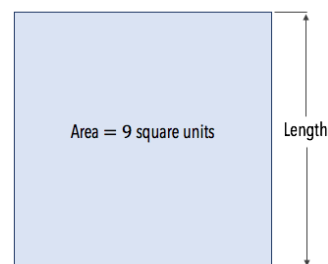# Estimating Square Roots

The square root of a given number is... *a number which, when multiplied by itself, results in the given number.*

- How would I use this definition to explain the square root of 100?

$$\sqrt{100}$$

The square root of a number can also be defined as... *the side length of a square with area that is equal to that number.*

- How would I use the side length and area of this square to explain $\sqrt{9}$?

Area = 9 square units   Length

- How would I explain and demonstrate determining the square root of 4?

$$\sqrt{4}$$

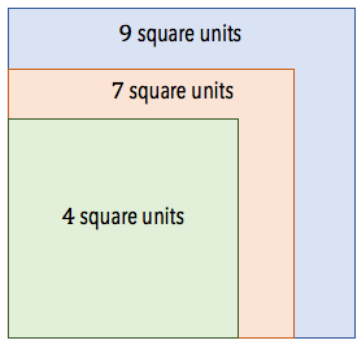- How would I explain the problem I encounter when trying to determine the square root of 7?

$$\sqrt{7}$$

- Why can some numbers, such as 4 and 9, be described as *perfect squares?*

- How would I explain a *perfect square?*

- How would I use the multiplication chart to explain and illustrate *perfect squares?*

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

- How does the diagram allow me to estimate the square root of 7?

9 square units

7 square units

4 square units

- How would I use my knowledge of perfect squares to estimate $\sqrt{38}$?

$$\sqrt{38}$$

- How would I explain my thinking for estimating the square root of 96?

$$\sqrt{96}$$

Which statements do I feel confident explaining and demonstrating?
Which statements do I <u>not</u> feel confident explaining and demonstrating?

✓ I can <u>explain</u> the square root of a number using multiplication

✓ I can <u>explain</u> the square root of a number using the side length and area of a square

✓ I can <u>explain</u> when a number can be described as a perfect square

✓ I can <u>illustrate</u> examples of perfect squares using a multiplication chart

✓ I can <u>explain</u> and <u>demonstrate</u> how I use my knowledge of perfect squares to estimate the square root of a number