



## 1.5 Addition of Real Numbers

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### Need To Know



- Two models for addition
- Rules to add signed numbers
- Simplifying Expressions
- Translation



## Two Models for Addition

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### About Addition

- The financial model for adding signed numbers.
- The vector model for adding signed number.
- Why do we have to look at two models?



## Two Models for Addition

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### Why do we have to look at two models?

- Developing intelligence requires the ability to see things from more than one perspective.
- These models help us generalize the rules of adding.
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## Adding Signed Numbers

### Financial Model

- \_\_\_\_\_ **numbers** correspond to deposits or credits to your account.
- \_\_\_\_\_ **numbers** correspond to withdrawals or debits from your account.

Deposit + Deposit =

Debt + Debt =

Deposit + Debt =

Debt + Deposit =

## Adding Signed Numbers

### Vector Model

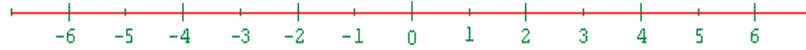
- **Vectors** are graphs of arrows with length and direction.
- **Positive numbers** are arrows to the right.
- **Negative numbers** are arrows to the left.



Examples:

- 1)  $2 + 3$       2)  $(-2) + (-3)$       3)  $(-2) + 3$       4)  $2 + (-3)$

## Adding Signed Numbers-Rules



### Rules for Adding

- 1) If the signs are the **same**, add values and keep the sign.
- 2) If the signs are the **opposite**, subtract values and keep the sign of larger the value.

### ■ Examples

- 1)  $2 + 5$
- 2)  $(-3) + (-1)$
- 3)  $(-5) + 2$
- 4)  $4 + (-6)$

## Like Terms

### Definition

- \_\_\_\_\_ are parts of an algebraic expression separated by + or -. They may be numbers and/or variables often combined with multiplication or division.
- \_\_\_\_\_ is the number factor of a term.
- \_\_\_\_\_ are terms with the exact same variable factors.



## Add & Subtract Like Terms

How can the Distributive Law help us make this expression simplify:

$$4x + 9x$$

Adding and Subtracting Like Terms is as simple as adding or subtracting coefficients.

Simplify each:

$$-11b + 5b$$

$$2x + (-5y) + (-5x) + (-9y)$$

$$8 + a + (-5.5a) + 7$$



## Translation and Practice

Write the expression in mathematics and simplify.

The sum of  $-5$  and  $-11$  increased by  $4$ .

Simplify the following expression.

$$[18 + (-5)] + [9 + (-10)]$$