



Squares and Square Roots Ex 3.1 Q3

Answer :

Factorise each number into its prime factors.

(i) $23805 = 3 \times 3 \times 5 \times 23 \times 23$

3	23805
3	7935
5	2645
23	529
23	23
	1

Grouping 23805 into pairs of equal factors:

$$23805 = (3 \times 3) \times (23 \times 23) \times 5$$

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) $12150 = 2 \times 3 \times 3 \times 3 \times 3 \times 3 \times 5 \times 5$

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

Grouping 12150 into pairs of equal factors:

$$12150 = (3 \times 3 \times 3 \times 3 \times 3) \times (5 \times 5) \times 2 \times 3$$

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 2×3 , i.e. by 6.

(iii) $7688 = 2 \times 2 \times 2 \times 31 \times 31$

Squares and Square Roots Ex 3.1 Q4

Answer :

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

(i) $14283 = 3 \times 3 \times 3 \times 23 \times 23$

3	14283
3	4761
3	1587
23	529
23	23
	1

Grouping the factors into pairs:

$$14283 = (3 \times 3) \times (23 \times 23) \times 3$$

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) $1800 = 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5$

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

Grouping the factors into pairs:

$$1800 = (2 \times 2) \times (3 \times 3) \times (5 \times 5) \times 2$$

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) $2904 = 2 \times 2 \times 2 \times 3 \times 11 \times 11$

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

Grouping the factors into pairs:

$$2904 = (2 \times 2) \times (11 \times 11) \times 2 \times 3$$

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 2×3 , i.e. 6.

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