Board –ICSE	Class – 8th	Topic – Square and Square roots

Q1. What is the square of 12 ?

Soln. The square of a number is found by multiplying the number by itself.

So,

$12 \times 12 = 144$

Therefore, the square of 12 is 144.1

Q2. Find the square of:

(i) 59

(ii) 6.3

(iii) 15

Soln. (i) Square of $59 = 59 \times 59 = 3481$

(ii) Square of $6.3 = 6.3 \times 6.3 = 39.69$

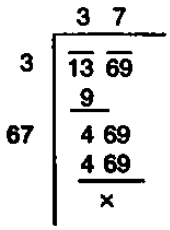
(iii) Square of $15 = 15 \times 15 = 225$

Q3. Find the square root of :

(i) 1369

(ii) 64009

Soln. (i)



1. Mark the digits of the given number in pairs starting from right to left., L.e., $\overline{13}\,\overline{69}$

   Take the first pair (i.e., 13) and find the largest whole number whose square is either equal to or less than 13 . Such a whole number is 3 . Write 3 in the quotient and also in the divisor.
2. Subtract $3 \times 3 = 9$ from 13 (the first pair). The remainder is 4 .
3. Bring down the second pair of digits (i.e., 69)

Double the quotient (i.e., 3) and write the result on the left of 469. Add the largest possible digit on the right of 6 so that the product of the two digit number obtained and this number does not exceed 469.

Such a digit, in this example is 7 , since $67 \times 7 = 469$.

Write 7 in the quotient also.

Thus, $\sqrt{1369} = 37$

(ii) Pairing the digits from right to left, we get $64009 = 6\overline{40}\,\overline{09}$

$\therefore \sqrt{64009} = 253$

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        2   5   3
    ┌──────────────
  2 | 6 40  09          [Step 1]
    | 4                 [Step 2]
    |-----
 45 | 2 40
    | 2 25              [Step 3]
    |-----
503 |   15 09           Bring down the next pair 09 and
    |   15 09           proceed further as Step 3.
    |-----
    |    ×
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Bring down the next pair 09 and proceed further as Step 3.

Q4. Find the least number by which 180 should be multiplied to make it a perfect square.

Soln.

$180 = 2 \times 2 \times 3 \times 3 \times 5$
$= (2 \times 2) \times (3 \times 3) \times 5$

Since, the factor 5 is not in pair.

$\therefore$ The given number should be multiplied by 5 .[$180 \times 5 = 2 \times 2 \times 3 \times 3 \times 5 \times 5$ and $\sqrt{180}$

Q5. By what least number must 48 be divided to make it a perfect square ?

Soln. $48 = 2 \times 2 \times 2 \times 2 \times 3 = (2 \times 2) \times (2 \times 2) \times 3$

Since, the factor 3 is not in pair.

$\therefore$ The given number must be divided by 3 .

$$\frac{48}{3} = \frac{2 \times 2 \times 2 \times 2 \times 3}{3} = 2 \times 2 \times 2 \times 2 \text{ and } \sqrt{\frac{48}{3}} = 2 \times 2 = 4$$

Q6. 484 students are to stand in such a way that there are as many students in each row as there are number of rows. Find the number of students in each row.

Soln. Since, the number of rows = No. of students in each row

And, no. of rows × no. of students in each row = Total no. of students = 484

∴ No. of students in each row $= \sqrt{484}$

$= \sqrt{2 \times 2 \times 11 \times 11} = 2 \times 11 = 22$