

Introduction To Integers and Absolute Value

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Number Systems

0, 1, 2, 3, 4, 5...

WHOLE NUMBERS

Whole Numbers start with zero.

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Number Systems

1, 2, 3, 4...

NATURAL NUMBERS

Also known as

COUNTING NUMBERS

Natural Numbers start with one.



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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

INTEGERS

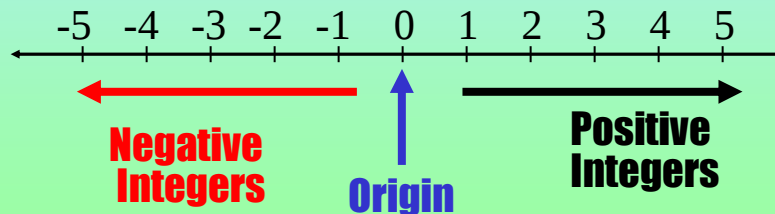
Integers include positive whole numbers, negative whole numbers, and zero.

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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

INTEGERS



The integer **zero** is neither positive or negative.

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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

INTEGERS

Hint: If you don't see a negative or positive sign in front of a number it is always positive.

+9

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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

INTEGERS

Hint: If an integer is negative, you will always see the negative sign.

- 5

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Number Systems

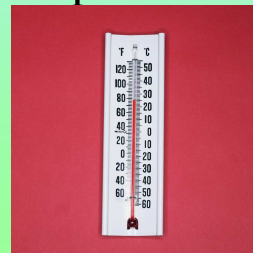
...-3, -2, -1, 0, 1, 2, 3...

INTEGERS

Integers are used to measure temperature.

Zero degrees Celsius is a freezing point. So negative integers represent really cold weather or very cold wind chills!

78° above zero +78



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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

INTEGERS

Integers are used to measure sea level.

When you step into the ocean you are stepping below sea level.

30 above zero +30

50 below zero -50



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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

INTEGERS

Integers are used in the game of football.

A gain of 10 yards would be +10

A penalty of 15 yards would be -15



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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

INTEGERS

Integers are used with money & banking.

A deposit of \$25 would be +25

A withdrawal of \$40 would be -40

A profit of \$89 would be +89



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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

INTEGERS

Integers are used with money & banking.

Let's say your parents bought a car but had to get a loan from the bank for \$5,000. When counting all their money they add in -\$5000 to show they still owe the bank.



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Number Systems

...-3, -2, -1, 0, 1, 2, 3...

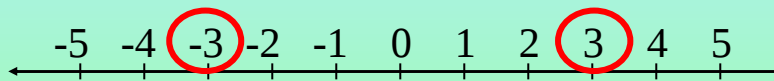
INTEGERS

Integers include whole numbers and their **OPPOSITES**.

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Number Systems

OPPOSITE NUMBERS are numbers that are the **same distance from zero** in the opposite direction



-3 and 3 are **OPPOSITES**

The **OPPOSITE** of 0 is 0. You can't have a negative zero.

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Number Systems

OPPOSITE NUMBERS are numbers that are the **same distance from zero** in the opposite direction

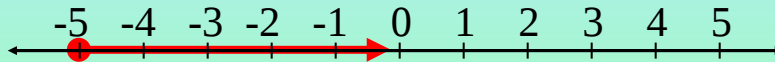
Name the **OPPOSITES**.

<u>INTEGER</u>	<u>OPPOSITE</u>
8	- 8
-15	+15
29	- 29
0	0

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Number Systems

ABSOLUTE VALUE of an integer is the distance a **number is from zero** on a number line.



The absolute value of -5 is **5 spaces from zero**.

Two vertical bars

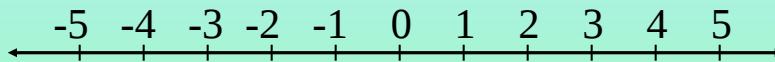
around the number
means find the
absolute value.

$$|-5| = 5$$

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Number Systems

ABSOLUTE VALUE of an integer is the distance a **number is from zero** on a number line.



Simplify.

$$1) |2| = 2$$

$$3) |10| = 10$$

$$5) |-4| = 4$$

$$2) |-7| = 7$$

$$4) |-18| = 18$$

$$6) |0| = 0$$

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Number Systems

To **compare** number systems sometimes we use **inequality symbols** rather than an equal sign.

> Means larger or greater than

< Means smaller or less than

= Means equal to

Large #

Small #



The hungry alligator eats the larger number.

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Number Systems

To **compare** number systems sometimes we use **inequality symbols** rather than an equal sign.

> Means larger or **greater than**

< Means smaller or **less than**

= Means equal to

$$5 > 4$$

5 is greater than 4

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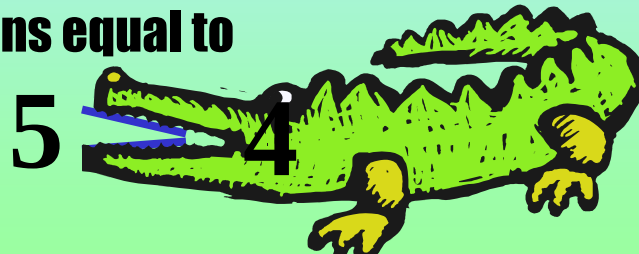
Number Systems

To **compare** number systems sometimes we use **inequality symbols** rather than an equal sign.

> Means larger or **greater than**

< Means smaller or **less than**

= Means equal to



If this method confuses you...try this!

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Number Systems

$<$ less than

$>$ greater than

 Left hand
= Less than



If this method confuses you...try this!

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Number Systems

1) $\geq$ "is greater than or equal to"

2) $<$ "is less than"

3) $=$ "is equal to"



4) $\leq$ "is less than or equal to"

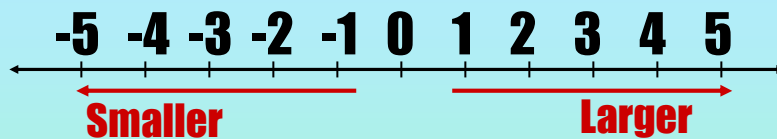
5) $>$ "is greater than"

6) $\approx$ "is approximately equal to"

7) $\neq$ "is not equal to"

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Number Systems



USE $<$, $>$, OR $=$ TO COMPARE.

1) $-3 < 4$

5) $4 > -10$

2) $0 > -1$

6) $-2 > -5$

3) $-65 < -45$

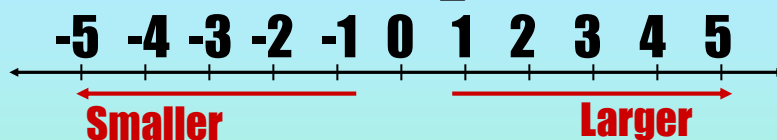
7) $-8 < -4$

4) $15 > -7$

8) $-20 > -50$

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Number Systems



USE $<$, $>$, OR $=$ TO COMPARE.

1) $|-3| = 3$

4) $|5| < |-8|$

2) $-9 < |9|$

5) $-|-3| < -1$

3) $-5 < -3$

6) $-6 = -|-6|$

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Number Systems

Aren't integers interesting?

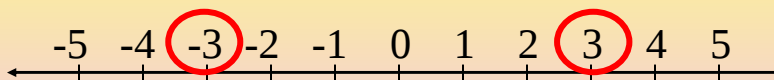
Take out your study guide!



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#1 Opposites

OPPOSITE NUMBERS are numbers that are the **same distance from zero** in the opposite direction



-3 and 3 are **OPPOSITES**

The **OPPOSITE** of 0 is 0. You can't have a negative zero.



< Less than > Greater than

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#2 Absolute Value

ABSOLUTE VALUE of an integer is the distance a **number is from zero** on a number line.



The absolute value of -5 is **5 spaces from zero**.

Two vertical bars

around the number

means find the

absolute value.

$$1) |2| = 2$$

$$3) |0| = 0$$

$$2) |-7| = 7$$

$$4) |-18| = 18$$

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