

DO NOW – On the back of this packet

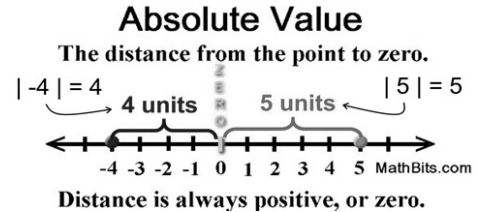
Name _____

LO: I can solve linear inequalities.

(1) **Need to know: Inequalities and when they are true**
pencil/pen

INEQUALITY:

If we compare any two numbers, say a and b , we will say that $a > b$ is true if a lies to the **right** of b on a standard horizontal number line or **above** b on a standard vertical number line.



Give the truth values for each of the following statements. Draw a number line to support your work.

- | | | | |
|----------------|--------------------|-----------------|------------------------|
| (a) $7 > 3$ | (b) $0 < 10$ | (c) $9 > 12$ | (d) $4 \leq 4$ |
| (e) $2 \geq 7$ | (f) $3.5 \leq 4.2$ | (g) $256 > 312$ | (h) $1,978 \leq 2,042$ |
| (a) $3 > -4$ | (b) $-5 > -3$ | (c) $0 > -6$ | |

Be EXTRA careful with these. Where are the negatives on a number line?

(2) **Inequalities: Testing variables**
pencil/pen JUSTIFY YOUR ANSWER BY SHOWING YOUR PROCESS

So, since we can test the inequality of numbers now, we can also test the inequality of expressions for values of variables. This is identical to checking the truth value of an equation.

Exercise #4: Given the inequality $3(x - 2) \geq 2x + 1$ determine if it is true or false for the following values of x .

- | | |
|--------------|-------------|
| (a) $x = 10$ | (b) $x = 5$ |
| (c) $x = 1$ | (d) $x = 7$ |

 (3) **Inequalities differ from equations**

pencil/pen

JUSTIFY YOUR ANSWER BY SHOWING YOUR PROCESS

Notice that unlike equations, inequalities tend to have many values that make them true. We will eventually discuss that certain inequalities even have an **infinite** number of values for their variables that make them true.

Exercise #5: For each of the following inequalities, determine if it is true or false at the given value of the replacement variable.

(a) $2x + 4 > 4x - 1$ for $x = 1$

(b) $-3(x + 5) \geq \frac{x + 7}{2}$ for $x = -3$

(c) $x^2 - 10x + 1 < 20 + 5x$ for $x = -2$

(d) $\frac{2(x - 5) + 1}{3} \leq \frac{x - 2}{9}$ for $x = 5$

 (4) **Exit Ticket**

ON THE LAST PAGE

 (5) **Homework** NEXT PAGE (page 3)pen or
pencil



Homework BRING BACK SIGNATURE SHEET SIGNED AND . . .

FLUENCY

1. For each inequality, state whether it is true or false.

(a) $3 \leq 8$

(b) $8 < 4$

(c) $9 > 9$

(d) $1,245 \leq 1,245$

(e) $-12 \geq -6$

(f) $3^2 \leq 5^2$

(g) $(-3)^2 \geq 3^2$

(h) $.99 \leq .98$

2. For each of the following inequalities, determine if it is true or false at the given value of the replacement variable.

(a) $3x + 2 \leq 2x - 5$ for $x = 8$

(b) $3x + 2 \leq 2 - 3x$ for $x = -2$

(c) $(x - 3)^2 > -3(x + 2)$ for $x = 3$

(d) $\frac{2(3 - 2x)}{5} \leq 2x - 3(x + 1)$ for $x = -1$

(e) $\frac{x^2 - 4x + 9}{6} > \frac{3x + 1}{5}$ for $x = 3$

(f) $\left| \frac{-2(5 - x)}{3} \right| \geq \frac{3x - 1}{2}$ for $x = -1$

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

Show substitutions and calculations to justify the symbol you placed in the box.

Write the appropriate inequality sign (< or >) in the box that will make each of the following true at the given point.

(a) $4x + 2$ $1 - 3x$ for $x = -2$

(b) $\frac{2x+1}{-3}$ $4(2-3x)$ for $x = -2$

(c) $2x^2 + 5$ $|1-9x|$ for $x = 4$

(d) $\frac{3(2x-5)}{3} + 2$ $8(3x-6)$ for $x = 5$

(1) Solve ONE of the equations below. List the “operations” and the “inverse operations” if you have trouble getting started or get stuck.

(a) $-4k + 2(5k - 6) = -3k - 39$

(b) $-12 = 3 - 2k - 3k$

(2) Describe what is supposed to make you smile in the cartoon.

