NAME_____

Module 7 **Ratio, Proportion, and Percent**
Lesson 1 **Square Roots**

Lesson Notes 7.1

Lesson Objectives

- Use models to differentiate between perfect squares up to 100 and other numbers.
- Recognize and identify perfect squares and their square roots.
- Represent and solve problem situations that can be modeled by and solved by using the concept of square roots for perfect squares.

Subtopic 1 Number Models

Square numbers can be modeled with an array that forms a square.

1 Is 75 a square number?

No; 75 cannot be modeled by a rectangular array that forms a square.

2 Is 49 a square number?

YES

1	2	3	4	5	6	7
2						
3						
4						
5						
6						
7						

3 Is 100 a square number?

YES

1	2	3	4	5	6	7	8	9	10
2									
3									
4									
5									
6									
7									
8									
9									
10									

4 Is 60 a square number?

No; 60 cannot be modeled by a rectangular array that forms a square.

Subtopic 2 Perfect Squares and Their Square Roots

The product of an integer and **itself** is a perfect square.
A square number can only **end** with digits 0, 1, 4, 5, 6, or 9.
The square root of a number is an integer that when **multiplied** by itself equals the given number.
The symbol $\sqrt{\ }$ indicates a square **root**.

Evaluate.

5 $\sqrt{121}$

$\sqrt{121} = 11$

6 $\sqrt{400}$

$\sqrt{400} = 20$

7 $9^2 + \sqrt{16}$

$9^2 + \sqrt{16}$
$81 + \sqrt{16}$
$81 + 4$
85

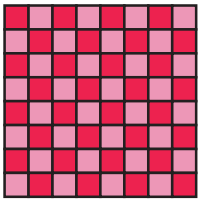
8 $8^2 + \sqrt{36}$

$8^2 + \sqrt{36}$
$64 + \sqrt{36}$
$64 + 6$
70

Subtopic 3 Problem Solving Using Squares and Square Roots

To find the area of a square, square the length of a **side**. $A = s^2$
To find the **length** of a side of a square, take the square root of the area. $s = \sqrt{A}$

9 A checkerboard has 32 red squares and 32 black squares. How many squares long is each side of the checkerboard?



$A = 64$ sq units
$s = \sqrt{64}$
$s = 8$

Each side has eight squares.