Squares and Square Roots Ex 3.2 Q11

Answer :

The numbers whose last digit is odd can never be the square of even numbers. So, we have to leave out 121, 225, 6561 and 4489, leaving only 256, 324, 1296, 5476 and 373758. For each number, use prime factorisation method and make pairs of equal factors.

(i) 256 = 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2

= (2 x 2) x (2 x 2) x (2 x 2) x (2 x 2)

There are no factors that are not paired. Hence, 256 is a perfect square. The square of an even number is always even. Hence, 256 is the square of an even number.

(ii) 324 = 2 x 2 x 3 x 3 x 3 x 3

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

There are no factors that are not paired. Hence, 324 is a perfect square. The square of an even number is always even. Hence, 324 is the square of an even number.

(iii)1296 = 2 x 2 x 2 x 2 x 3 x 3 x 3 x 3

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

There are no factors that are not paired. Hence, 1296 is a perfect square. The square of an even number is always even. Hence, 1296 is the square of an even number.

(iv) 5476 = 2 x 2 x 37 x 37

= (2 x 2) x (37 x 37)

There are no factors that are not paired. Hence, 5476 is a perfect square. The square of an even number is always even. Hence, 5476 is the square of an even number.

(v) 373758 = 2 x 3 x 7 x 11 x 809

Here, each factor appears only once, so grouping them into pairs of equal factors is not possible. It means that 373758 is not the square of an even number.

Hence, the numbers that are the squares of even numbers are 256, 324, 1296 and 5476.

Squares and Square Roots Ex 3.2 Q12

Answer :

If the units digit of a number is 2, 3, 7 or 8, the number cannot be a whole square.

(i) 1026 has 6 as the units digit, so it is possibly a perfect square.

(ii) 1028 has 8 as the units digit, so it cannot be a perfect square.

(iii) 1024 has 4 as the units digit, so it is possibly a perfect square.

(iv) 1022 has 2 as the units digit, so it cannot be a perfect square.

(v) 1023 has 3 as the units digit, so it cannot be a perfect square.

(vi) 1027 has 7 as the unit digit, so it cannot be a perfect square.

Hence, by examining the units digits, we can be certain that 1028, 1022, 1023 and 1027 cannot be whole squares.

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