Names (pair) _____ Date _____

Linear Inequalities

1 IN PAIRS **Investigate.** Start with $4 < 6$ and do the operation to both sides. Is the sign $<$ still right?

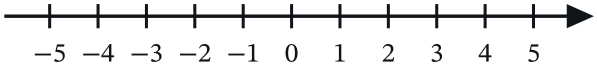
Operation	New inequality	The sign
$+ 2$		stays / turns
$- 10$		stays / turns
$\times 3$		stays / turns
$\times (-2)$		stays / turns
$\div (-2)$		stays / turns

Remember

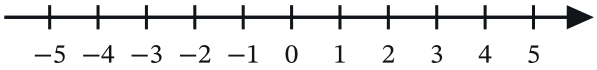
We solve an inequality like an equation, with one difference: when we **multiply or divide both sides by a negative number, the inequality sign turns round**. The solution is a set of numbers: we write it as an interval and show it on the number line.

2 ON YOUR OWN Solve, write as an interval and show it on the line.

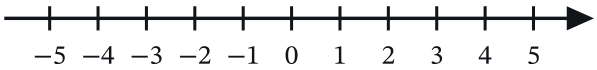
$3x - 4 < 8$



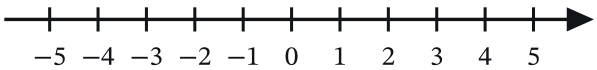
$-2x + 1 \geq 7$



$5x + 2 > 3x - 6$



$4 - x \leq 2x + 10$



Names (pair) _____ Date _____

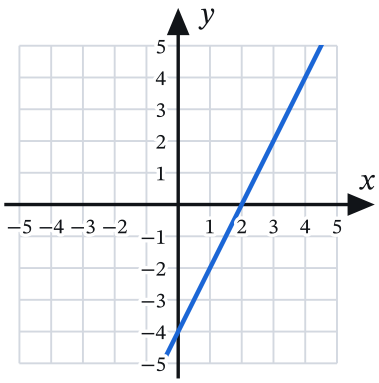
3 IN PAIRS **Find the mistake.** Ena: $-3x > 12 \rightarrow x > -4$.

4 ON YOUR OWN Solve and write as an interval.

$\frac{x}{2} - 1 \geq \frac{x+1}{3} \rightarrow$ ☐

$2(x-3) < 5x + 3 \rightarrow$ ☐

5 IN PAIRS **A view from the graph.** The picture shows the graph of $y = 2x - 4$. For which x is the graph above the x-axis? Compare with the solution of $2x - 4 > 0$.



6 ON YOUR OWN What is the largest integer that satisfies $3x + 1 < 11$?

☐

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Type $y = 2x - 4$, choose $>$ and 0 in **Intersections and inequalities** and look at the solution on the x-axis.

★ ON YOUR OWN **Exit card.** $-4x + 3 > 11 \rightarrow$ ☐