Day- 18 Aug 2020 Chapter-6

Squares and Square roots

Ex - 6.1

Q1. What will be the unit digit of the squares of the following numbers:-

(i) ~~81~~ We know that if a number has its unit's place digit as a, then its square will end with the unit digit of the multiplication a × a.

(i) 81

Since the given number has its unit's place digit as 1, its square will ends with the unit digit of the multiplication = 1×1 = 1.

(ii) 272
Since the given number has its unit's place digit as 2, its square will end with the unit digit of the multipli cation = 2×2 = 4.

(iii) 799
Since the given number has its unit's place digit as 9, its square will end with the unit digit of the multiplication = 9×9 = 81 Ans 1.

(iv) 3853
Since the given number has its unit's place digit as 3, its square will end with the unit digit of the multiplication = 3×3 = 9.

(iv) 1234

Since the given number has its unit's place digit as 4, its square will ends with the unit digit of the multiplication = 4 × 4 = 16 = 6 Ans

(vi) 26387

Since the given number has its unit's place digit as 7, its square will ends with the unit digit of the multiplication = 7×7 = 49 = 9 Ans.

(vii) 52698

Since the given number has its unit's place digit as 8, its square will end with the unit digit of the multiplication = 8×8 = 64 = 4 Ans

(viii) 99880

Since the given number has its unit's place digit as 0, its square will end with the unit digit of the multiplication = 0×0 = 0 Ans

(ix) 12796

Since the given number has its unit's place digi as 6, its square will end with the unit digit of the multiplication = 6×6 = 36 = 6 Ans

(x) 55555

Since the given number has its unit's place digi as 5, its square will end with the unit digit of the multiplication = 5×5 = 25 = 5 Ans

Q2. The following numbers are obviously not herfect squares. Givee reason.

$1^2 = 1$, $2^2 = 4$, $3^2 = 9$, $4^2 = 16$, $5^2 = 25$
$6^2 = 36$, $7^2 = 49$, $8^2 = 64$, $9^2 = 81$ [illegible]

Perfect square no.
[1, 4, 9, 6, 5, [illegible]] [0, 2, 3, 7, 8 - Not perfect square no.]

(i) 1057 ends with 7 at unit place. So it is not a perfect square number.

(ii) 23453 ends with 3 at unit place. So it is not a perfect square number.

(iii) 7928 ends with 8 at unit place. So it is not a perfect square number.

(iv) 2,22,222 ends with 2 at unit place. So it is not a perfect square number.

(v) 64000 ends with 3 ~~Zeo~~ zeros. So it cannot a perfect square number.

(vi) 89722. ends with 2 at unit place. So it is not a perfect square number.

(vii) 22000 ends with 3 zeros. So it cannot a perfect square number.

(viii) 50 5050 ends with 1 Zeros. So it is not a perfect square number.

fect

Q3. The squares of which of the following would be odd numbers?

* We know that the square of an odd number is odd and the square of an even number is even.

ct

(i) 431 – The square of 431 is an odd number.

(ii) 2826 → The square of 2826 is an even number.

(iii) 7779 → The square of 7779 is an odd number.

(iv) 82004 → The square of 82004 is an even number.

Ans (i) and (iii)

Q4. Observe the following pattern and find the missing digits :-

$$11^2 = 121$$
$$101^2 = 10201$$
$$1001^2 = 1002001$$
$$100001^2 = \underline{1}\ \underline{0000}\ \underline{2}\ \underline{0000}\ \underline{1}$$
$$10000001^2 = \underline{100000020000001}$$

Q5. Observe the following pattern and supply the missing numbers:-

$11^2 = 121$

$101^2 = 10201$

$10101^2 = 102030201$

$1010101^2 = \underline{1020304030201}$

$\underline{101010101}^2 = 10203040504030201$

Day 19 Aug 2020 Ex 6.1

Q6. Using the given pattern, find the missing numbers:-

$1^2 + 2^2 + 2^2 = 3^2$
$2^2 + 3^2 + 6^2 = 7^2$
$3^2 + 4^2 + 12^2 = 13^2$
$4^2 + 5^2 + \underline{20}^2 = 21^2$
$5^2 + \underline{6}^2 + 30^2 = 31^2$
$6^2 + 7^2 + \underline{42}^2 = \underline{43}^2$

Q7. Without adding, find the Sum:-
We Know that the sum of n odd numbers $= n^2$

(i) 1 + 3 + 5 + 7 + 9

Sol. Sum of I^{st} 5 odd number. $= (5)^2$
$\Rightarrow 25$

(ii) 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19

Sum of I^{st} 10 odd number $= (10)^2$
$\Rightarrow 100$

(iii) 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21 + 23

Sum of I^{st} 12 odd number $= (12)^2$
$\Rightarrow 144$

Q8. (i) Express 49 as the Sum of 7 odd numbers.

Sol. We Know, Sum of I^{st} n odd natural numbers is n^2
So $49 = 7^2$
49 = Sum of I^{st} 7 odd natural numbers
1 + 3 + 5 + 7 + 9 + 11 + 13

ers :-

(ii) Express 121 as the Sum of 11 odd numbers.

Sol. We Know, Sum of first n odd natural numbers is n^2. So 121 = 11^2

121 = Sum of 11 odd natural numbers

1+3+5+7+9+11+13+15+17+19+21

Q9. How many numbers lie between Squares of the following numbers?

~~(i) 12 and 13~~

✶ We Know that numbers between n^2 and $(n+1)^2 = 2n$

(i) 12 and 13

Numbers between 12^2 and $(12+1)^2 = 2 \times 12$

$\Rightarrow 24$

(ii) 25 and 26

Numbers between 25^2 and $(25+1)^2 = 2 \times 25$

$\Rightarrow 50$

(iii) 99 and 100

Numbers between 99^2 and $100^2 \Rightarrow 2 \times 99$

$\Rightarrow 198$

^{2}

Ex-6.2

Q1. Find the squares of the following numbers:-

(i) 32

$32 = (30+2)^2$

$\therefore (a+b)^2 = a^2 + 2ab + b^2$

$(30+2)^2 \Rightarrow (30)^2 + 2 \times 30 \times 2 + (2)^2$

$\Rightarrow 900 + 120 + 4$

$\Rightarrow 1024$

$(32)^2 = 1024$ Ans

(ii) $35 = (30+5)^2$

Sol: $(30+5)^2 = (30)^2 + 2 \times 30 \times 5 + (5)^2$

$\Rightarrow 900 + 300 + 25$

$(35)^2 \Rightarrow 1225$ Ans

(iii) $86 = (80+6)^2$

$(80+6)^2 = (80)^2 + 2 \times 80 \times 6 + (6)^2$

$\Rightarrow 6400 + 960 + 36$

$(86)^2 \Rightarrow 7396$ Ans.

(iv) $93 = (90+3)^2$

$(90+3)^2 = (90)^2 + 2 \times 90 \times 3 + (3)^2$

$\Rightarrow 8100 + \cancel{27}\ 540 + 9$

$(93)^2 \Rightarrow 8649$ Ans.

(v) $71 = (70+1)^2$

$(70+1)^2 \Rightarrow (70)^2 + 2 \times 70 \times 1 + (1)^2$

$\Rightarrow 4900 + 140 + 1$

$(71)^2 \Rightarrow 5041$ As

(vi). $46 = (40+6)^2$.

Sol $(40+6)^2 = (40)^2 + 2 \times 40 \times 6 + (6)^2$

$\Rightarrow 1600 + 480 + 36$

$(46)^2 \Rightarrow 2116$ Ans

Q2. Write a Pythagoras triplet whose one member is:-

✱ For any natural number $m > 1$, $2m$, $m^2 - 1$, $m^2 + 1$ forms a Pythagoras triplet.

(i) 6

Sol $2m = 6$

$m = \frac{6}{2} = 3$

$m^2 - 1$

$(3)^2 - 1 = 9 - 1 = 8$.

$m^2 + 1$

$(3)^2 + 1 = 9 + 1 = 10$

(6, 8, 10) is a Pythagoras triplet.

(ii) 14

$2m = 14$

$m = \frac{\cancel{14}}{2} = 7$

$m^2 - 1$

$(7)^2 - 1 = 49 - 1 = 48$

$m^2 + 1$

$(7)^2 + 1 = 49 + 1 = 50$ (14, 48, 50) is a Pythagra triplet.

(iii) 16

Sol. $2m = 16$

$m = \frac{\cancel{16}}{\cancel{2}} = 8$

$m^2 - 1$

$(8)^2 - 1$

$64 - 1 = 63$

$m^2 + 1$

$(8)^2 + 1$

$64 + 1 = 65$

(16, 63, 65) is a pythogorean triplet.

(iv) 18

Sol. $2m = 18$

$m = \frac{18}{2} = 9$

$m^2 - 1$

$(9)^2 - 1$

$81 - 1 = 80$

$m^2 + 1$

$(9)^2 + 1$

$81 + 1 = 82$

(18, 80, 82) is a pythogorean triplet.

Day 20 Aug 2020 Ex - 6.3

Q1. What Could be the possible one's digits of the Square root of each of the following numbers?

(i) 9801

As One's digit in the Square root of 9801 may be 1 or 9.

(ii) 99856

As One's digit in the Square root of 99856 may be 4 or 6.

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$

(iii) 998001

As One's digit in the Square root of 998001 may be 1 or 9.

(iv) 657666025

As One's digit in the Square root of 657666025 may be 5.

DATE:

Q2. With out doing any calculation, find the numbers which are surely not perfect squares.

* We know that the numbers ending with 2, 3, 7 or 8 are not perfect squares.

(i) 153 → Ending with 3.
(ii) 257 → Ending with 7
(iii) 408 → Ending with 8
(iv) 441 → Ending with 1, So it is a perfect square number.

(i), (ii) and (iii) are not perfect squares. because they ended with 3, 7 and 8.

Ex 6.3 Class 8 Maths Question 3.

Find the square roots of 100 and 169 by the method of repeated subtraction.

Solution:

Using the method of repeated subtraction of consecutive odd numbers, we have

(i) 100 − 1 = 99, 99 − 3 = 96, 96 − 5 = 91, 91 − 7 = 84, 84 − 9 = 75, 75 − 11 = 64, 64 − 13 = 51, 51 − 15 = 36, 36 − 17 = 19, 19 − 19 = 0

(Ten times repetition)

Thus $\sqrt{100} = 10$

(ii) 169 − 1 = 168, 168 − 3 = 165, 165 − 5 = 160, 160 − 7 = 153, 153 − 9 = 144, 144 − 11 = 133, 133 − 13 = 120, 120 − 15 = 105, 105 − 17 = 88, 88 − 19 = 69, 69 − 21 = 48, 48 − 23 = 25, 25 − 25 = 0

(Thirteen times repetition)

Thus $\sqrt{169} = 13$

Ex 6.3 Class 8 Maths Question 4.

Find the square roots of the following numbers by the Prime Factorisation Method :

(i) 729

(ii) 400

(iii) 1764

(iv) 4096

(v) 7744

(vi) 9604

(vii) 6929

(viii) 9216

(ix) 529

(x) 8100

Solution:

(i) By prime factorisation, we get

$$729 = \underline{3 \times 3} \times \underline{3 \times 3} \times \underline{3 \times 3}$$

$$\therefore \quad \sqrt{729} = 3 \times 3 \times 3$$

$$= 27$$

3	729
3	243
3	81
3	27
3	9
3	3
	1

(ii) By prime factorisation, we get

$$400 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{5 \times 5}$$

$$\therefore \quad \sqrt{400} = 2 \times 2 \times 5$$

$$= 20$$

2	400
2	200
2	100
2	50
5	25
5	5
	1

(iii) By prime factorisation, we get

$$1764 = \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{7 \times 7}$$

$$\therefore \quad \sqrt{1764} = 2 \times 3 \times 7$$

$$= 42$$

2	1764
2	882
3	441
3	147
7	49
7	7
	1

(iv) By prime factorisation, we get

$$4096 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2}$$

$$\times \underline{2 \times 2} \times \underline{2 \times 2}$$

$$\therefore \quad \sqrt{4096} = 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$= 64$$

2	4096
2	2048
2	1024
2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

(v) By prime factorisation, we get

$$7744 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{11 \times 11}$$

$$\therefore \quad \sqrt{7744} = 2 \times 2 \times 2 \times 11$$

$$= 88$$

2	7744
2	3872
2	1936
2	968
2	484
2	242
11	121
11	11
	1

(vi) By prime factorisation, we get

$$9604 = \underline{2 \times 2} \times \underline{7 \times 7} \times \underline{7 \times 7}$$

$$\therefore \quad \sqrt{9604} = 2 \times 7 \times 7$$

$$= 98$$

2	9604
2	4802
7	2401
7	343
7	49
7	7
	1

(vii) By prime factorisation, we get

$$5929 = \underline{7 \times 7} \times \underline{11 \times 11}$$

$$\therefore \quad \sqrt{5929} = 7 \times 11$$

$$= 77$$

7	5929
7	847
11	121
11	11
	1

(viii) By prime factorisation, we get

$$9216 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{3 \times 3}$$

$$\therefore \quad \sqrt{9216} = 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

$$= 96$$

2	9216
2	4608
2	2304
2	1152
2	576
2	288
2	144
2	72
2	36
2	18
3	9
3	3
	1

(ix) By prime factorisation, we get

$$\underline{529} = \underline{23 \times 23}$$

$$\therefore \quad \sqrt{529} = 23$$

23	529
23	23
	1

(x) By prime factorisation, we get

$$8100 = \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{3 \times 3} \times \underline{5 \times 5}$$

$$\therefore \quad \sqrt{8100} = 2 \times 3 \times 3 \times 5$$

$$= 90$$

2	8100
2	4050
3	2025
3	675
3	225
3	75
5	25
5	5
	1

Ex 6.3 Class 8 Maths Question 5.

For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect square number. Also find the square root of the square number so obtained.

(i) 252

(ii) 180

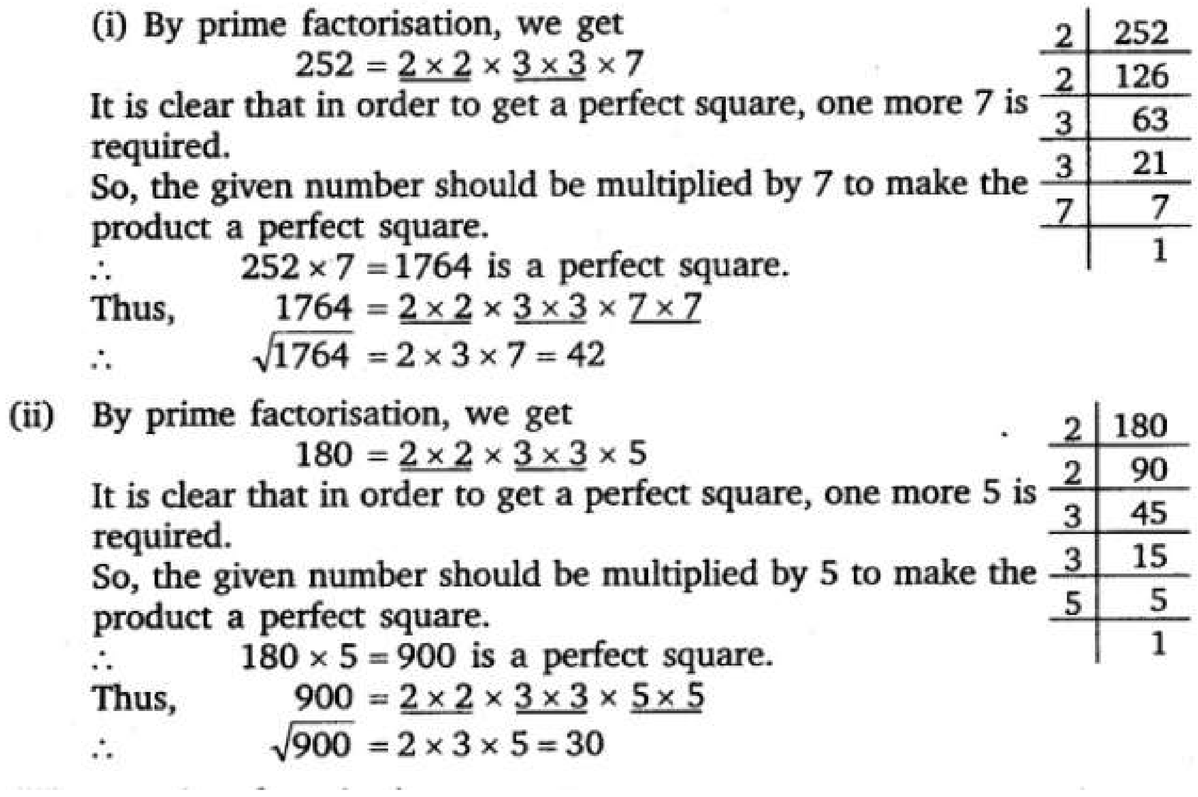
(iii) 1008

(iv) 2028

(v) 1458

(vi) 768

Solution:



(i) By prime factorisation, we get

$$252 = \underline{2 \times 2} \times \underline{3 \times 3} \times 7$$

It is clear that in order to get a perfect square, one more 7 is required.

So, the given number should be multiplied by 7 to make the product a perfect square.

$\therefore \quad 252 \times 7 = 1764$ is a perfect square.

Thus, $\quad 1764 = \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{7 \times 7}$

$\therefore \quad \sqrt{1764} = 2 \times 3 \times 7 = 42$

2	252
2	126
3	63
3	21
7	7
	1

(ii) By prime factorisation, we get

$$180 = \underline{2 \times 2} \times \underline{3 \times 3} \times 5$$

It is clear that in order to get a perfect square, one more 5 is required.

So, the given number should be multiplied by 5 to make the product a perfect square.

$\therefore \quad 180 \times 5 = 900$ is a perfect square.

Thus, $\quad 900 = \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{5 \times 5}$

$\therefore \quad \sqrt{900} = 2 \times 3 \times 5 = 30$

2	180
2	90
3	45
3	15
5	5
	1

(iii) By prime factorisation, we get

$$1008 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{3 \times 3} \times 7$$

It is clear that in order to get a perfect square, one more 7 is required.

So, the given number should be multiplied by 7 to make the product a perfect square.

$\therefore \quad 1008 \times 7 = 7056$ is a perfect square.

Thus, $\quad 7056 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{7 \times 7}$

$\therefore \quad \sqrt{7056} = 2 \times 2 \times 3 \times 7$

$= 84$

2	1008
2	504
2	252
2	126
3	63
3	21
7	7
	1

(iv) By prime factorisation, we get

$$2028 = \underline{2 \times 2} \times 3 \times \ \underline{13 \times 13}$$

It is clear that in order to get a perfect square, one more 3 is required.

So, the given number should be multiplied by 3 to make the product a perfect square.

$\therefore \quad 2028 \times 3 = 6084$

Thus, $\quad 6084 = \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{13 \times 13}$

$\therefore \quad \sqrt{6084} = 2 \times 3 \times 13 = 78$

2	2028
2	1014
3	507
13	169
13	13
	1

(v) By prime factorisation, we get

$$1458 = 2 \times \underline{3 \times 3} \times \underline{3 \times 3} \times \underline{3 \times 3}$$

It is clear that in order to get a perfect square, one more 2 is required.

So, the given number should be multiplied by 2 to make the product a perfect square.

$\therefore \quad 1458 \times 2 = 2916$

Thus, $\quad 2916 = \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{3 \times 3} \times \underline{3 \times 3}$

$\therefore \quad \sqrt{2916} = 2 \times 3 \times 3 \times 3$

$= 54$

2	1458
3	729
3	243
3	81
3	27
3	9
3	3
	1

(vi) By prime factorisation, we get

$$768 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times 3$$

It is clear that in order to get a perfect square, one more 3 is required.

So, the given number should be multiplied by 3 to make the product a perfect square.

$\therefore \quad 768 \times 3 = 2304$

Thus, $\quad 2304 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{3 \times 3}$

$\therefore \quad \sqrt{2304} = 2 \times 2 \times 2 \times 2 \times 3$

$= 48$

2	768
2	384
2	192
2	96
2	48
2	24
2	12
2	6
3	3
	1

Ex 6.3 Class 8 Maths Question 6.

For each of the following numbers. find the smallest whole number by which it should be divided so as to get a perfect square. Also find the square root of the square number so obtained.

(i) 252

(ii) 2925

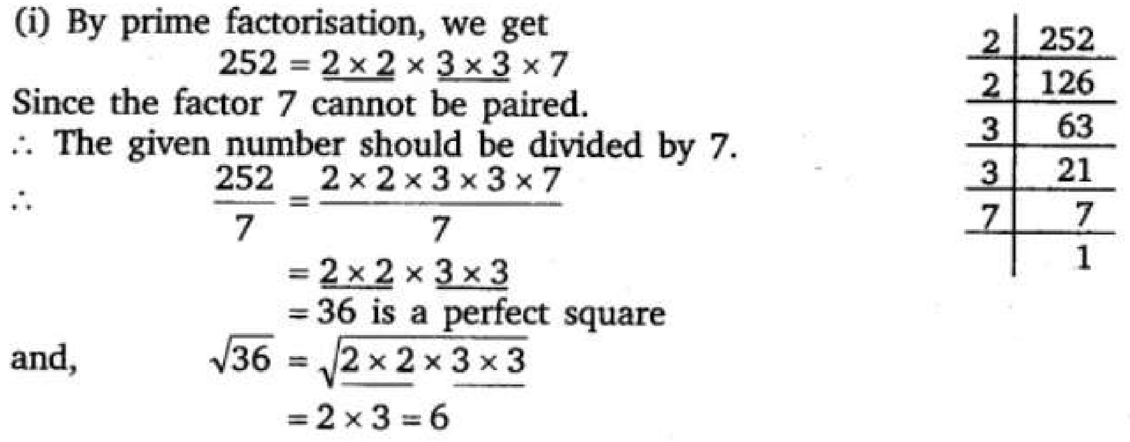
(iii) 396

(iv) 2645

(v) 2800

(vi) 1620

Solution:



(i) By prime factorisation, we get

$$252 = \underline{2 \times 2} \times \underline{3 \times 3} \times 7$$

Since the factor 7 cannot be paired.

∴ The given number should be divided by 7.

$$\therefore \quad \frac{252}{7} = \frac{2 \times 2 \times 3 \times 3 \times 7}{7}$$

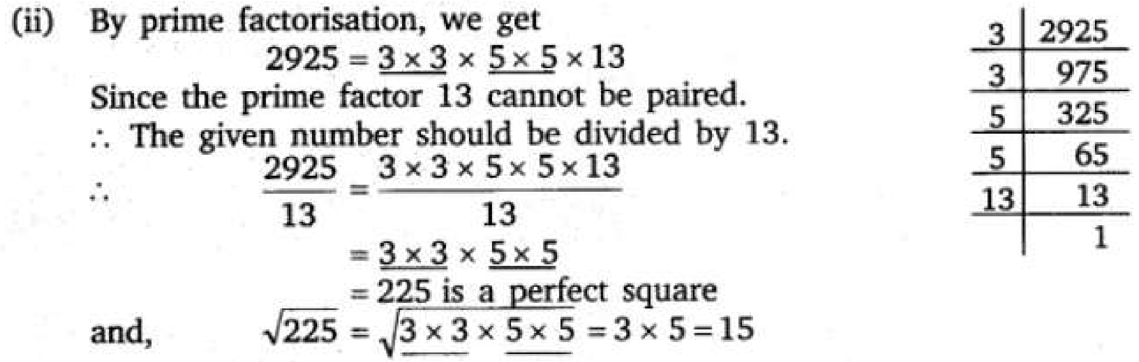
$$= \underline{2 \times 2} \times \underline{3 \times 3}$$

$$= 36 \text{ is a perfect square}$$

and, $$\sqrt{36} = \sqrt{\underline{2 \times 2} \times \underline{3 \times 3}}$$

$$= 2 \times 3 = 6$$

2	252
2	126
3	63
3	21
7	7
	1



(ii) By prime factorisation, we get

$$2925 = \underline{3 \times 3} \times \underline{5 \times 5} \times 13$$

Since the prime factor 13 cannot be paired.

∴ The given number should be divided by 13.

$$\therefore \quad \frac{2925}{13} = \frac{3 \times 3 \times 5 \times 5 \times 13}{13}$$

$$= \underline{3 \times 3} \times \underline{5 \times 5}$$

$$= 225 \text{ is a perfect square}$$

and, $$\sqrt{225} = \sqrt{\underline{3 \times 3} \times \underline{5 \times 5}} = 3 \times 5 = 15$$

3	2925
3	975
5	325
5	65
13	13
	1

(iii) By prime factorisation, we get

$$396 = \underline{2 \times 2} \times \underline{3 \times 3} \times 11$$

Since the prime factor 11 cannot be paired.

$\therefore$ The given number should be divided by 11.

$$\therefore \quad \frac{396}{11} = \frac{2 \times 2 \times 3 \times 3 \times 11}{11}$$

$$= \underline{2 \times 2} \times \underline{3 \times 3}$$

$$= 36 \text{ is a perfect square}$$

and $\quad \sqrt{36} = \sqrt{2 \times 2 \times 3 \times 3} = 2 \times 3 = 6$

$$\begin{array}{r|r} 2 & 396 \\ \hline 2 & 198 \\ \hline 3 & 99 \\ \hline 3 & 33 \\ \hline 11 & 11 \\ \hline & 1 \end{array}$$

(iv) By prime factorisation, we get

$$2645 = 5 \times \underline{23 \times 23}$$

Since the prime factor 5 cannot be paired.

$\therefore$ The given number should be divided by 5.

$$\therefore \quad \frac{2645}{5} = \frac{5 \times 23 \times 23}{5}$$

$$= 23 \times 23 = 529 \text{ is a perfect square}$$

and, $\quad \sqrt{529} = \sqrt{\underline{23 \times 23}} = 23$

$$\begin{array}{r|r} 5 & 2645 \\ \hline 23 & 529 \\ \hline 23 & 23 \\ \hline & 1 \end{array}$$

(v) By prime factorisation, we get

$$2800 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{5 \times 5} \times 7$$

Since the prime factor 7 cannot be paired.

$\therefore$ The given number should be divided by 7.

$$\therefore \quad \frac{2800}{7} = \frac{2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 7}{7}$$

$$= \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{5 \times 5}$$

$$= 400 \text{ is a perfect square}$$

and, $\quad \sqrt{400} = \sqrt{\underline{2 \times 2} \times \underline{2 \times 2} \times \underline{5 \times 5}} = 2 \times 2 \times 5 = 20$

$$\begin{array}{r|r} 2 & 2800 \\ \hline 2 & 1400 \\ \hline 2 & 700 \\ \hline 2 & 350 \\ \hline 5 & 175 \\ \hline 5 & 35 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

(vi) By prime factorisation, we get

$$1620 = \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{3 \times 3} \times 5$$

Since the prime factor 5 cannot be paired.

$\therefore$ The given number should be divided by 5.

$$\therefore \quad \frac{1620}{5} = \frac{2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 5}{5}$$

$$= \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{3 \times 3}$$

$$= 324 \text{ is a perfect square}$$

and, $\quad \sqrt{324} = \sqrt{\underline{2 \times 2} \times \underline{3 \times 3} \times \underline{3 \times 3}}$

$$= 2 \times 3 \times 3 = 18$$

$$\begin{array}{r|r} 2 & 1620 \\ \hline 2 & 810 \\ \hline 3 & 405 \\ \hline 3 & 135 \\ \hline 3 & 45 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

Day 3 Sept 2020

Chapter-6

Exercise - 6.3

Q7. The students of Class VIII of a school donated ₹2401 in all. for Prime Minister's National Relief Fund. Each student donated as many rupees as the number of students in the class. Find the number of students in the Class.

Sol. Let the number of students = x

Each student donte Rs ⇒ $x \times x$

Total money contributed by the Class VIII ⇒

$\Rightarrow 2401 = x \times x$

$2401 = x^2$

$x = \sqrt{2401}$

$x = \sqrt{\underbrace{7\times7}\times\underbrace{7\times7}}$

$x = 7 \times 7$, $x = 49$

7	2401
7	343
7	49
7	7
	1

The number of students = 49.

Q8. 2025 plants are to be planed in a garden in such a way that ~~so~~ each row contains as many plants as the number of rows. Find the number of rows and the number of plants in each row.

Sol. Let the number of rows be x,

the number of plants in each rows = x

Total ~~mar~~ plant = 2025

3	2025
3	675
3	225
3	75
5	25
5	5
	1

$2025 = x \times x$

$2025 = x^2$.

$x = \sqrt{2025}$

$x = \sqrt{\underbrace{3\times3}\times\underbrace{3\times3}\times\underbrace{5\times5}}$

$x = 3 \times 3 \times 5$

$x = 45$.

Q9. Find the smallest square number that is divisible by each of the numbers 4, 9 and 10.

Sol.

2	4, 9, 10
2	2, 9, 5
3	1, 9, 5
3	1, 3, 5
5	1, 1, 5
	1, 1, 1

$\Rightarrow \underbrace{2\times2}\times\underbrace{3\times3}\times\underline{5} \Rightarrow 180$

Here 5 cannot be paired.
We will multiply 180 by 5 to get perfect square.
$180\times5 = 900$

So the smallest square number divisible by 4, 9 and 100 = 900.

Q10. Find the smallest square number that is divisible by each of the numbers 8, 15 and 10.

Sol.

2	8, 15, 10
2	4, 15, 5
2	2, 15, 5
3	1, 15, 5
5	1, 5, 5
	1, 1, 1

$\Rightarrow \underbrace{2\times2}\times2\times3\times5 = 120$

Here, 3, 5 and 2 cannot be paired.
We will multiply 120 by (2×3×5=
to get perfect square.
$120\times30 = 3600$

So the smallest square number divisible by 8, 15 and = 3600.

Day 4 Sept 2020

Chapter-6

Ex-6.4

Q1. Find the Square root of each of the following numbers by Division method.

(i) 2304

Sol.

```
           48
     4 | 23 04
    +4 | 16↓↓
    88 |  704
    +8 |  704
    96 |    0
```

$\sqrt{2304} = 48.$

```
 82
×2
164
 88
×8
704
```

(ii) 4489

```
            67
     6  | 44 89
    +6  | 36↓↓
   127  |  889
    +7  |  889
   134  |    0
```

$\sqrt{4489} = 67.$

```
 123
×3
 369
 127
×7
 889
```

(iii) 3481

```
           59
     5 | 34 81
    +5 | 25↓↓
   109 |  981
    +9 |  981
   118 |    0
```

$\sqrt{3481} = 59.$

(iv) 529

```
           23
     2 | 5 29
    +2 | 4↓↓
    43 | 129
    +3 | 129
    46 |   0
```

$\sqrt{529} = 23$

(v) 3249

	57
5	$\overline{32}\,\overline{49}$
+5	25↓↓
107	749
+7	749
114	0

$\sqrt{3249} = 57$

(vi)

1369

	3 7
3	1 3 6 9
+3	9 ↓↓
67	4 6 9
+7	4 6 9
74	0

63
×3
189
67
×7
469

$\sqrt{1369} = 37$

(vii) 5776

144
×4
576
146
×6
876

	76
7	$\overline{57}\,\overline{76}$
+7	49↓↓
146	876
+6	876
152	0

$\sqrt{5776} = 76.$

(viii) 7921

	8 9
8	$\overline{79}\,\overline{21}$
+8	64↓↓
169	1521
+9	1521
178	0

$\sqrt{7921} = 89$

(ix) 576

	2 4
2	$\overline{5}\,\overline{76}$
+2	4 ↓↓
44	1 76
+4	1 76
48	0

$\sqrt{576} = 24$

(x) 1024

	3 2
3	$\overline{10}\,\overline{24}$
+3	9 ↓↓
62	1 24
+2	1 24
64	0

$\sqrt{1024} = 32$

(xi) 3136

```
          56
  5  | 31 36
 +5  | 25 ↓↓
 106 |  6 36
  +6 |  6 36
 112 |    0
```

$\sqrt{3136} = 56$

(xii) 900

```
        30
  3  | 9 00
 +3  | 9 ↓↓
 60  | 0 00
```

$\sqrt{900} = 30.$

Q2. Find the number of digits in the square root of each of the following numbers (with out any Calculati

even $\frac{n}{2}$

(i) $\overline{64}$

64 Contains two digit which is even.

$= \frac{n}{2} = \frac{2}{2} = 1$

odd $\frac{n+1}{2}$

(ii) $\overline{1}\,\overline{44}$

144 contains 3 digit which is odd.

$\frac{3+1}{2} = \frac{4}{2} = 2$

(iii) $\overline{44}\,\overline{89}$

4489 Contains 4 digit which is even.

$= \frac{n}{2} = \frac{4}{2} = 2.$

(iv) $\overline{2}\,\overline{72}\,\overline{25}$

27225 Contains 5 digit which is odd.

$\frac{n+1}{2} = \frac{5+1}{2} = \frac{6}{2} = 3.$

(v) 390625

Sol. 390625 Contains 6 digit which is even.

$\frac{n}{2} = \frac{6}{2} = 3.$

Q3. Find the square root of the following decimal numbers:-

(i) 2.56

1.6

1	2.56
+1	1 ↓↓
26	156
+6	156
32	0

$\sqrt{2.56} = 1.6$

(ii) 7.29

2.7

2	7.29
+2	4 ↓↓
47	329
+7	329
54	0

$\sqrt{7.29} = 2.7$

(iii) 51.84

7.2

7	51.84
+7	49 ↓↓
142	284
+2	284
146	0

(iv) 42.25

6.5

6	42.25
+6	36 ↓↓
125	625
+5	625
130	0

(v) 31.36

5.6

5	31.36
+5	25 ↓↓
106	636
+6	636
112	0

$\sqrt{51.84} = 7.2$ $\sqrt{42.25} = 6.5$ $\sqrt{31.36} = 5.6$

Day 5 sept 2020

Chapter-6

Ex -6.4

Q4. Find the least number which must be subtracted from each of the following numbers so as to get a perfect square. Also find the square root of the perfect square root of the perfect square so obtained.

(i) 402

2

2 | $\overline{4}\,\overline{02}$

+2 | 4↓↓

4 | 0 02

We must subtract 2 from 402 to get a perfect square.

New number = 402 - 2 = 400

20

2 | $\overline{4}\,\overline{00}$

+2 | 4↓↓

40 | 0 00

$\sqrt{400} = 20.$

(ii) 1989

44

4 | $\overline{19}\,\overline{89}$

+4 | 16↓↓

84 | 389

4 | 336

88 | 53

44

4 | $\overline{19}\,\overline{36}$

+4 | 16↓↓

84 | 336

+4 | 336

88 | 0

$\sqrt{1936} = 44.$

We must subtract 53 from 1989 to get a perfect square.

New number = 1989 - 53 = 1936

(iii) 3250

	57
5	3250.
+5	25↓↓
107	750
+7	749
114	1

	57
5	3249
+5	25↓↓
107	749
+7	749
114	0

$\sqrt{3249} = 57.$

We must Subtract 1 from 3250 to get a perfect Square. New number = 3250 − 1 = 3249,

(iv) 825

	2
2	825
+2	4↓↓
48	425
+8	384
56	41

	28
2	784
+2	4↓↓
48	384
+8	384
56	0

$\sqrt{784} = 28.$

We must Subtract 41 from 825 to get a perfect Square. New number = 825 − 41 = 784

(v) 4000

	6
6	4000
+6	36↓↓
123	400
+3	369
126	31

	63
6	3969
+6	36↓↓
123	369
+3	369
126	0

$\sqrt{3969} = 126.$

We must subtract 31 from 4000 to get a perfect Square. New number = 4000 − 31 = 3969.

Ex - 6.4

ay - 7 Sept 2020

Q5. Find the least number which must be added to each of the following numbers so as to get a perfect square. Also find the square root of the ~~p~~ perfect square so obtained.

(i) 525

```
       2 2
   2 | 5 25
  +2 | 4 ↓↓
  42 | 1 25
  +2 |   84
  44 |   41
```

```
       2 3
   2 | 5 29
  +2 | 4 ↓↓
  43 | 1 29
  +3 | 1 29
  46 |    0
```

$\sqrt{529} = 23.$

```
  23
 ×23
 ---
  69
 46×
 ---
 529
 525
 ---
  04
```

Here $(22)^2 < 525 > (23)^2$

So if we add 4 to 525, it will be perfect square.

New number = 525 + 4 = 529.

(ii) 1750

```
       4 1             4 2              4 2
   4 | 17 50      4 | 17 50        4 | 17 64
  +4 | 16 ↓↓     +4 | 16 ↓↓       +4 | 16 ↓↓
  81 |  1 50     82 |  1 50       82 |  1 64
  +1 |    81     +2 |  1 64       +2 |  1 64
  82 |    69                      84 |     0
```

Here $(41)^2 < 1750 > (42)^2$

We can say 1750 is (164 − 150) = 14 less than $(42)^2$

So if we add 14 to 1750, it will be perfect square.

New no. ⇒ 1750 + 14 = 1764 $\sqrt{1764} = 42.$

(iii) 252

	15
1	$\overline{2}\,\overline{52}$
+1	1↓↓
25	152
+5	125
30	27

	16
1	$\overline{2}\,\overline{56}$
+1	1↓↓
26	156
+6	156
32	0

3
16
×16
96
16×·
256

252
4

Here $(15)^2 < 252 > (16)^2$

So if we add 4 to 252, it will be perfect square.

New number = 252+4 = 256.

$\sqrt{256} = 16.$

(iv) 1825

	42
4	$\overline{18}\,\overline{25}$
+4	16↓↓
82	225
+2	162
84	63

	43
4	$\overline{18}\,\overline{49}$
+4	16↓↓
83	249
+3	249
86	0

1
43
×43
129
172×
1849

1825
24

Here $(42)^2 < 1825 7 (43)^2$

So if we add 24 to 1825, it will be perfect Square number

New number => 1825+24 => 1849

$\sqrt{1849} = 43.$

(v) 6412

	80
8	6412
+8	64↓↓
160	0 120

	81
8	6561
+8	64↓↓
161	161
+1	161
162	0

81
×81
①81
648×
6561
−6412
0149

Here $(80)^2 < 6412 > (81)^2$

So if we add 6412+149, it will be perfect square

New number = 6561

$\sqrt{6561} = 81.$

Date ________
Page ________

Chapter - 6

Ex - 6.4

Day 8sep 2020

Q6. Find the length of the side of a square whose area is $441 m^2$?

Sol. Let the length of each side of the square = a.
Then area of square => $a \times a = (a)^2$

$$a^2 = 441 m^2$$
$$a = \sqrt{441}$$

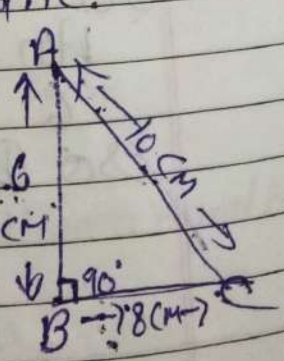
	2 1
2	$\overline{4}\ \overline{41}$
+2	4
41	0 41
1	41
42	0

$$\sqrt{441} = 21$$

The length of each side of the Square = a = 21m.

Q7. In a right triangle ABC, ∠B = 90°

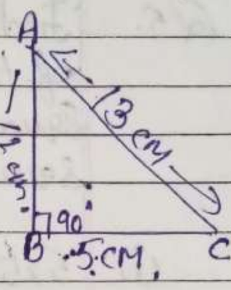
(a) If AB = 6 cm, BC = 8 cm, find AC.



Sol. Given = AB = 6 cm, BC = 8 cm.
Let AC be x CM.

$$AC^2 = AB^2 + BC^2$$
$$AC^2 = (6)^2 + (8)^2$$
$$AC^2 = 36 + 64$$
$$AC^2 = 100$$
$$AC = \sqrt{100} \Rightarrow 10 \quad , AC = 10.$$

B. If AC = 13 cm, BC = 5 cm, find AB.



Sol Given AC = 13 cm, BC = 5 cm.
Let AB be x cm.

$(AB)^2 = ~~B~~(AC)^2 - (BC)^2$
$(AB)^2 = (13)^2 - (5)^2$
$(AB)^2 = 169 - 25$
$(AB)^2 = 144$
$AB = \sqrt{144} \exists 12$ cm.

Q8. A gardener has 1000 plants. He wants to plant these in such a way that the number of rows and the number of columns remain same. Find the minimum number of plants he needs more for this.

Sol Let the number of rows and column be x.
Total no. of row and column $= x \times x = x^2$
$x^2 = 1000$, $x = \sqrt{1000}$

$$\begin{array}{r|l} & 31 \\ \hline 3 & \overline{10}\,\overline{00} \\ +3 & 9\downarrow\downarrow \\ \hline 61 & 100 \\ +1 & 61 \\ \hline 62 & 39 \end{array} \qquad \begin{array}{r|l} & 32 \\ \hline 3 & \overline{10}\,\overline{00} \\ +3 & 9\downarrow\downarrow \\ \hline 62 & 100 \\ +2 & 124 \\ \hline & \end{array}$$

or [we can say 1000 is (124 − 100) = 24 less than $(32)^2$.]

Here $(31)^2 < 1000 > (32)^2$
So if we add 24 to 1000 we get perfect square no.
New number = 1000 + 24 = 1024.
24 more plants are needed.

Q9. There are 500 children in a School. for a P.T drill they have to stand in such a manner that the number of rows is equal to number of columns. How many children would be left out in this arrangement.

Sol. Let the number of rows and column be = x.
Total number of row and column $= x \times x = x^2$

$$x^2 = 500$$
$$x = \sqrt{500}$$

$$\begin{array}{r|l} & 22 \\ \hline 2 & \bar{5}\,\overline{00} \\ +2 & 4\ [illegible] \\ \hline 42 & 1\,00 \\ +2 & \ \ 84 \\ \hline 44 & \ \ 16 \end{array}$$

So, 16 children would be left out in the arrangement.