

Section 3-2
Solving Inequalities Using
Addition and Subtraction

In a US Presidential election race, a candidate needs 270 out of 538 total electoral votes to win. If a candidate has already gotten 238 outside of the southeastern US, what is the least number of states that he could win and still become president? What are they? Justify.


Electoral Votes

We will solve inequalities using properties of inequalities.

Addition Property of Inequality

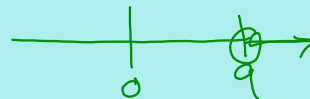
$a > b$, then $a + c > b + c$ $10 > 5 + 2$
 $a < b$, then $a + c < b + c$ $12 > 7$

$x - 7 \leq -9$
 $+7 \quad +7$
 $x \leq -2$



Solve and graph:

$-2 < m - 11$
 $+11 \quad +11$
 $9 < m$



The subtraction property of inequality works the same way.

$$a > b, \text{ then } a - c > b - c$$

$$\begin{array}{r} f + 10 \leq 13 \\ -10 \quad -10 \\ \hline f \leq 3 \end{array}$$

Section 3-3 Solving Inequality Using Multiplication and Division

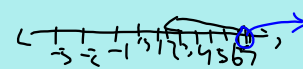
Multiplication Property of Inequality

with $c > 0$,
if $a > b$, then $ac > bc$
if $a < b$, then $ac < bc$

with $c < 0$
if $a > b$, then $ac < bc$
if $a < b$, then $ac > bc$

Solve $x < 4 \cdot 2$

$$x < 8$$

$$\begin{array}{l} -6x \leq 10 \\ \frac{-6x}{-6} \leq \frac{10}{-6} \\ x \geq -\frac{5}{3} \\ -2x < -14 \\ \frac{-2x}{-2} > \frac{-14}{-2} \quad x > 7 \\ \frac{-2x}{-2} > \frac{-14}{-2} \\ x < 7 \end{array}$$


Solve:

$$-3 \cdot 10 \geq \frac{x}{-3}$$

$$-30 \leq x$$

$$8 \cdot \frac{c}{8} > \frac{1}{4} \cdot 8$$

$$c > 2$$

$$\frac{-2}{3}x > -6$$

$$x < 9$$

$$\frac{-2}{3}x > -6$$

$$x < 9$$

$$x < -9$$

$$x > 9$$

Write the missing piece to make it true.

$$-8u < \frac{?}{-8}; u > -0.5$$

$$u > \frac{?}{-8} \quad -\frac{1}{2}$$

Which is the correct graph for each?

$$-\frac{x}{3} \leq -1$$

$$x \geq 3$$

$$x - 4 \leq -1$$

$$x \geq -3$$

$$-2x > -6$$

$$x < 3$$

$$x + 7 \geq 4$$

$$x \geq -3$$

A

B

C

D

Hwk:

pg. 174-177 #26, 38, 44, 48,
49, 60, 68, 76

pg. 181 - 183

#12-24 (4th), 34-48 (evens),
58, 60

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