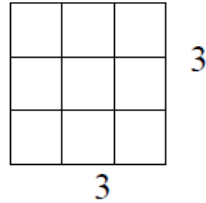# U2:L2 — Perfect Squares

When a base is raised to the second power, we say it is <u>squared</u>.

$$3^2 = 3 \times 3 = 9$$



The length and width of the square are **the same** (in this case they are 3).

## How many can you remember?

| | | | |
|---|---|---|---|
| $1^2$ | $2^2$ | $3^2$ | $4^2$ |
| $5^2$ | $6^2$ | $7^2$ | $8^2$ |
| $9^2$ | $10^2$ | $11^2$ | $12^2$ |
| $13^2$ | $14^2$ | $15$ | $16^2$ |
| $17^2$ | $18^2$ | $19^2$ | $20^2$ |

Just like the opposites we already know...

- adding & subtracting
- multiplying & dividing

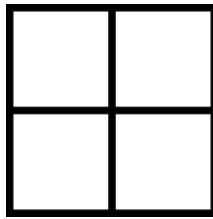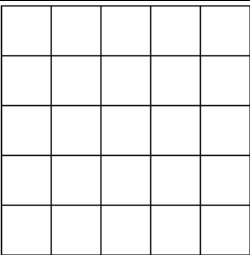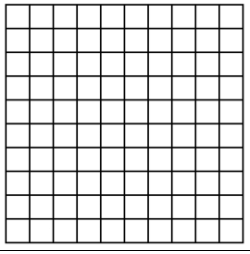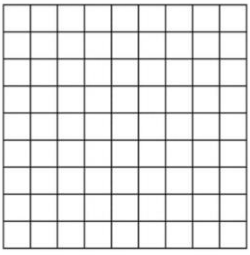Squares also have an opposite... <u>SQUARE ROOTS.</u>
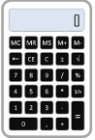
Example:

$$2^2 = 2\times2 = 4$$

$$\sqrt{4} = 2$$

This is like saying, the SQUARE is made up of 4 units, what is the length of its sides?

Find the square root of the following numbers...

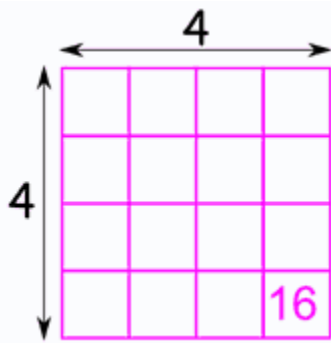| | | |
|---|---|---|
| $\sqrt{25}$ | | |
| $\sqrt{100}$ | | |
| $\sqrt{81}$ | | |

You can also find square roots in your calculator. Try these next problems with help from the calculator:

| $\sqrt{169}$ | $\sqrt{576}$ | $\sqrt{484}$ | $\sqrt{169}$ |
|---|---|---|---|
| $\sqrt{400}$ | $\sqrt{900}$ | $\sqrt{2500}$ | $\sqrt{77}$ |

Are all the answers **whole** numbers?

If you take the square root of a number and it gives you an answer with a decimal, this number is not a **perfect square.**



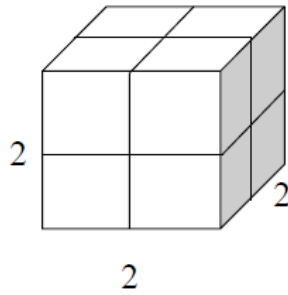**FOR EXAMPLE**, *try and draw a perfect square of 15…*

Name 5 numbers between $1 - 50$ that are NOT perfect squares:

|  |  |  |  |  |
|---|---|---|---|---|
|  |  |  |  |  |

# Perfect Cubes

When a base is raised to the power of three, we say it is "cubed".

$$2^3 = 2 \; x \; 2 \; x \; 2 = 8$$



The length, width and height of the cube are all equal (in this case, they are all 2).

## How many can you find?

| $1^3$ | $2^3$ | $3^3$ | $4^3$ |
|-------|-------|-------|-------|
| $5^3$ | $6^3$ | $7^3$ | $8^3$ |
| $9^3$ | $10^3$ | $11^3$ | $12^3$ |