4.1

Writing and Graphing Inequalities

Review

a) $\frac{t}{4} - 3 = 9$

b) $6p - 2p = 28$

Comparing

Complete the statement using < or >.

1) $-\frac{2}{3} \square \frac{3}{8}$

2) $-\frac{1}{2} \square -\frac{7}{8}$

3) $-\frac{1}{5} \square \frac{1}{10}$

4) $-1.4 \square 1.2$

5) $-2.2 \square -4.6$

6) $-1.9 \square -1.1$

Inequalities

An inequality is a mathematical sentence that compares expressions.

To write an inequality, look for the following phrases to determine where to place the inequality symbol.

Inequality Symbols				
Symbol	$<$	$>$	$\leq$	$\geq$
Key Phrases	• is less than • is fewer than	• is greater than • is more than	• is less than or equal to • is at most • is no more than	• is greater than or equal to • is at least • is no less than

Writing Inequalities

Write the following as an inequality.

1) A number h is great than or equal to -7.

2) A number k is less than 4.

3) A number x is at most -10.

4) A number p is fewer than 17.

5) A number y is no less than -9

6) A number t is at least 5.

Writing Inequalities

Write the following as an inequality.

7) A number q plus a number is great than or equal to -7.9.

8) The product of a number m and 8 is at most -40.

9) The quotient of a number d and -7 is at least -10.

10) The difference of a number n and 1.5 is fewer than 45.

11) The sum of a number a and 7.8 is no more than 46.8.

12) 17 less than a number x is no less than 56.

Solutions of Inequalities

A solution of an inequality is a _value_ that makes the inequality _true_.

An inequality can have more than _one_ solution.

The set of all solutions of an inequality is called the _solution set_.

Value of x	x + 2 < -1	Is the inequality true?

Checking solutions

Tell whether -2 is a solution of each inequality. Show work.

a) $x - 5 \geq -6$

b) $-5.5 < 14$

Checking solutions

Tell whether -5 is a solution of each inequality. Show work.

c) $x + 12 > 7$

d) $\frac{x}{2.5} \geq -3$

Graphing Inequalities

$<$ "Less than" $\leq$ "Less than or equal to"

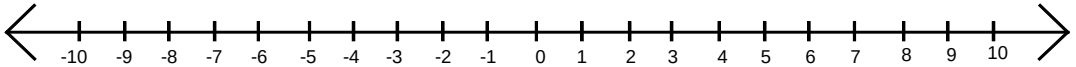
$>$ "Greater than" $\geq$ "Greater than or equal to"

Graph the following:

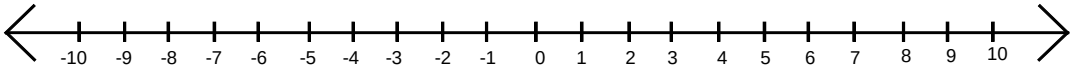
$< or >$ - Empty Dots

$\leq or \geq$ - Full Dots

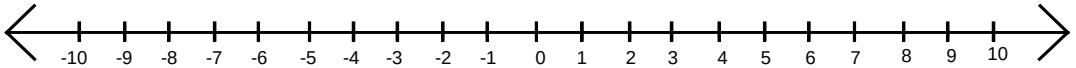
a) $y \geq -3$



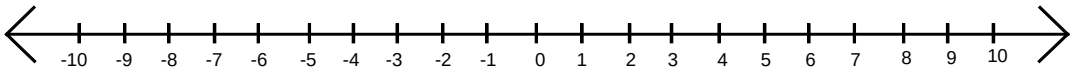
b) $y < -3$



c) $y \leq -3$



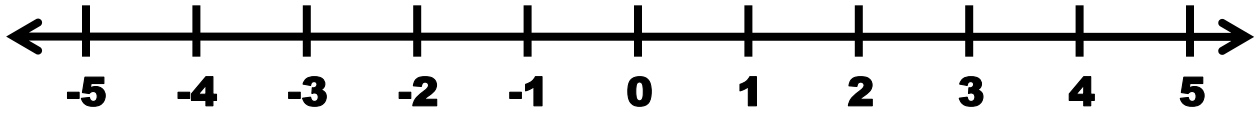
d) $y > -3$



Practice

$< or >$ - Empty Dots

$\leq or \geq$ - Full Dots

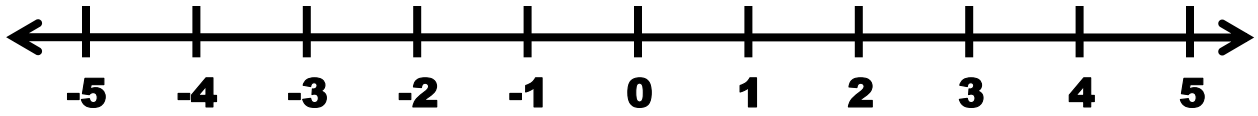


Inequality Symbols

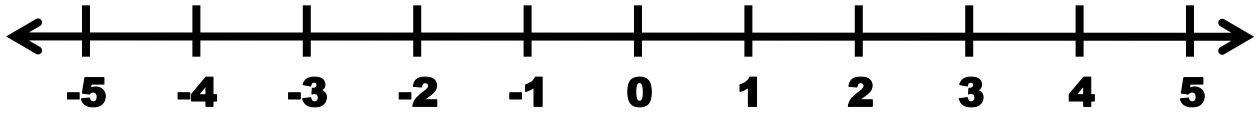
$<$ "Less than" $\leq$ "Less than or equal to"

$>$ $\geq$

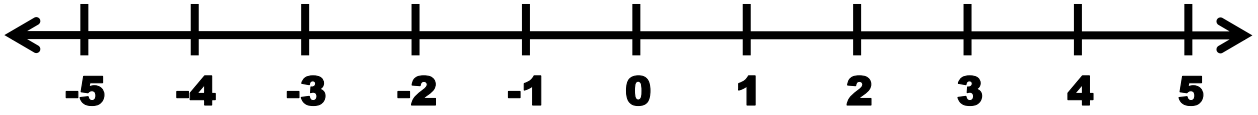
a) $x > -1$



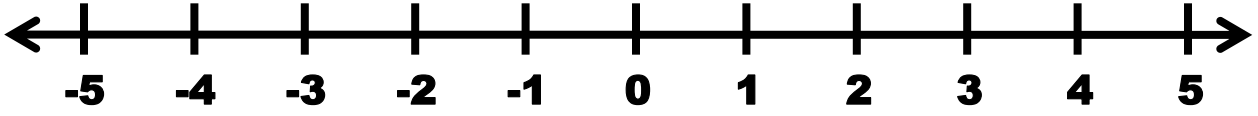
b) $x < -1$



c) $x \geq 2$



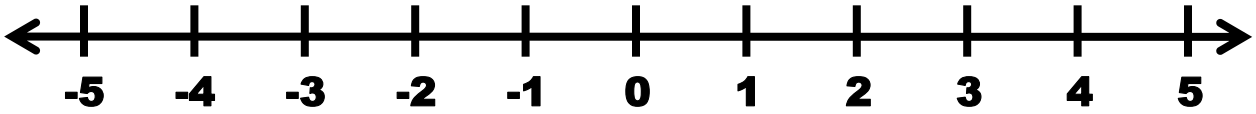
d) $x \leq 2$



Practice

$< or >$ - Empty Dots

$\leq or \geq$ - Full Dots

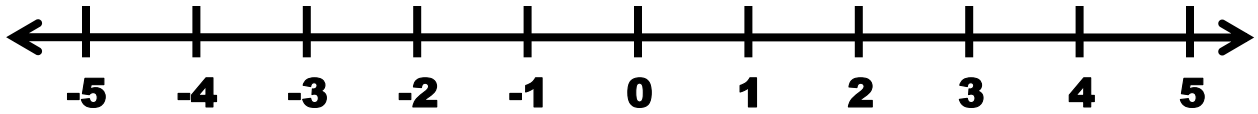


Inequality Symbols

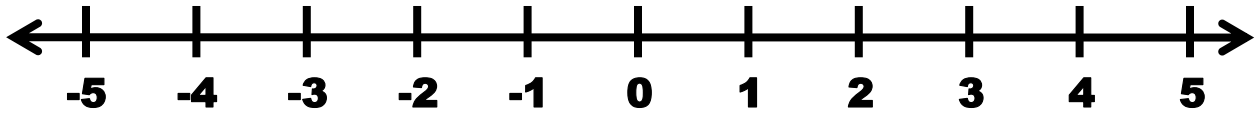
$<$ "Less than" $\leq$ "Less than or equal to"

$>$ "Greater than" $\geq$ "Greater than or equal to"

e) $z \geq 4$

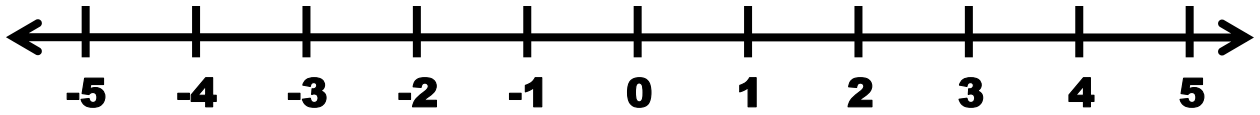


f) $t < -\frac{1}{2}$



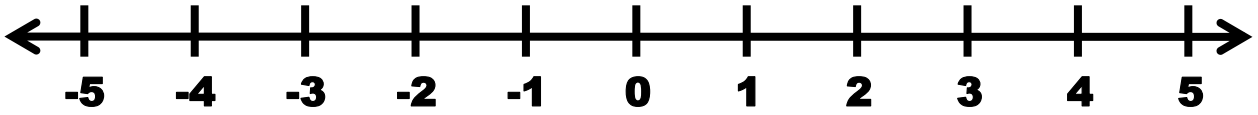
g) $-2 < x$

$\rightarrow \quad x > -2$



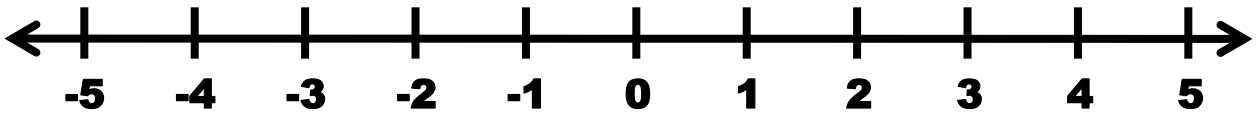
h) $3 \geq x$

$\rightarrow \quad x \leq 3$



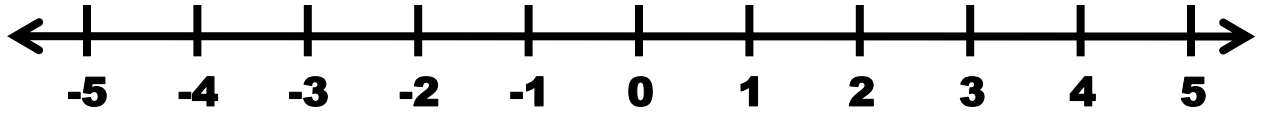
i) $-1\frac{1}{2} < x$

$\rightarrow \quad x > -1\frac{1}{2}$

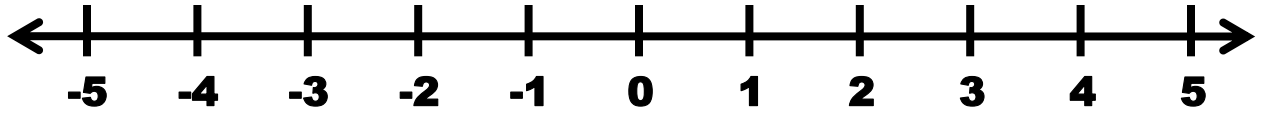


Write the inequality shown in each graph

$j)$



$k)$



$l)$