

MATH 6 CLASSWORK 22

April 12, 2026

Inequalities and Equations with Inequalities

$$a < b$$

Or

$$-b < -a$$

Same can be written if we multiply both sides by -1? Lets take a look at some examples

$$3 < 5, \quad \text{after multiplying by -1} \quad \Rightarrow \quad -3 > -5$$

$$a < b \quad \Leftrightarrow \quad -a > -b$$

Example:

Solve inequality

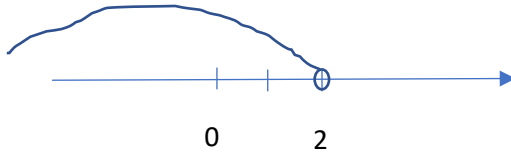
$$-3x > -6$$

Multiply by -1

$$3x < 6$$

Divide by 3

$$x < 2$$



$$ab = 0$$

$$a = 0 \text{ OR } b = 0$$

$$ab > 0$$

$$\begin{array}{l} \left\{ \begin{array}{l} a > 0 \\ b > 0 \end{array} \right. \quad \text{OR} \quad \left\{ \begin{array}{l} a < 0 \\ b < 0 \end{array} \right. \\ \text{Both positive} \quad \text{OR} \quad \text{both negative} \end{array}$$

$$ab < 0$$

$$\left\{ \begin{array}{l} a > 0 \\ b < 0 \end{array} \right. \quad \text{OR} \quad \left\{ \begin{array}{l} a < 0 \\ b > 0 \end{array} \right.$$

One is positive and one is negative

$$(x - 1)(x - 2) > 0$$

$$\left\{ \begin{array}{l} x - 1 > 0 \\ x - 2 > 0 \end{array} \right. \quad \text{OR} \quad \left\{ \begin{array}{l} x - 1 < 0 \\ x - 2 < 0 \end{array} \right.$$

$$\left\{ \begin{array}{l} x > 1 \\ x > 2 \end{array} \right. \quad \text{OR} \quad \left\{ \begin{array}{l} x < 1 \\ x < 2 \end{array} \right.$$

MATH 6 HOMEWORK 22

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1. Solve the following inequalities, draw solution on the number line
 - a. $-x < 2$
 - b. $2 - 3x > 5$
 - c. $3x + 1 < 5x + 7$
 - d. $1 + 5x < 3x$
 - e. $2x - 1 < x - 7$

2. Solve the following equations and inequalities:
 - a. $(x - 1)(x - 2) = 0$
 - b. $(x - 1)(x - 2) < 0$
 - c. $(x + 1)(x - 2) > 0$

3. On the quadrille paper plot the graphs below. Notice that lines are shifted along y axis
 - a. On the same cartesian XY plane:
 - i. $y = x$
 - ii. $y = x + 5$
 - iii. $y = x - 3$
 - b. On the same cartesian XY plane:
 - i. $y = 2x$
 - ii. $y = 2x + 3$
 - iii. $y = 2x - 2$
 - c. On the same cartesian XY plane:
 - i. $y = -2x$
 - ii. $y = -2x + 1$
 - iii. $y = -2x - 4$

4. Plot
 - i. $y = |x|$
 - ii. $y = |x| + 2$
 - iii. $y = |x + 2|$