

# Lesson 1.3.5: “And” or “Or”

## Targets:

1. I can find the solution set of two equations/inequalities joined by "and" or "or".
2. I can graph these solutions sets on a number line.

## Warm Up

These are all examples of declarative compound sentences. Determine whether each claim given below is true or false.

a.) Right now, I am in math class and English class.

b.) Right now, I am in math class or English class.

c.)  $3+5=8$  and  $5<7-1$

d.)  $10+2\neq 12$  and  $8-3>0$

e.)  $3<5+4$  or  $6+4=9$

f.)  $16-20>1$  or  $5.5+4.5=11$

g.) When the two declarations in the sentences above were separated by “and,” what had to be true to make the statement true?

h.) When the two declarations in the sentences above were separated by “or,” what had to be true to make the statement true?

## Practice 1

Solve each system of equations and inequalities.

a.  $x + 8 = 3$  or  $x - 6 = 2$

b.  $4x - 9 = 0$  or  $3x + 5 = 2$

c.  $x - 6 = 1$  and  $x + 2 = 9$

d.  $2w - 8 = 10$  and  $w > 9$ .

## Practice 2

Use this same number line for all 3 parts of this practice problem.



1. Using a colored pencil, graph the inequality  $x < 3$  on the number line.
2. Using a different colored pencil, graph the inequality  $x > -1$  on the number line.
3. Using a third colored pencil, darken the section of the number line where  $x < 3$  and  $x > -1$ .

### Practice 3

Use this same number line for all 3 parts of this practice problem.



- Using a colored pencil, graph the inequality  $x < -4$  on the number line.
- Using a different colored pencil, graph the inequality  $x > 0$  on the number line.
- Using a third colored pencil, darken the section of the number line where  $x < -4$  or  $x > 0$ .

### Practice 4

Use this same number line for all 3 parts of this practice problem.

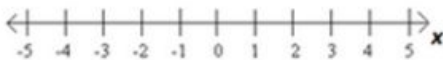


- Graph the compound sentence on the number line:  $x > -2$  or  $x = -2$
- How could we abbreviate the sentence:  $x > -2$  or  $x = -2$
- Rewrite  $x \leq 4$  as a compound sentence and graph the solution on the number line.

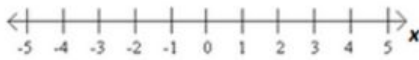
### Practice 5

Graph each compound sentence on a number line.

a.  $x = 2$  or  $x > 6$



b.  $x \leq -5$  or  $x \geq 2$



Rewrite as a compound sentence and graph the sentence on a number line.

c.  $1 \leq x \leq 3$



### Exit Ticket

Graph the solution set to each compound inequality on a number line.

a.  $x < -8$  or  $x > -8$

b.  $0 < x \leq 10$

Write a compound inequality for each graph.



e. A poll shows that a candidate is projected to receive 57% of the votes. If the margin for error is plus or minus 3%, write a compound inequality for the percentage of votes the candidate can expect to get.

f. Mercury is one of only two elements that is liquid at room temperature. Mercury is non-liquid for temperatures less than  $-38.0^{\circ}\text{F}$  or greater than  $673.8^{\circ}\text{F}$ . Write a compound inequality for the temperatures at which mercury is non-liquid.