

## Revision Worksheet

Date – 19/08/2020

### Chapter – 1

### Rational & Irrational Number

### Solution

#### MCQ

- |                        |                        |                  |
|------------------------|------------------------|------------------|
| 1. b) $\frac{17}{19}$  | 2. c) 1.05             | 3. d) 1, 2 & 3   |
| 4. c) 9                | 5. a) 181              | 6. b) 0.1        |
| 7. b) 4                | 8. b) 5                | 9. a) $\sqrt{2}$ |
| 10. b) 7.12            | 11. a) $\frac{12}{17}$ | 12. b) 1.10      |
| 13. d) 1.05            | 14. a) a               | 15. b) Square    |
| 16. d) Square fraction | 17. a) $\frac{1}{7}$   | 18. c) 64        |
| 19. b) 313             | 20. a) $8\frac{1}{5}$  |                  |

#### Creative Question

1. 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

$$\begin{array}{r}
 2 \mid 21952 \\
 \hline
 2 \mid 10976 \\
 \hline
 2 \mid 5488 \\
 \hline
 2 \mid 2744 \\
 \hline
 2 \mid 1372 \\
 \hline
 2 \mid 686 \\
 \hline
 7 \mid 343 \\
 \hline
 7 \mid 49 \\
 \hline
 7
 \end{array}$$

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

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

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

$$\begin{array}{r}
 7 \mid \overline{56} \overline{05} (74 \\
 \hline
 49 \\
 144 \mid 705 \\
 \hline
 576 \\
 \hline
 129
 \end{array}$$

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

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

$$\begin{aligned}
 &= (75 \times 75) - 5605 \\
 &= 5625 - 5605 \\
 &= 20
 \end{aligned}$$

**Ans:** 20.

**2. a)** The price of 1 plant = 12 Taka

$$\begin{aligned}
 \therefore \text{“ “ “ 595 “} &= (595 \times 12) \text{ Taka} \\
 &= 7140 \text{ Taka}
 \end{aligned}$$

Ans: He spent 7140 Taka.

**b)**

$$\begin{array}{r}
 2 \overline{) 595} \text{ ( 24} \\
 \underline{4} \\
 44 \quad 195 \\
 \underline{176} \\
 19
 \end{array}$$

So, 19 plants will be left.

Ans: 19 plants.

**c)** The amount of money spent 7140 taka

The number of plants = 595

$$\therefore \text{Difference} = 7140 - 595 = 6545$$

$$\begin{array}{r}
 8 \overline{) 6545} \text{ ( } 80 \\
 \underline{64} \\
 145 \\
 \underline{0} \\
 145
 \end{array}$$

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

$$\begin{aligned}
 \therefore \text{The required number} &= (81)^2 - 6545 \\
 &= (81 \times 81) - 6545 \\
 &= 6561 - 6545 \\
 &= 16
 \end{aligned}$$

Ans : 16.

**3. a)**

$$\begin{array}{r}
 2 \overline{) 6} \\
 \underline{3}
 \end{array}$$

$$\begin{aligned}
 6 &= 1 \times 6 \\
 &= 2 \times 3
 \end{aligned}$$

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

Ans : 1, 2, 3, 6.

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

$$\begin{array}{r}
 3 \overline{) 5, 6, 9} \\
 \underline{5, 2, 3}
 \end{array}$$

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.

∴ 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,  $(9)^2 < 90 < (10)^2$

$$\begin{aligned} \therefore \text{The required number} &= (10)^2 - 90 \\ &= (10 \times 10) - 90 \\ &= 100 - 90 \\ &= 10 \end{aligned}$$

Ans : 10.

4. a)

$$\begin{array}{r|l} 2 & 384 \\ \hline 2 & 192 \\ \hline 2 & 96 \\ \hline 2 & 48 \\ \hline 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline & 3 \end{array}$$

$$\therefore 384 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 = (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times 2 \times 3$$

Since 2 and 3 have no pair, so 384 is not a perfect square number.

Ans : 384 is not a perfect square number.

**b)**

$$\begin{array}{r}
 3 \overline{) 2187} \\
 \underline{3 \phantom{0} 729} \\
 3 \overline{) 243} \\
 \underline{3 \phantom{0} 81} \\
 3 \overline{) 27} \\
 \underline{3 \phantom{0} 9} \\
 3
 \end{array}$$

$$\therefore 2187 = 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 = (3 \times 3) \times (3 \times 3) \times (3 \times 3) \times 3$$

Since 3 has no pair, so 2187 is not a perfect square number. Hence, by multiplying with at least 3 would make the number a perfect square number.

Ans : 3.

**c)**

$$\begin{array}{r}
 4 \overline{) 21 \ 87} \ ( \ 46 \\
 \underline{16} \\
 86 \overline{) 5 \ 87} \\
 \underline{5 \ 16} \\
 71
 \end{array}$$

We observe here that,  $(46)^2 < 2187 < (47)^2$

The required number to be added =  $(47)^2 - 2187$

$$= (47 \times 47) - 2187$$

$$= 2209 - 2187 = 22$$

Ans : 22.

$$5. a) \quad 3 \overline{)9}$$

$$\quad \quad \quad 3$$

Here,  $9 = 1 \times 9$

$$= 3 \times 3$$

$\therefore$  Factors of 9 = 1, 3, 9

Ans : 1, 3, 9

**b)** L.C.M of 4, 5, 9 =  $4 \times 5 \times 9$

Here, 4, 5 and 9 have no pair. Hence, by multiplying with at least  $4 \times 5 \times 9 = 180$  would make the number a perfect square number.

Ans : 180 soldiers.

**c)** L.C.M of 4, 5, 9 =  $4 \times 5 \times 9 = 180$

Now,

$$\begin{array}{r} 1 \overline{)180} \quad (13 \\ \underline{1} \phantom{0} \\ 23 \phantom{0} \\ \underline{69} \\ 11 \end{array}$$

We observe here that,  $(13)^2 < 180 < (14)^2$

The required number of soldiers to be added =  $(14)^2 - 180$

$$= (14 \times 14) - 180$$

$$= 196 - 180 = 16$$

Ans : 16 soldiers.

**6. a)** Given,

The number of students =  $x$

Monthly cost of each students =  $10x$

$\therefore$  Total cost =  $10x \times x = 10x^2$

Ans :  $10x^2$ .

**b)** From 'a' we get, Total cost =  $10x^2$

ATQ,

$$10x^2 = 9000$$

$$\text{Or, } x^2 = 9000 \div 10$$

$$\text{Or, } x^2 = 900$$

$$\text{Or, } x = \sqrt{900}$$

$$\text{Or, } x = 30$$

$\therefore$  The number of students = 30

Ans : 30 students.

**c)**

$$\begin{array}{r} 5 \overline{) 30} \text{ ( 5} \\ \underline{25} \\ 5 \end{array}$$

Here, remainder 5, so 30 is not a perfect square number.

If 5 students left from the hostel then the number of students can be arranged in a square.

$\therefore$  5 students should be omitted.

Ans : 5 students.



7. a) Total trees =  $535 + 1156 = 1691$

Ans : 1691 trees.

b)

$$\begin{array}{r} 3 \overline{) 1156} \quad ( 34 \\ \underline{9} \phantom{00} \\ 256 \\ \underline{256} \\ 0 \end{array}$$

Here, 1156 is a perfect square number.

∴ The number of coconut trees in each row is 34.

Ans : 34 coconut trees.

c)

$$\begin{array}{r} 2 \overline{) 535} \quad ( 23 \\ \underline{4} \phantom{00} \\ 135 \\ \underline{129} \\ 6 \end{array}$$

Here, 535 is not a perfect square number.

We observe here that,  $(23)^2 < 535 < (24)^2$

The required number of soldiers to be added =  $(24)^2 - 535$

$$= (24 \times 24) - 535$$

$$= 676 - 535 = 41$$

Ans : More 41 mango trees are needed.

8. a)

$$\begin{array}{r} 2 \overline{) 4056} \\ \underline{2028} \phantom{00} \\ 2 \overline{) 1014} \\ \underline{1014} \phantom{00} \\ 3 \overline{) 507} \\ \underline{1507} \phantom{00} \\ 13 \overline{) 169} \\ \underline{169} \\ 13 \end{array}$$

$$\begin{aligned} \therefore 4056 &= 2 \times 2 \times 2 \times 3 \times 13 \times 13 \\ &= (2 \times 2) \times (13 \times 13) \times 2 \times 3 \end{aligned}$$

Here, 2 and 3 have no pairs. So,  $2 \times 3$  or 6. If we divide 4056 by 6 the number will be a perfect square.

Ans : 6 .

b)

$$\begin{array}{r} 8 \overline{) 7601} \text{ ( 87} \\ \underline{64} \phantom{00} \\ 167 \overline{) 1201} \\ \underline{1169} \phantom{00} \\ 32 \end{array}$$

Therefore 7601 is not a perfect square. If we subtract 32 from 7601 the result will be perfect square.

$$\therefore \text{The required number} = (7601 - 32) = 7569$$

Ans : 32, 7569.

$$\begin{array}{r}
 \text{c)} \quad 8 \overline{) 67\ 78\ 94} \quad ( 823 \\
 \underline{64} \\
 162 \quad \underline{3\ 78} \\
 \quad \quad \underline{3\ 24} \\
 1643 \quad \underline{54\ 94} \\
 \quad \quad \quad \underline{49\ 29} \\
 \quad \quad \quad \quad \underline{5\ 65}
 \end{array}$$

We observe that,  $(823)^2 < 677894 < (824)^2$

$$\begin{aligned}
 \therefore \text{The required number} &= (824)^2 - 677894 \\
 &= (824 \times 824) - 677894 \\
 &= 678976 - 677894 = 1082
 \end{aligned}$$

So that, if we add 1082 with 677894 the result will be perfect square.

Ans : 1082.

9. a) Let the number of students is a.

Each students give  $(a \times 5)$  paisa or  $5a$  paisa

So, the total number of taka  $(5a \times a)$  paisa or  $5a^2$  paisa

Ans :  $5a^2$ .

b) Here, Tk. 245 =  $(245 \times 100)$  paisa [1 taka = 100 paisa]

$$= 24500 \text{ paisa}$$

$\therefore$  Amount of total money = 24500 paisa

ATQ,

$$5a^2 = 24500$$

$$\text{Or, } a^2 = 24500 \div 5$$

$$\text{Or, } a^2 = 4900$$

$$\text{Or, } a = 70$$

So the number of students = 70

Ans : 70 students

$$\text{c) } \begin{array}{r} 8 \overline{) 70} \quad ( 8 \\ \underline{64} \\ 6 \end{array}$$

We observe that,  $(8)^2 < 70 < (9)^2$

$$\begin{aligned} \therefore \text{The required number} &= (9)^2 - 70 \\ &= (9 \times 9) - 70 \\ &= 81 - 70 = 11 \end{aligned}$$

11 students should take admission.

Ans : 11 students.

$$\text{10. a) } \begin{array}{r} 19 \overline{) 361} \\ \underline{19} \end{array}$$

$$\begin{aligned} \therefore 361 &= 19 \times 19 \\ &= (19 \times 19) \end{aligned}$$

So, the square root of 361 is 19.

Ans : 19.

b)

$$\begin{array}{r}
 3 \overline{) 23805} \\
 \underline{3 \phantom{0} 7935} \\
 5 \phantom{0} \overline{) 2645} \\
 \underline{5 \phantom{0} 2645} \\
 23 \overline{) 529} \\
 \underline{23}
 \end{array}$$

$$\begin{aligned}
 \therefore 23805 &= 3 \times 3 \times 5 \times 23 \times 23 \\
 &= (3 \times 3) \times (23 \times 23) \times 5
 \end{aligned}$$

Here, 5 has no pair. If we multiply 5 with 23805, the result will be perfect square.

Ans : 5.

c)

$$\begin{array}{r}
 1 \overline{) 1 \overline{00} \overline{60} \overline{09}} \text{ ( } 1003 \text{ )} \\
 \underline{1} \\
 20 \phantom{0} \overline{) 00} \\
 \underline{20 \phantom{0} 00} \\
 200 \phantom{0} \overline{) 60} \\
 \underline{200 \phantom{0} 00} \\
 2003 \phantom{0} \overline{) 60 \ 09} \\
 \underline{2003 \phantom{0} 60 \ 09} \\
 0
 \end{array}$$

$$\therefore \text{Square root of } 1006009 = \sqrt{1006009} = 1003$$

Ans : 1003.

11. a)

$$0.00005625 = \frac{5625}{100000000} = \frac{5625 \div 625}{100000000 \div 625} = \frac{9}{160000}$$

∴ If we express 0.00005625 in terms of  $\frac{a}{b}$  then we find  $\frac{9}{160000}$ , here the value of a and b are 9 and 160000 who are integer and in between 9 and 160000 there is no common factor except 1.

Ans :  $\frac{9}{160000}$ .

**b)**

$$\begin{array}{r}
 7 \overline{) 0.00\ 00\ 56\ 25} \quad ( 0.0075 \\
 \underline{\phantom{7} 49} \\
 7\ 25 \\
 \underline{\phantom{7} 7\ 25} \\
 0
 \end{array}$$

∴ Square root of 0.00005625 =  $\sqrt{0.00005625} = 0.0075$

Ans : 0.0075.

**c)**

$$\begin{array}{r}
 3 \overline{) 12.21\ 00\ 00\ 00} \quad ( 3.4942 \\
 \underline{\phantom{3} 9} \\
 64 \\
 \underline{\phantom{64} 3\ 21} \\
 2\ 56 \\
 \underline{\phantom{256} 65\ 00} \\
 62\ 01 \\
 \underline{\phantom{6201} 2\ 99\ 00} \\
 2\ 79\ 36 \\
 \underline{\phantom{27936} 19\ 64\ 00} \\
 13\ 97\ 64 \\
 \underline{\phantom{139764} 5\ 66\ 36}
 \end{array}$$

∴ The square root of 12.21 up to three decimal place is 3.494.

Ans : 3.494.

**12. a)**  $0.047 = \frac{47}{1000}$

So, we express 0.047 in denominator of 1000 we get  $\frac{47}{1000}$ .

Ans :  $\frac{47}{1000}$ .

**b)**

$$\begin{array}{r}
 2 \mid 8 \overline{02.58 \overline{89}} \text{ (28.33)} \\
 \underline{4} \\
 48 \mid 4 \ 02 \\
 \underline{3 \ 84} \\
 563 \mid 18 \ 58 \\
 \underline{16 \ 89} \\
 5663 \mid 1 \ 69 \ 89 \\
 \underline{1 \ 69 \ 89} \\
 0
 \end{array}$$

∴ Square root of 802.5889 =  $\sqrt{802.5889} = 28.33$

Ans : 28.33.

**c)**

$$\begin{array}{r}
 2 \mid 0.\overline{04 \ 70 \ 00} \text{ (0.216)} \\
 \underline{4} \\
 41 \mid 70 \\
 \underline{41} \\
 426 \mid 29 \ 00 \\
 \underline{25 \ 56} \\
 3 \ 44
 \end{array}$$

∴ The square root of 0.047 up to two decimal place is 0.216.

Ans : 0.216.

