1.2 squares and square roots

1.2 Squares and Square Roots

There are two ways to determine if a number is a square number.

- If you can write a division sentence for a number so that the <u>quotient</u> is *equal* to the <u>divisor</u>, the number is a **square number**.

  ex. $9 \div 3 = \underline{3}$

  dividend   divisor   quotient

- You can also use <u>factoring</u>.
  A factor is a number that divides <u>exactly</u> into another number.
  Factors of a number occur in <u>pairs</u>
  A number is a square number if it has an (odd) number of factors.

  ex. Is 36 a square number?

  1×36 Write the factors in pairs and then
  $2 \times \underline{18}$ when you are sure you have them all,
  $3 \times \underline{12}$ write them in ascending order.
  $4 \times \underline{9}$ ← repeated factor   small → big
  $6 \times \underline{6}$

The factors of 36 are: <u>1, 2, 3, 4, 6, 9, 12, 18, 36</u>   "perfect square"

There are <u>9</u> factors in total. This is an **odd** number, so 36 is a <u>square</u> number.

In the ordered list of factors, notice that 6 is the middle number, and that $6 \times 6 = 36$.

6 is called the <u>square root</u> of 36.

We write the square root of 36 as $\sqrt{36}$.
Squaring and taking the square root are called *inverse operations*.

So, $\sqrt{36} = 6$ because <u>$6^2 = 6 \times 6$</u> = <u>36</u>
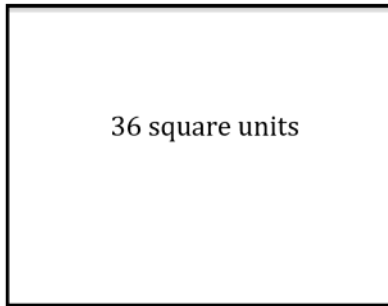
This means $\sqrt{6^2} = \underline{6}$

> **Hint!**
> To find the square of a number;
> multiply the number by itself.

You can find a square root using a diagram of a square.

The ___area___ of the square is the square number.

The **side length** of the square is the ___square root___ of the area.

$\sqrt{36} =$ ___6___ units

Remember!
$s = \sqrt{A}$

36 square units

$\sqrt{36} =$ ___6___ units

p. 15 # 6-7, 10-12bc, 13, 14, 15, 19, 22