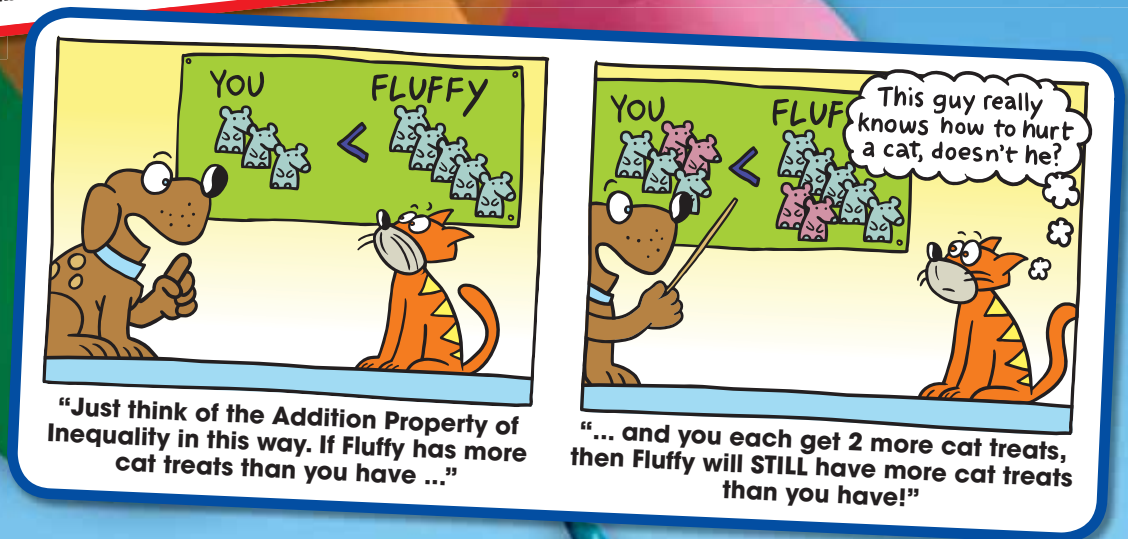
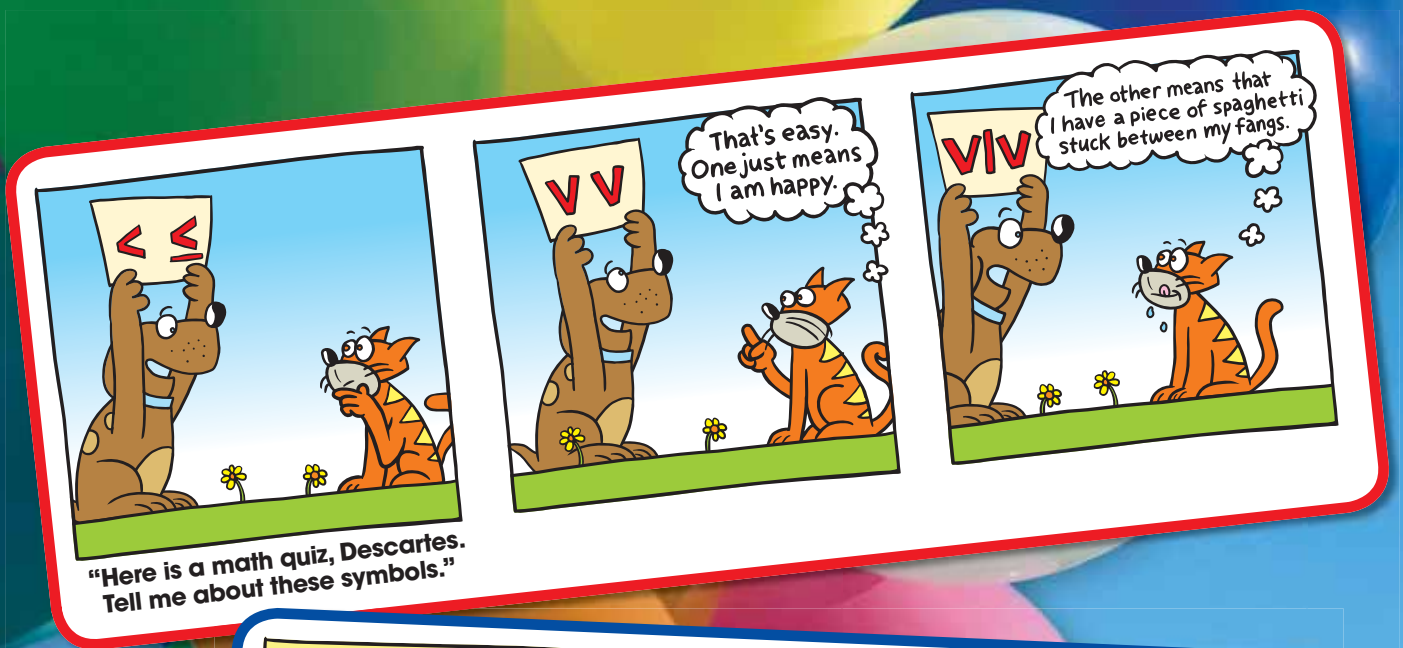


8 Linear Inequalities

- 8.1 Writing and Graphing Inequalities
- 8.2 Solving Inequalities Using Addition or Subtraction
- 8.3 Solving Inequalities Using Multiplication or Division
- 8.4 Solving Multi-Step Inequalities



What You Learned Before

● Comparing Real Numbers

Complete the number sentence with $<$, $>$, or $=$.

Example 1 $\frac{1}{3}$ 0.3

$$\frac{1}{3} = \frac{10}{30}, \quad 0.3 = \frac{3}{10} = \frac{9}{30}$$

Because $\frac{10}{30}$ is greater than $\frac{9}{30}$,

$\frac{1}{3}$ is greater than 0.3 .

∴ So, $\frac{1}{3} > 0.3$.

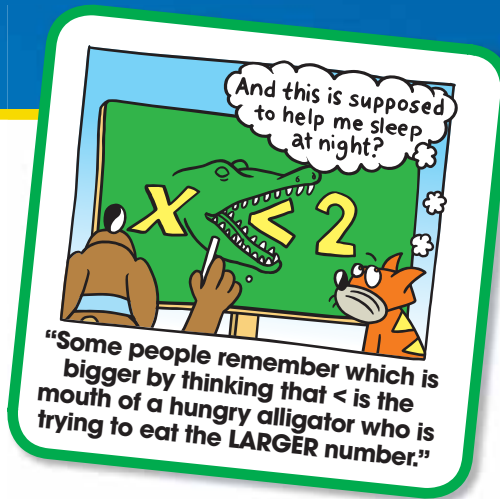
Example 2 $\sqrt{6}$ 6

Use a calculator to estimate $\sqrt{6}$.

$$\sqrt{6} \approx 2.45$$

Because 2.45 is less than 6 , $\sqrt{6}$ is less than 6 .

∴ So, $\sqrt{6} < 6$.



Try It Yourself

Complete the number sentence with $<$, $>$, or $=$.

1. $\frac{1}{4}$ 0.25

2. 0.1 $\frac{1}{9}$

3. π $\sqrt{10}$

● Graphing Inequalities

Example 3 Graph $x \geq 3$.

Use a closed circle because 3 is a solution.

Shade the number line on the side where you found the solution.



Test a number to the left of 3 . $x = 0$ is *not* a solution.

Test a number to the right of 3 . $x = 6$ is a solution.

Example 4 Graph $x < -2$.

Shade the number line on the side where you found the solution.

Use an open circle because -2 is *not* a solution.



Test a number to the left of -2 . $x = -4$ is a solution.

Test a number to the right of -2 . $x = 0$ is *not* a solution.

Try It Yourself

Graph the inequality.

4. $x \geq 0$

5. $x < 6$

6. $x \leq -4$

7. $x > -10$