



Squares and Square Roots Ex 3.1 Q1

2	7688
2	3844
2	1922
31	961
31	31
	1

Grouping 7688 into pairs of equal factors:

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

Here, 2 does not occur in pairs. To be a perfect square, every prime factor has to be in pairs. Hence, the smallest number by which 7688 must be multiplied is 2.

Answer :

(i) $484 = 22^2$

(ii) $625 = 25^2$

(iii) $576 = 24^2$

(iv) Perfect squares closest to 941 are 900 (30^2) and 961 (31^2). Since 30 and 31 are consecutive numbers, there are no perfect squares between 900 and 961. Hence, 941 is not a perfect square.

(v) $961 = 31^2$

(vi) $2500 = 50^2$

Hence, all numbers except that in (iv), i.e. 941, are perfect squares.

Squares and Square Roots Ex 3.1 Q2

Answer :

In each problem, factorise the number into its prime factors.

(i) $1156 = 2 \times 2 \times 17 \times 17$

Grouping the factors into pairs of equal factors, we obtain:

$$1156 = (2 \times 2) \times (17 \times 17)$$

No factors are left over. Hence, 1156 is a perfect square. Moreover, by grouping 1156 into equal factors:

$$1156 = (2 \times 17) \times (2 \times 17)$$

$$= (2 \times 17)^2$$

Hence, 1156 is the square of 34, which is equal to 2×17 .

(ii) $2025 = 3 \times 3 \times 3 \times 3 \times 5 \times 5$

Grouping the factors into pairs of equal factors, we obtain:

$$2025 = (3 \times 3) \times (3 \times 3) \times (5 \times 5)$$

No factors are left over. Hence, 2025 is a perfect square. Moreover, by grouping 2025 into equal factors:

$$2025 = (3 \times 3 \times 5) \times (3 \times 3 \times 5)$$

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

Hence, 2025 is the square of 45, which is equal to $3 \times 3 \times 5$.

(iii) $14641 = 11 \times 11 \times 11 \times 11$

Grouping the factors into pairs of equal factors, we obtain:

$$14641 = (11 \times 11) \times (11 \times 11)$$

No factors are left over. Hence, 14641 is a perfect square. The above expression is already grouped into equal factors:

$$\begin{aligned} 14641 &= (11 \times 11) \times (11 \times 11) \\ &= (11 \times 11)^2 \end{aligned}$$

Hence, 14641 is the square of 121, which is equal to 11×11 .

(iv) $4761 = 3 \times 3 \times 23 \times 23$

Grouping the factors into pairs of equal factors, we obtain:

$$4761 = (3 \times 3) \times (23 \times 23)$$

No factors are left over. Hence, 4761 is a perfect square. The above expression is already grouped into equal factors:

$$\begin{aligned} 4761 &= (3 \times 23) \times (3 \times 23) \\ &= (3 \times 23)^2 \end{aligned}$$

Hence, 4761 is the square of 69, which is equal to 3×23 .

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