

This worksheet focuses on the **two sides of an inequality**. The solution to an inequality is a set of numbers that are greater than or less than a given number. The solution is not one single number, but a set of numbers. This set is called a **solution set, designated by { }**. Solution sets are also written in **set-builder notation**:

Steps for solving Inequalities.

- Keep the inequality in balance. Whatever operation you perform on **one side** you perform the exact same operation **on the other side**.
- Concentrate on the variable. Your goal is to isolate the **variable** (unknown) on one side of the inequality.
- Perform **opposite operations**. First, add and subtract; then multiple and divide.
- Remember to **reverse the direction** of the inequality sign when you **multiply** or **divide both sides of the inequality** by a **negative** number.

Solve the following inequalities and type the answer on the line provided.

1. $4x < 8$ _____

- a. $x > 2$
- b. $x = 2$
- c. $x < 2$
- d. $x \leq 2$

2. $6x + 3 > 5x - 4$ _____

- a. $\{x | x > -1\}$
- b. $\{x | x > 7\}$
- c. $\{x | x > -7\}$
- d. $\{x | x > -11\}$

3. $x + 8x + 13 > 4(x + 2)$ _____

- a. $x > -1$
- b. $x < -1$
- c. $x \leq -1$
- d. $x \geq -1$

4. Which choice below describes the solution set for the answer to question 3 in set-builder notation?

a. $\{x \mid x < -1\}$

b. $\{x \mid x > -1\}$

c. $\{x \mid x \leq -1\}$

d. $\{x \mid x \geq -1\}$

5. $10x < 8x$ _____

a. $\{x \mid x \geq 0\}$

b. $\{x \mid x \leq 0\}$

c. $\{x \mid x > 0\}$

d. $\{x \mid x < 0\}$