Cosmo School

Class – 7

Chapter – 1

Rational and Irrational Number

Lecture sheet – 9

Creative Question

1. 21952 and 5605 are two numbers.

a) Give reason whether the first number is perfect square number.

b) If the first number is not perfect square number, what is the least number by which it is divided to get a perfect square number?

c) What is the least number to be added to the second number so that total sum is a perfect square number?

Solution:

a) First number = 21952

We know that, the number consisting of digit 2 or 3 or 7 or 8 at the extreme right that is, in the unit place can never be a perfect square.

As the number 21952 has digit 2 in its unit place, the number is not perfect square.

b) Here, first number = 21952

2	21952
2	10976
2	5488
2	2744
2	1372
2	686
7	343
7	49
	7

$21952 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 7 \times 7$

$= (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (7 \times 7) \times 7$

The number 21952 is not perfect square. If we divide the number by 7, the required number will be perfect square.

Ans : 7.

c) Second number = 5605

7	$\overline{56}\ \overline{05}$ (74
	49
144	7 05
	5 76
	129

We observe here that, $(74)^2 < 5605 < (75)^2$

The required number to be added = $(75)^2 - 5605$

$= (75 \times 75) - 5605$

$= 5625 - 5605$

$= 20$

Ans: 20.

2. A farmer buys 595 plants for making a garden. The price of each plant is Tk. 12

a) How much money did he spend to buy the plants?

b) How many of the plants will be left if number of plants in each row of the garden is equal to number of rows?

c) What is the least number which is to be added to the difference of the number of spending of total taka and the number of plants so that the sum will be a perfect square number?

Solution:

a) The price of 1 plant = 12 Taka

∴ " " " 595 " = (595×12) Taka

= 7140 Taka

Ans: He spent 7140 Taka.

b)

2	$5\overline{95}$ (24
	4
44	1 95
	1 76
	19

So, 19 plants will be left.

Ans: 19 plants.

c) The amount of money spent 7140 taka

The number of plants = 595

∴ Difference = 7140 – 595 = 6545

8	$\overline{65}\,\overline{45}$ (80
	64
160	1 45
	0
	145

We observe that, $(80)^2 < 6545 < (81)^2$

∴ The required number = $(81)^2 – 6545$

$= (81 \times 81) – 6545$

$= 6561 – 6545$

$= 16$

Ans : 16.

3. A troops can be arranged in 5, 6 and 9 rows, but not is a square form.

a) Find out factors of 8.

b) What is the least number by which the number in troops is to be multiplied so that the troops can be arranged in a square form?

c) At least how many troops should have to join to arrange troops so obtained in a square form?

Solution:

a)

$$\begin{array}{r|l} 2 & 6 \\ \hline & 3 \end{array}$$

$6 = 1 \times 6$

$= 2 \times 3$

$\therefore$ The factors of 6 = 1, 2, 3, 6

Ans : 1, 2, 3, 6.

b) The L.C.M. of 5, 6 and 9 :

$$\begin{array}{r|l} 3 & 5, 6, 9 \\ \hline & 5, 2, 3 \end{array}$$

The L.C.M. of 5, 6 and 9 = $3 \times 5 \times 2 \times 3 = (3 \times 3) \times 2 \times 5$

2 and 5 have no pair. So we cannot arrange in square form of the value of L.C.M. If we multiply the L.C.M. with 2 and 5 then the product will become perfect square number.

$\therefore$ We have to multiply the L.C.M. with $(2 \times 5) = 10$.

Ans : 10.

c) The L.C.M. of 5, 6 and 9 :

$$\begin{array}{r|l} 3 & 5,\ 6,\ 9 \\ \hline & 5,\ 2,\ 3 \end{array}$$

The L.C.M. of 5, 6 and 9 = $3 \times 5 \times 2 \times 3 = (3 \times 3) \times 2 \times 5 = 90$

$$\begin{array}{r|l} 9 & \overline{90}\ (\ 9 \\ & 81 \\ \hline & 9 \end{array}$$

We observe that, $(9)^2 < 90 < (10)^2$

$\therefore$ The required number = $(10)^2 - 90$

$= (10 \times 10) - 90$

$= 100 - 90$

$= 10$

Ans : 10.

Exercise (Do Yourself)

1. 384 and 2187 are two numbers.

a) Verify with factors whether the first number be perfect square number.

b) If the second number is not perfect square number, what is the least number to be multiplied to get a perfect square number? What is the perfect square number?

c) What is the best number to be added to the second number so that the total sum is a perfect square number?

2. An army team can be arranged in 4, 5, 9 rows but they cannot be arranged in a square shape.

a) What are the factors of 9?

b) By which smallest number the total number of the soldiers should be multiplied to arrange the army in a square?

c) At least how many soldiers should join the troop to arrange them in a square?

3. The monthly expenditure of each students of a hostel is ten times of the number of students living in that hostel. Monthly expenditure is Tk. 9000 in that hostel.

a) Consider the number of students is x, express the monthly expenditure in terms as x.

b) Find the number of students of that hostel.

c) At least how many students should be left to arrange them in a square?

4. A farmer has 535 mango trees and 1156 coconut trees. He wants to plant equal number of trees along the length and the width of the garden.

a) How many trees does the farmer have?

b) If he plants coconut trees in his garden, find the number of coconut trees in each row.

c) How many more mango trees will he require to plant equally in each row along length and width?