

Name (1pt) Quiz 1.4

In problems 1-2, solve each linear inequality. Express your solution using set-builder notation and interval notation. Graph the solution.

1. (3points) $-3x + 1 > 13$ $\{x \mid x < -4\}$ $(-\infty, -4)$

2. (3points) $\frac{1}{2}(x-4) \geq \frac{3}{4}(2x+1)$ $\{x \mid x \leq -\frac{11}{4}\}$ $(-\infty, -\frac{11}{4}]$

3. (3 points) Computing Grades In order to earn an A in Mr. Ruffatto's Intermediate Algebra course, Jackie must earn at least 540 points. Thus far, Jackie has earned 90, 83, 95, and 90 points on her four exams. The final exam, which counts as 200 points, is rapidly approaching. How many points does Jackie need to earn on the final to earn an A in Mr. Ruffatto's class?

$540 \leq 358 + 2x$
 $182 \leq 2x$

$D = 1000 - 20p$
 $S = -200 + 10p$
 $S > D$
 $\frac{-200 + 10p}{+20p} > \frac{1000 - 20p}{+200 + 20p}$
 $30p > 1200$
 $p > \$40$ *ave 90*

90, 83, 95, 90,

$540 \leq 358 + 2x$

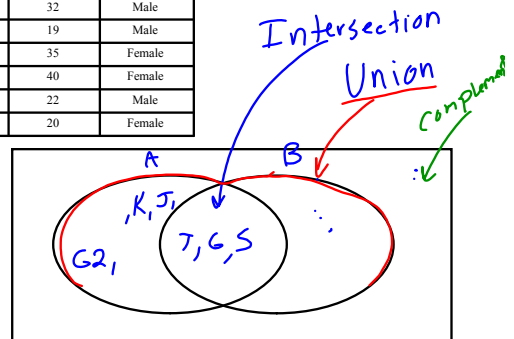
1.5 Compound Inequalities

Student	Age	Gender
Grace	19	Female
Sophia	23	Female
Kevin	20	Male
Robert	32	Male
Jack	19	Male
Mary	35	Female
Nancy	40	Female
George	22	Male
Teresa	20	Female

Student	Age	Gender
Grace	19	Female
Sophia	23	Female
Kevin	20	Male
Robert	32	Male
Jack	19	Male
Mary	35	Female
Nancy	40	Female
George	22	Male
Teresa	20	Female

Set A is all students whose age is less than 25.

Set B is all Females



Set A is all students whose age is less than 25.

Set B is all Females

A and B $\{Grace, Sophia, Teresa\}$

A or B

The intersection of two sets A and B, denoted $A \cap B$, is the set of all elements that belong to both set A and set B.

The union of two sets A and B, denoted $A \cup B$, is the set of all elements that are in the set A or in the set B or in both A and B

(The word "and" implies intersection, while the word "or" implies union.)

$A = \{1, 3, 5, 7, 9\}$
 $B = \{1, 2, 3, 4, 5\}$

1. $A \cup B$ 2. $A \cap B$
 $\{1, 2, 3, 4, 5, 7, 9\}$ $\{1, 3, 5\}$

You try

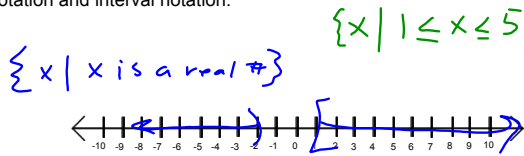
$A = \{1, 2, 3, 4, 5, 6\}$ $B = \{1, 3, 5, 7\}$ and $C = \{2, 4, 6, 8\}$

Find the Following

- 1. $A \cap B$ 2. $A \cap C$
 $\{1, 3, 5\}$ $\{2, 4, 6\}$
- 3. $A \cup C$ 4. $A \cup B$
- 5. $B \cap C$ 6. $B \cup C$
 $\{1, 2, 3, 4, 5, 6, 7, 8\}$

Suppose $A = \{x | x \leq 5\}$, $B = \{x | x \geq 1\}$, and $C = \{x | x < -2\}$

Determine $A \cap B$. Graph the solution. Write the set in both set-builder notation and interval notation.



Do the same with $B \cup C$ $(-\infty, -2) \cup [1, \infty)$
 $\{x | x < -2 \cup x \geq 1\}$



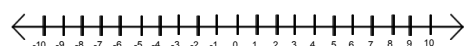
You try

Suppose $A = \{x | x > 2\}$, $B = \{x | x < 7\}$, and $C = \{x | x \leq -3\}$

Determine $A \cap B$. Graph the solution. Write the set in both set-builder notation and interval notation.



Do the same with $A \cup C$



$$3x+2 > -7 \text{ and } 4x+1 \leq 9$$

$$\begin{array}{r} -2 \quad -2 \\ 3x > -9 \\ x > -3 \end{array} \quad \begin{array}{r} \\ \\ x \leq 2 \end{array}$$

$$3x > -9$$

$$x > -3$$

$$\{x \mid -3 < x \leq 2\} \quad (-3, 2]$$



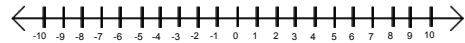
You try

$$-2x+5 > -1 \text{ and } 5x+6 \leq -4$$



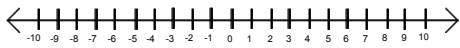
$$x-5 > -1 \text{ and } 2x-3 \leq -5$$

$$-3 < -4x+1 < 13$$

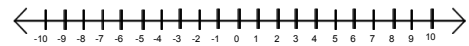


You try

$$-2 < 3x + 1 < 10$$



$$3x - 5 < -2 \text{ or } 4 - 5x \leq -16$$



You try

$$\frac{3}{4}(x+4) < 6 \text{ or } \frac{3}{2}(x+1) > 15$$



$$\frac{1}{2}x - 1 < 1 \text{ or } \frac{2x-1}{3} \geq -1$$

