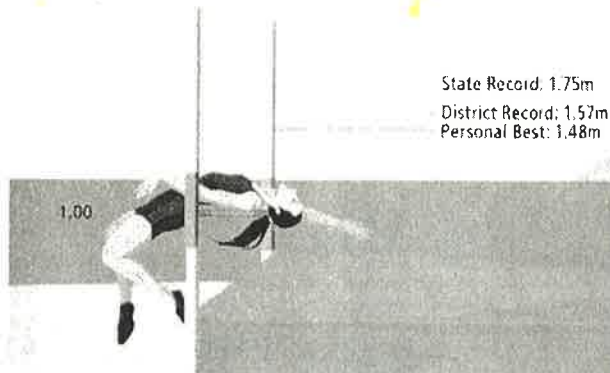# Topic 1.5 – Solving Inequalities in One Variable

Model & Discuss

Skyler competes in the high jump event at her school. She hopes to tie or break some records at the next meet.

A. Write and solve an equation to find x, the number of meters Skyler must add to her personal best to tie the district record.

State Record: 1.75m
District Record: 1.57m
Personal Best: 1.48m

1.00

B. Rewrite your equation as an inequality to represent the situation where Skyler breaks the district record. How is the value of x in the inequality related to the value of x in the equation?

C. How many meters does Skyler need to add to her personal best to break the state record?

$\leq$ $\geq$ ● $=$

$<$ $>$ $\circ$ $\neq$

EXAMPLE 1 Solve Inequalities

Solve $-4(3x-1)+6x \geq 16$ and graph the solution.

$-4(3x-1)+6x \geq 16$

$-12x+4+6x \geq 16$

$-6x+4 \geq 16$

$-6x+4 \geq 16$
$\quad -4 \quad -4$
$-6x \geq 12$
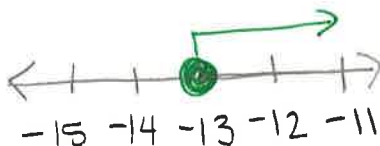$\overline{-6} \quad \overline{-6}$
$\boxed{x \leq -2}$

When divide by negative flip the sign

EXAMPLE 2 Solve an Inequality With Variables on Both Sides

Solve $3.5x+19 \geq 1.5x-7$. Then graph the solution.

$\quad -1.5x \quad -1.5x$

$2x+19 \geq -7$

$\quad -19 \quad -19$

$\frac{2x}{2} \geq \frac{-26}{2}$

$\boxed{x \geq -13}$

$-15 \; -14 \; -13 \; -12 \; -11$

EXAMPLE 3 Understand Inequalities With Infinitely Many or No Solutions

Solve $\qquad -3(2x-5) > -6x+9$

$-6x+15 > -6x+9$

$+6x \qquad +6x$

$15 > 9$

Infinite Solutions Since 15 is greater than 9

No Solution
$15 < 9$
False

7

EXAMPLE 4 Use Inequalities to Solve Problems
Derek wants to order some roses online. For what number of roses is it less expensive to order from Florist A? From Florist B?

Florist A
$$4.75x + 40 <$$
$$-5.15x$$

Florist B
$$25 + 5.15x$$
$$-5.15x$$

Florist A:
$4.75 per blue rose
plus $40
delivery charge.

Florist B:
$5.15 per red rose
plus $25
delivery charge.

$$-0.4x + 40 < 25$$
$$-40 \quad -40$$

$$\frac{-0.4x}{-0.4} < \frac{-15}{-0.4}$$ Divided by negative, so flip sign

$$x > 37.5$$

Florist A is less expensive when you buy 38 or more roses.

Florist B is less expensive when you buy 37 or less roses.

HW Pg 34 #15 - 43 odd, 47
Due Thursday

8