

Ch. 1.2: Estimating Square Roots**Warm-up:**

- ❖ How is the side length of a square related to its area?

1. Perfect Squares

- A _____ of a square multiplied by itself equals the _____ of a square.
- The _____ of a perfect square is always a _____.

2. Definition & Notation

- When you multiply a number by itself, you _____ the number.
- *We can write this in MANY different ways!*

WORDS	MATHEMATICAL NOTATION
Four _____ four is sixteen.	_____ × _____ = _____
Four _____ is sixteen.	_____ = _____
The _____ of 4 is _____.	

3. Estimating Square Roots

- ❖ The square roots of non-perfect square numbers are not _____.
- ❖ We can _____ the square root of a non-perfect square number.
- ❖ When we estimate, we end up with a _____ in our answer rather than a whole number.
- ❖ Square roots of non-perfect squares are called **irrational numbers**. For example, $\sqrt{2} =$

❖ **Irrational numbers** are numbers that are non-repeating, non-terminating decimals. They cannot be written as a _____.

❖ The symbol _____ means **less than** and the symbol _____ means **greater than**. We can use these symbols to help show how we estimate the square root of a number.

4. Estimating

- Figure out what perfect squares are on either side of the number.
- Take the square root of all three.
- Write a decimal answer that it is closer to.

a) Estimate square root 18

b) Estimate square root 32

Estimated fraction: _____

Estimated fraction: _____

Estimated decimal: _____

Estimated decimal: _____

1) Which two consecutive numbers is each square root between? How do you know?

a) $\sqrt{21}$

b) $\sqrt{70}$

2) Estimate each of the following roots to one decimal place. How do you know?

a) $\sqrt{84}$

b) $\sqrt{105}$

5. Big Ideas

Describe in words how you would estimate the square root of a number that is NOT a perfect square.