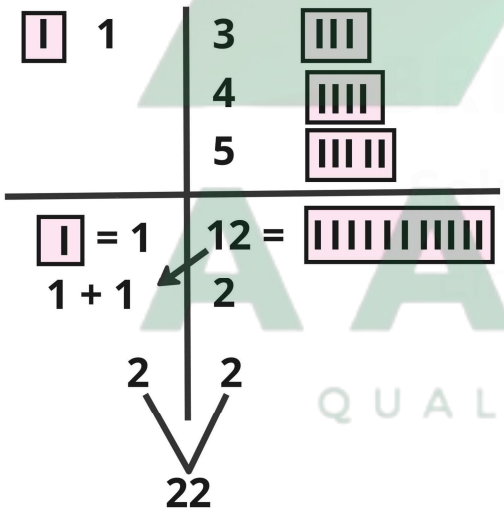
Let's understand it through the examples given below:

Example:

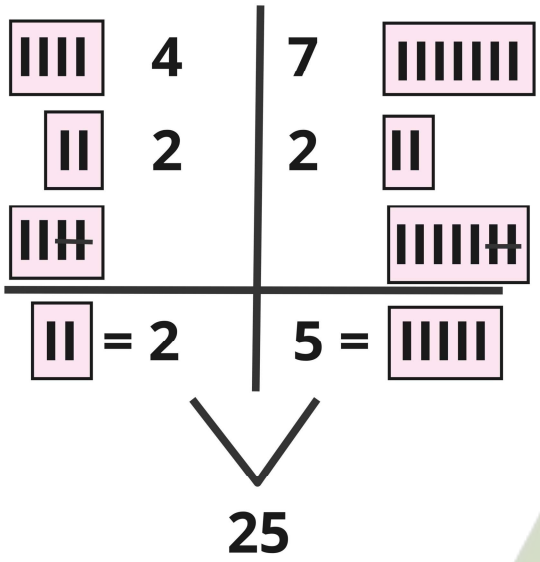
[47] – [13] – [4] – [5] = [25]

Solution:

First add **[13], [4]** and **[5]** as **[13] + [4] + [5]**



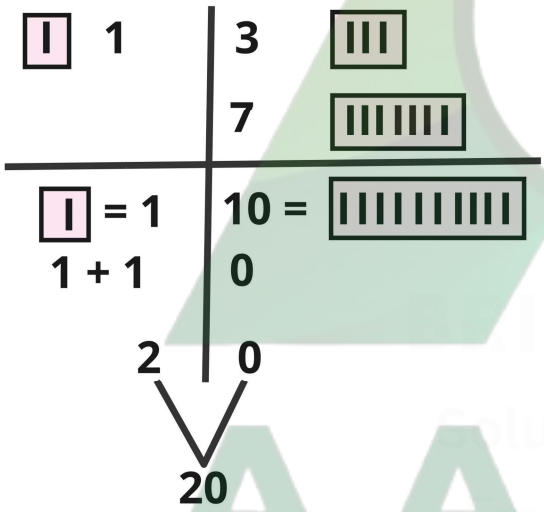
Now subtract **[47] - [22]**



Example:

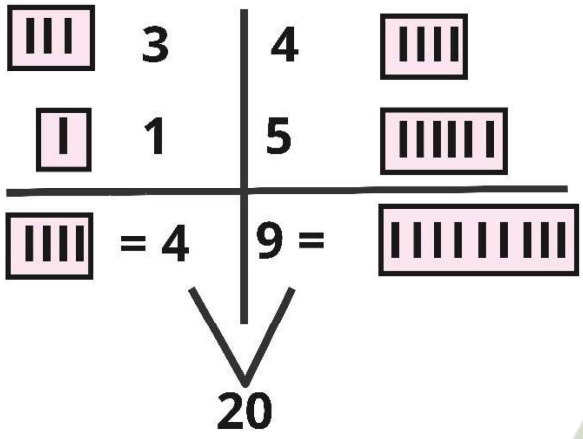
[34] + [15] – [13] – [7]

Here, first add **[13]** and **[7]** and write the result with - sign.



0.-**[13] - [7] = -[20]**

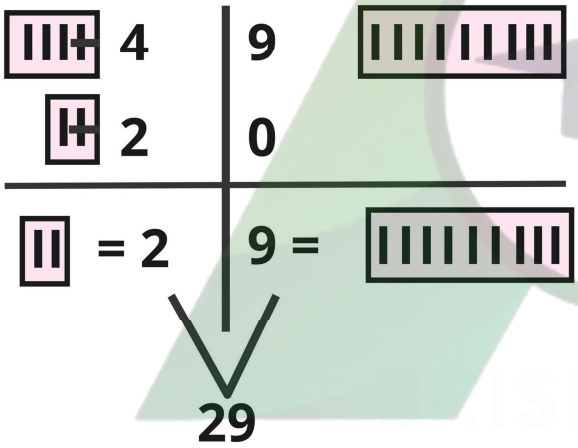
Now add **[34]** and **[15]** and write the result with + sign.



[34] + [15] = [49]

Now subtract **[20]** from **[49]**.

[49] - [20]



Subtraction of Five Numbers

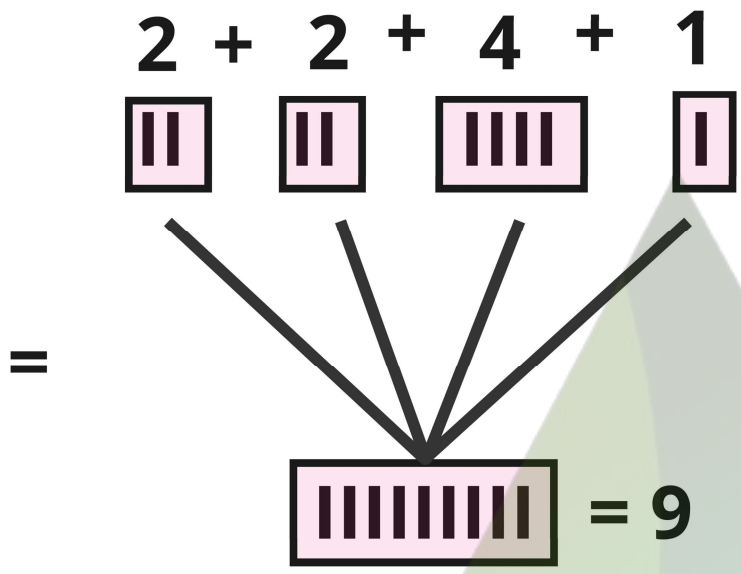
To subtract the five numbers, the subtraction pattern remains same as discussed in the previous topic.

Example:

[10] - [2] - [2] - [4] - [1]

Solution:

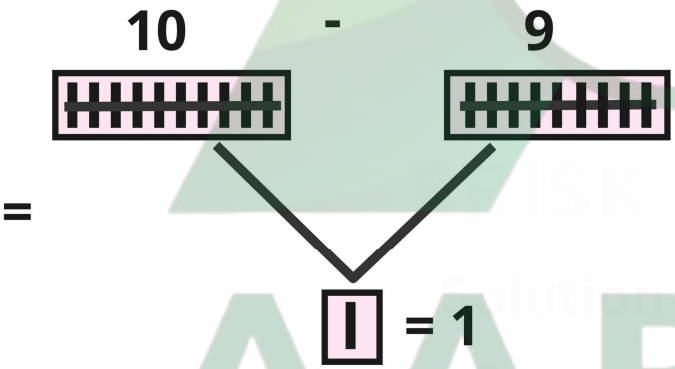
1st We add the numbers with '-' (minus) sign and write the result.



-[2] - [2] - [4] - [1] = -[9]

Now subtract **[9]** from **[10]**.

[10] - [9]



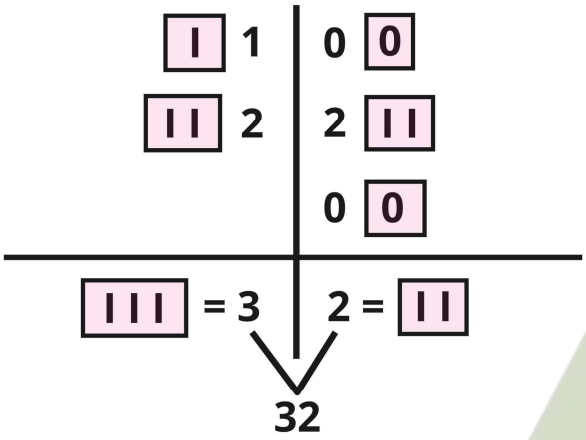
Example:

Take another example:

[34] - [10] + [13] - [0] - [22] = [?]

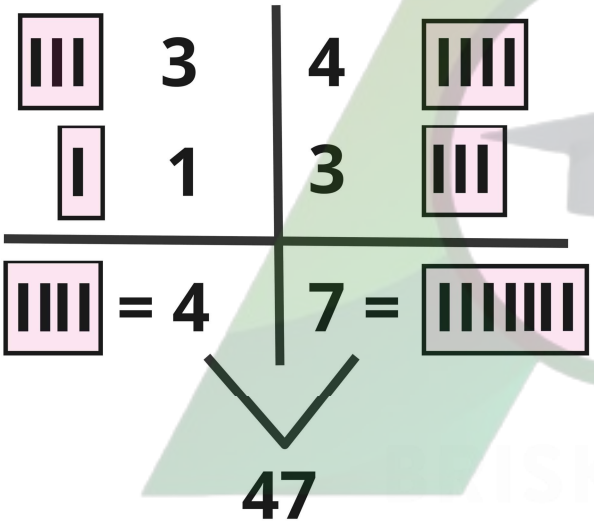
Solution:

1st add **[10], [2]** and **[22]** (Numbers with minus sign) and write the result.



-[10] - [22] - [0] = -[32]

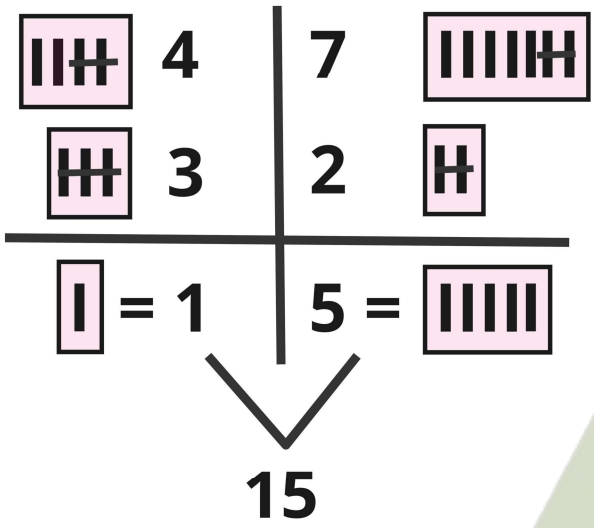
Now add **[34]** and **[13]** (numbers with + Sign) **[34] + [13]**



[34] + [13] = [47]

Now subtract **[32]** from **[47]**.

[47] - [32]



Questions:

1. 60 - 16 - 18 - 3 = ?

(a) 23

(b) 28

(c) 27

(d) All of the above

2. How much is obtained if 46 is taken away from 456?

(a) 423

(b) 410

(c) 427

(d) All of the above

3. 

(a) 

(b) 

(c) 0

(d) 

4. Distance travelled by A in 15 minutes is 68 kilometres and distance travelled by B in 1 hour 20 minutes is 68 kilometres. Find the difference of time taken by A and B.

(a) 1 hour 10 minutes

(b) 1 hour 30 minutes

(c) 55 minutes

(d) All the above

5. 

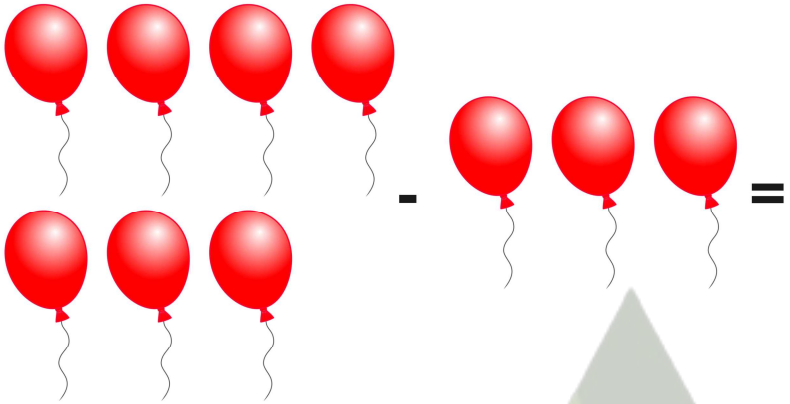
(a) 

(b) 

(c) 

(d) 

6. Solve the following:



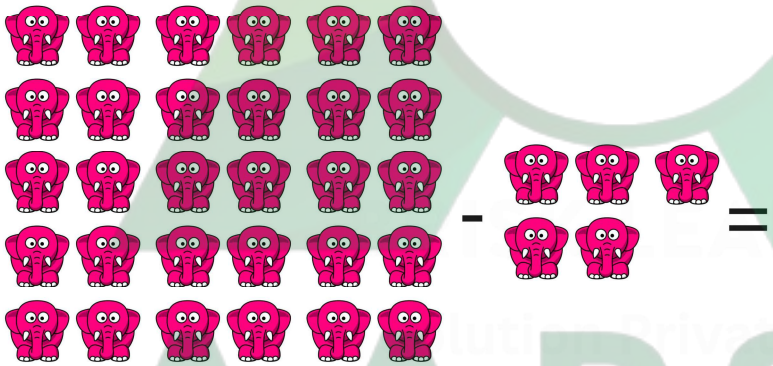
(a) 4

(b) 6

(c) 5

(d) 8

7. Solve the following:



(a) 20

(b) 30

(c) 25

(d) 24

8. Sumit have 12 chocolates in which riya eats 4 then how many chocolates are left?

(a) 7

(b) 8

(c) 5

(d) 9

9. How much is obtained if 46 is taken away from 456?

(a) 423

(b) 410

(c) 427

(d) All of the above

Answer-

1: (a)

2: (b)

3: (c)

4: (c)

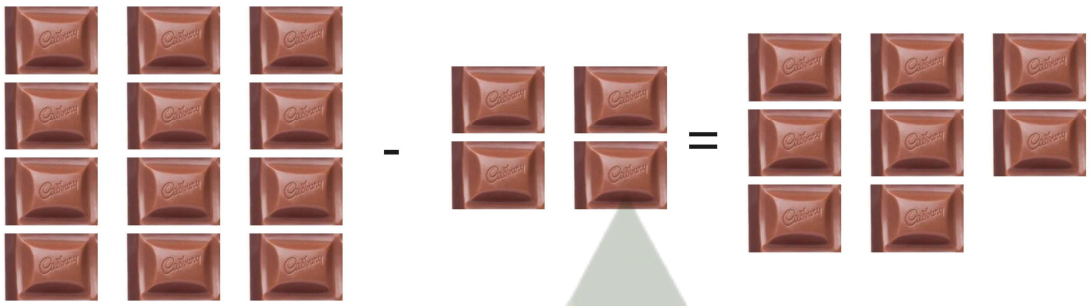
5: (d)

6: (d)

7: (c)

8: (b)

Explanation:



9: (b)