Squares and Square Roots Ex 3.4 Q2

Answer :

(i) Resolving 441 into prime factors:

441 = 3 x 3 x 7 x 7

3	441
3	147
7	49
7	7
	1

Grouping the factors into pairs of equal factors:

441 = (3 x 3) x (7 x 7)

Taking one factor for each pair, we get the square root of 441:

3 x 7 = 21

(ii) Resolving 196 into prime factors:

196 = 2 x 2 x 7 x 7

2	196
2	98
7	49
7	7
	1

Grouping the factors into pairs of equal factors:

196 = (2 x 2) x (7 x 7)

Taking one factor for each pair, we get the square root of 196:

2 x 7 = 14

(iii) Resolving 529 into prime factors:

529 = 23 x 23

23	529
23	23
	1

Grouping the factors into pairs of equal factors:

529= (23 x 23)

Taking one factor for each pair, we get the square root of 529 as 23.

(iv) Resolving 1764 into prime factors:

1764 = 2 x 2 x 3 x 3 x 7 x 7

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

Grouping the factors into pairs of equal factors:

1764 = (2 x 2) x (3 x 3) x (7 x 7)

Taking one factor for each pair, we get the square root of 1764:

2 x 3 x 7 = 42

(v) Resolving 1156 into prime factors:

1156 = 2 x 2 x 17 x 17

2	1156
2	578
17	289
17	17
	1

Grouping the factors into pairs of equal factors:

1156 = (2 x 2) x (17 x 17)

Taking one factor for each pair, we get the square root of 1156:

2 x 17 = 34

(vi) Resolving 4096 into prime factors:

$4096 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

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

Grouping the factors into pairs of equal factors:

$4096 = (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (2 \times 2) \times (2 \times 2)$

Taking one factor for each pair, we get the square root of 4096:

$(2 \times 2) \times (2 \times 2) \times (2 \times 2) = 64$

(vii) Resolving 7056 into prime factors:

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

2	7056
2	3528
2	1764
2	882
3	441
3	147
7	49
7	7
	1

Grouping the factors into pairs of equal factors:

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

Taking one factor for each pair, we get the square root of 705:

$2 \times 2 \times 3 \times 7 = 84$

(viii) Resolving 8281 into prime factors:

$8281 = 7 \times 7 \times 13 \times 13$

7	8281
7	1183
13	169
13	13
	1

Grouping the factors into pairs of equal factors:

8281 = (7 x 7) x (13 x 13)

Taking one factor for each pair, we get the square root of 8281:

7 x 13 = 91

(ix) Resolving 11664 into prime factors:

11664 = 2 x 2 x 2 x 2 x 3 x 3 x 3 x 3 x 3 x 3

2	11644
2	5832
2	2916
2	1458
3	729
3	243
3	81
3	27
3	9
3	3
	1

Grouping the factors into pairs of equal factors:

11664 = (2 x 2) x (2 x 2) x (3 x 3) x (3 x 3) x (3 x 3)

Taking one factor for each pair, we get the square root of 11664:

2 x 2 x 3 x 3 x 3 = 108

(x) Resolving 47089 into prime factors:

47089 = 7 x 7 x 31 x 31

7	47089
7	6727
31	961
31	31
	1

Grouping the factors into pairs of equal factors:

47089 = (7 x 7) x (31 x 31)

Taking one factor for each pair, we get the square root of 47089:

7 x 31 = 217

(xi) Resolving 24336 into prime factors:

24336 = 2 x 2 x 2 x 2 x 3 x 3 x 13 x 13

2	24336
2	12168
2	6084
2	3042
3	1521
3	507
13	169
13	13
	1

Grouping the factors into pairs of equal factors:

24336 = (2 x 2) x (2 x 2) x (3 x 3) x (13 x 13)

Taking one factor for each pair, we get the square root of 24336:

2 x 2 x 3 x 13 = 156

(xii) Resolving 190969 into prime factors:

190969 = 19 x 19 x 23 x 23

19	190969
19	10051
23	529
23	23
	1

Grouping the factors into pairs of equal factors:

190969 = (19 x 19) x (23 x 23)

Taking one factor for each pair, we get the square root of 190969:

19 x 23 = 437

(xiii) Resolving 586756 into prime factors:

586756 = 2 x 2 x 383 x 383

2	586756
2	293378
383	146689
383	383
	1

Grouping the factors into pairs of equal factors:

586756 = (2 x 2) x (383 x 383)

Taking one factor for each pair, we get the square root of 586756:

2 x 383 = 766

(xiv) Resolving 27225 into prime factors:

27225 = 3 x 3 x 5 x 5 x 11 x 11

3	27225
3	9075
5	3025
5	605
11	121
11	11
	1

Grouping the factors into pairs of equal factors:

27225 = (3 x 3) x (5 x 5) x (11 x 11)

Taking one factor for each pair, we get the square root of 27225:

3 x 5 x 11 = 165

(xv) Resolving 3013696 into prime factors:

3013696 = 2 x 2 x 2 x 2 x 2 x 2 x 7 x 7 x 31 x 31

2	3013696
2	1506848
2	753424
2	376712
2	188356
2	94178
7	47089
7	6727
31	961
31	31
	1

Grouping the factors into pairs of equal factors:

3013696 = (2 x 2) x (2 x 2) x (2 x 2) x (7 x 7) x (31 x 31)

Taking one factor for each pair, we get the square root of 3013696:

2 x 2 x 2 x 7 x 31 = 1736

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