* 8th grade standard

Algebra 1 5.1

Solve linear inequalities by using addition*

Solve linear inequalities by using subtraction*

inequality

set builder notation $\{x \mid x \geq 3\}$ $x < 6$

addition property

subtraction property

whiteboards

triangle puzzles (?)

set-builder notation.

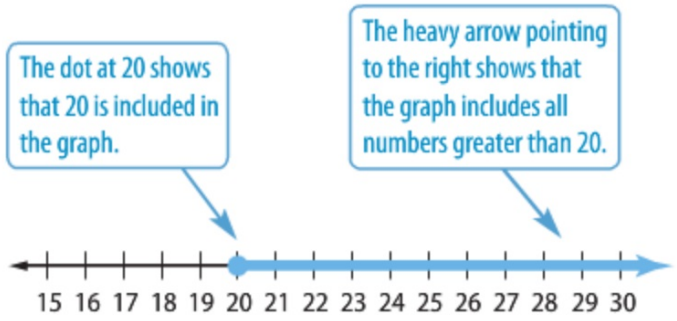
ReadingMath

set-builder notation

$\{x \mid x \geq 20\}$ is read *the set of all numbers x such that x is greater than or equal to 20.*

$$\{x \mid x \geq 20\}.$$

x=
x>



What are the 3 options?

$R = K$

$R < K$

$R > K$

= the same as equal to

ConceptSummary Phrases for Inequalities

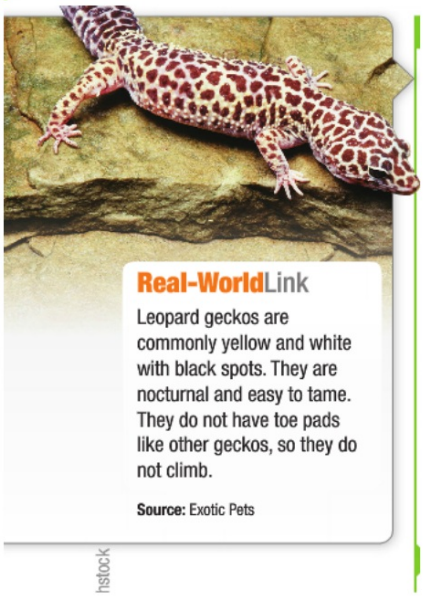
$<$	$>$	$\leq$	$\geq$
less than fewer than	greater than more than	at most, no more than, less than or equal to	at least, no less than, greater than or equal to

$R < K$ $R > K$ $R \leq k$ $R \geq K$

Real-World Example 4 Use an Inequality to Solve a Problem

PT

PETS Felipe needs for the temperature of his leopard gecko's basking spot to be at least 82°F. Currently the basking spot is 62.5°F. How much warmer does the basking spot need to be?



Real-World Link

Leopard geckos are commonly yellow and white with black spots. They are nocturnal and easy to tame. They do not have toe pads like other geckos, so they do not climb.

Source: Exotic Pets

hstock

82 or ↑

now 62.5

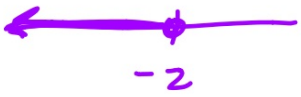
$62.5 + ? \geq 82$

$62.5 + x \geq 82$

$x \geq 19.5$

Whiteboards





Solve each inequality. Then graph the solution set on a number line.

1. $x - 3 > 7$ $x > 10$

+3 +3

2. $5 \geq 7 + y$

3. $g + 6 < 2$

4. $11 \leq p + 4$

5. $10 > n - 1$

6. $k + 24 > -5$

7. $8r + 6 < 9r$

8. $8n \geq 7n - 3$

+7n +7n

$n \geq -3$

$6 < n$

$n > 6$



N = a number < > =

Define a variable, write an inequality, and solve each problem. Check your solution.

9. Twice a number increased by 4 is at least 10 more than the number.

10. Three more than a number is less than twice the number.

6 + 3 12

9 < 12

3 < n n > 3

if 6

N ≥ 6

if 10 2·10 + 4 10 + 10

24 20

24. $2a \leq -4 + a$

25. $z + 4 \geq 2z$

26. $w - 5 \leq 2w$

27. $3y + 6 \leq 2y$

28. $6x + 5 \geq 7x$

29. $-9 + 2a < 3a$