

## **Approximating Square Roots of Numbers you don't know.**

- 1. Identify perfect squares above and below that number and take their square roots**
- 2. The square root of that number is between the square root of those 2 perfect squares**
- 3. Take the midpoint of those 2 perfect squares and square that number**
- 4. If that number is not close enough, take the midpoint of that number and the larger perfect square.**

## Approximate the $\sqrt{7}$

The  $\sqrt{7}$  is between the  $\sqrt{4}$  and the  $\sqrt{9}$

$$\sqrt{4} = 2$$

$\sqrt{7} \rightarrow \therefore$  is between 2 and 3, try 2.5

$$\sqrt{9} = 3$$

$2.5 \times 2.5 = 6.25$ , that less than 7, try about halfway between 2.5 and 3; 2.7

$2.7 \times 2.7 = 7.29$  so the answer is approximately a little less than 2.7

## Approximate the $\sqrt{3}$

The  $\sqrt{3}$  is between the  $\sqrt{1}$  and the  $\sqrt{4}$

$$\sqrt{1} = 1$$

$\sqrt{3} = \rightarrow$  is between 1 and 2, try 1.5

$$\sqrt{4} = 2$$

$1.5 \times 1.5 = 2.25$ , that's less than 3, try about halfway between 1.5 and 2, try 1.7

$1.7 \times 1.7 = 2.89$ , so the answer is approximately a little more than 1.7

## Approximate the $\sqrt{52}$

The  $\sqrt{52}$  is between the  $\sqrt{49}$  and the  $\sqrt{64}$

$$\sqrt{49} = 7$$

$$\sqrt{52} = \rightarrow \text{is between 7 and 8, try 7.5}$$

$$\sqrt{64} = 8$$

$7.5 \times 7.5 = 56.25$ , that's greater than 52, try halfway between 7.5 and 7, try 7.2

$7.2 \times 7.2 = 51.89$ , so the answer is a little more than 7.2