**1.1 – Square Roots of Perfect Squares**

A **perfect square** is a number that can be expressed as a product of two equal numbers. The whole number 9 is a perfect square since 9 = 3 × 3. Pictorally, we can arrange 9 objects in a square array:

Ex. 1: Write four whole number perfect squares between 1 and 100.

Fractions can be perfect squares as well. Be sure to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the fraction before deciding whether it is or not.

Ex. 2: Is each fraction a perfect square?

1. $\frac{16}{49}$ (b) $\frac{25}{12}$ (c) $\frac{8}{18}$

A decimal is a perfect square if you can write it as a fraction that is a perfect square. Alternatively, you can use a calculator and find its square root – the square root will be a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ decimal if the original decimal is a perfect square.

Ex. 3: Is each decimal a perfect square?

1. 0.81 (b) 0.025 (c) 2.25

Recall that the **square root** of a number is the number which, when multiplied by itself, results in the given number. It also represents the side length of a square with the given area.

Ex. 4: Find the square root of each perfect square without using a calculator.

1. $\sqrt{\frac{144}{49}}$ (b) $\sqrt{0.36}$ (c) $\sqrt{0.0049}$ (d) $\sqrt{1.21}$

Ex. 5: Find the number whose square root is:

1. $\frac{3}{8}$ (b) 1.5