Squares and Square Roots Ex 3.4 Q13

Answer :

To find the square root of 121:
121 − 1 = 120
120 − 3 = 117
117 − 5 = 112
112 − 7 = 105
105 − 9 = 96
96 − 11 = 85
85 − 13 = 72
72 − 15 = 57
57 − 17 = 40
40 − 19 = 21
21 − 21 = 0
In total, there are 11 numbers to subtract from 121. Hence, the square root of 121 is 11.

To find the square root of 169:
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
In total, there are 13 numbers to subtract from 169. Hence, the square root of 169 is 13.

Squares and Square Roots Ex 3.4 Q14

Answer :

(i) The prime factorisation of 7744:

$7744 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 11 \times 11$

Grouping them into pairs of equal factors, we get:

$7744 = (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (11 \times 11)$

Taking one factor from each pair, we get :

$\sqrt{7744} = 2 \times 2 \times 2 \times 2 \times 11 = 88$

(ii) The prime factorisation of 9604:

$9604 = 2 \times 2 \times 7 \times 7 \times 7 \times 7$

Grouping them into pairs of equal factors, we get:

$9604 = (2 \times 2) \times (7 \times 7) \times (7 \times 7)$

Taking one factor from each pair, we get:

$\sqrt{604} = 2 \times 7 \times 7 = 9$

(iii) The prime factorisation of 5929:

$5929 = 7 \times 7 \times 11 \times 11$

Grouping them into pairs of equal factors, we get:

$5929 = (7 \times 7) \times (11 \times 11)$

Taking one factor from each pair, we get:

$\sqrt{5929} = 7 \times 11 = 77$

(iv) The prime factorisation of 7056:

$7056 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7 \times 7$

Grouping them into pairs of equal factors, we get:

$7056 = (2 \times 2) \times (2 \times 2) \times (3 \times 3) \times (7 \times 7)$

Taking one factor from each pair, we get:

$\sqrt{7056} = 2 \times 2 \times 3 \times 7 = 84$

Squares and Square Roots Ex 3.4 Q15

Answer :

Let S be the number of students.

Let r be the amount in rupees donated by each student.

The total donation can be expressed by:

$S \times r$ = Rs. 2401

Since the total amount in rupees is equal to the number of students, r is equal to S.

Substituting this in the first equation:

$S \times S = 2401$

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

$S = 7 \times 7 = 49$

So, there are 49 students in the class.

Squares and Square Roots Ex 3.4 Q16

Answer :

Since 71 students were left out, there are only 5929 (6000 – 71) students remaining.
Hence, the number of rows or columns is simply the square root of 5929.
Factorising 5929 into its prime factors:
$5929 = 7 \times 7 \times 11 \times 11$
Grouping them into pairs of equal factors:
5929 = (7 x 7) x (11 x 11)
The square root of 5929
$= \sqrt{5929} = 7 \times 11 = 77$
Hence, in the arrangement, there were 77 rows of students.

********** END **********