1. -200

2. +525 (or 525)

3. -8

4. -17

5. +1,250 (or 1,250)

6.

7. 100

8.
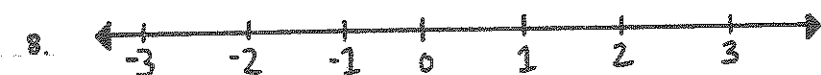
9. 79

10. -47

☐ Chapter 3 ☐

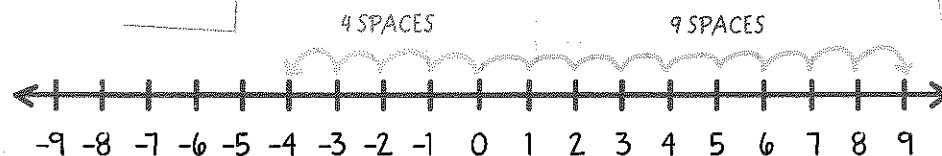# ABSOLUTE VALUE

△ ◇ ○ △ ☐ ○ △ ☐ △ ◇ ○ △ ☐

The **ABSOLUTE VALUE** of a number is its distance from zero (on the number line). Thus, the absolute value is always positive. We indicate absolute value by putting two bars around the number.

EXAMPLE: $|-4|$

$|-4|$ is read "the absolute value of -4." Because -4 is 4 spaces from zero on the number line, the absolute value is 4.

EXAMPLE: $|9|$

$|9|$ is read "the absolute value of 9." Because 9 is 9 spaces from zero on the number line, the absolute value is 9.

Absolute value bars are also grouping symbols, so you must complete the operation inside them first, then take the absolute value.

EXAMPLE: $|5-3| = |2| = 2$

Sometimes, there are positive or negative symbols outside an absolute value bar. Think: inside, then outside—first take the absolute value of what is inside the bars, then apply the outside symbol.

EXAMPLE: $-|6| = -6$

(The absolute value of 6 is 6. Then we apply the negative symbol on the outside of the absolute value bars to get the answer -6.)

NOW, THIS CHANGES EVERYTHING.
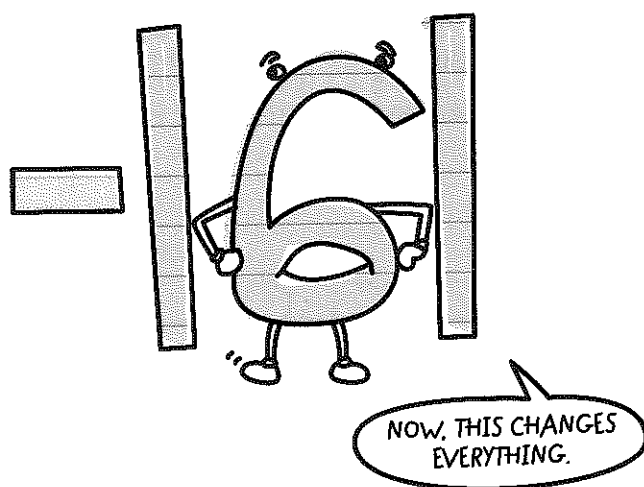
EXAMPLE: $-|-16| = -16$

(The absolute value of -16 is 16. Then we apply the negative symbol on the outside of the absolute value bars to get the answer -16.)

A number in front of the absolute value bars means multiplication (like when we use parentheses).

EXAMPLE: $2|-4|$ (The absolute value of -4 is 4.)

$2 \cdot 4 = 8$ (Once you have the value inside the absolute value bars, you can solve normally.)

Multiplication can be shown in a few different ways—not just with **x**. All of these symbols mean multiply:

$$2 \times 4 = 8$$
$$2 \cdot 4 = 8$$
$$(2)(4) = 8$$
$$2(4) = 8$$

If you use **VARIABLES**, you can put variables next to each other or put a number next to a variable to indicate multiplication, like so:

$$ab = 8$$
$$3x = 15$$

VARIABLE: a letter or symbol used in place of a quantity we don't know yet