Using Algebra Tiles to teach integer operations

Ruth Sanders

Navarro Middle School

Noyce Fellow

Definition: Integers are whole numbers plus their opposites.

Number line

-3   -2   -1   0   1   2

Algebra Tiles

-1	-1	-1		+1	+1
-1	-1				+1
-1					
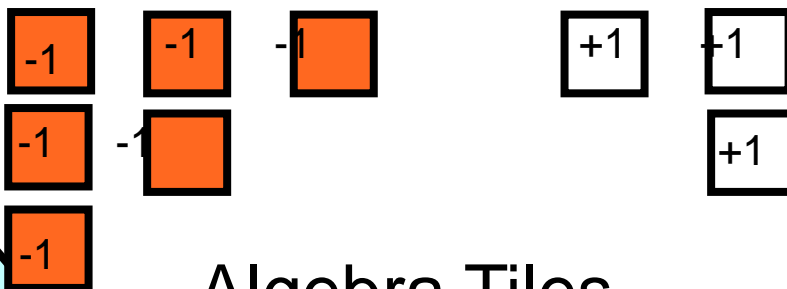
What is an integer?

Examples:

0   -7   +4   -22   + 22

Non-examples:

2/3   0.75   -1/2   -0.25

| -1 | (+1) | = 0 (This is a zero pair)

You may see it written like this..

-1 + (+ 1) = 0   (A negative one plus a positive one equals zero)

-1 + 1 = 0   (A negative one plus one equals zero)

-3 + 3 = 0   (A negative three plus three equals zero)

Zero pairs - When you are adding integers and you have the same number of positive integers as you have negative integers, they will equal to zero.

When subtracting integers, think about take away .

- 5 - 4   Read as (A negative five take away a positive 4.)

| -1 |

| -1 |

| -1 |

| -1 | Can you take away a positive four?

| -1 |

(Now add zero pairs until you have a positive four.) This will not change the value of the expression.

| -1 | +1 | -1 | +1 | -1 | +1 | -1 | +1 | | |

Now take away a positive four.

| -1 | -1 |

| -1 |

| -1 | -1 |

| -1 | +1 | -1 | +1 | -1 | +1 | -1 | +1 | | |

Count what is left, this is your answer.

The answer is a -9. Can you come up with a pattern when subtracting integers with different signs?

<u>Practice:</u>
<u>1</u>. -3 + (-4) =
2. -3 - 4 =
3. 3 + 4 =
4. - 4 + (-4) =
5. - 4 - 4 =

What do you notice about the answers for numbers one and two?

What do you notice about the answers for numbers four and five?

Follow the information given in the flier for multiplying and dividing integers.

Practice:

1. $\dfrac{-12}{4}$ (- 12 divided by 4) =

2. $3(-4) =$

3. $-2(-3) =$