Squares and Square Roots Ex 3.1 Q3

Answer :

Factorise each number into its prime factors.

(i) 23805 = 3 x 3 x 5 x 23 x 23

3	23805
3	7935
5	2645
23	529
23	23
	1

Grouping 23805 into pairs of equal factors:

23805 = (3 x 3) x (23 x 23) x 5

Here, the factor 5 does not occur in pairs. To be a perfect square, every prime factor has to be in pairs. Hence, the smallest number by which 23805 must be multiplied is 5.

(ii) 12150 = 2 x 3 x 3 x 3 x 3 x 3 x 5 x 5

2	12150
3	6075
3	2025
3	675
3	225
3	75
5	25
5	5
	1

Grouping 12150 into pairs of equal factors:

12150 = (3 x 3 x 3 x 3) x (5 x 5) x 2 x 3

Here, 2 and 3 do not occur in pairs. To be a perfect square, every prime factor has to be in pairs. Hence. the smallest number by which 12150 must be multiplied is 2 x 3, i.e. by 6.

(iii) 7688 = 2 x 2 x 2 x 31 x 31

Squares and Square Roots Ex 3.1 Q4

Answer :

For each question, factorise the number into its prime factors.

(i) 14283 = 3 x 3 x 3 x 23 x 23

3	14283
3	4761
3	1587
23	529
23	23
	1

Grouping the factors into pairs:

14283 = (3 x 3) x (23 x 23) x 3

Here, the factor 3 does not occur in pairs. To be a perfect square, all the factors have to be in pairs. Hence, the smallest number by which 14283 must be divided for it to be a perfect square is 3.

(ii) 1800= 2 x 2 x 2 x 3 x 3 x 5 x 5

(ii) 1800= 2 x 2 x 2 x 3 x 3 x 5 x 5

2	1800
2	900
2	450
3	225
3	75
5	25
5	5
	1

Grouping the factors into pairs:

1800 = (2 x 2) x (3 x 3) x (5 x 5) x 2

Here, the factor 2 does not occur in pairs. To be a perfect square, all the factors have to be in pairs. Hence, the smallest number by which 1800 must be divided for it to be a perfect square is 2.

(iii) 2904 = 2 x 2 x 2 x 3 x 11 x 11

2	2904
2	1452
2	726
3	363
11	121
11	11
	1

Grouping the factors into pairs:

2904 = (2 x 2) x (11 x 11) x 2 x 3

Here, the factors 2 and 3 do not occur in pairs. To be a perfect square, all the factors have to be in pairs. Hence, the smallest number by which 2904 must be divided for it to be a perfect square is 2 x 3, i.e. 6.

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