Name: Date: Period:

A **set** is a collection of objects or elements. A set is represented by listing its elements between { }. Capital letters are used to name sets. The *order* of the elements is *not* important.

- This symbol, $\in$, is used to indicate that an element is a member of a particular set.
  - For example, given set S = {1, 2, 3, 4, 5}. $5 \in S$ means that 5 is an element in set S.
- Similarly, $6 \notin S$ means that 6 is NOT a member of S.
- The following are three different types of sets:

Empty set or null set	**Finite set**	**Infinite set**:
a set that has no elements. written as { } **OR** ϕ *Do not make the common error of writing the empty set as* {ϕ}.	**a set whose elements can be counted**	**a set whose elements cannot be counted because there is no end to the set**
Examples: The months with 32 days. Counting #s between 1 & 2	Examples: The set of all students in your math class. {1, 2, 3, 4, 5} {x|x is a whole # less than 10}	Examples: The set of counting #s. The set of points on a straight line. {1, 2, 3, 4, 5, …}

Different Types of Notation

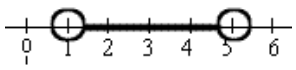
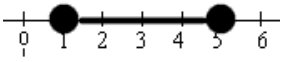
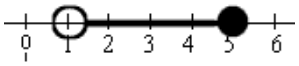
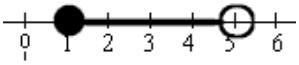
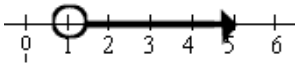
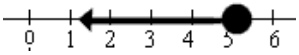
Type of Notation	**Example**	**In words**
Roster Form – a list of the elements in { }	{6, 7, 8, …}	The set of all integers > 5
Interval Notation – Endpoints enclosed by parenthesis and/or brackets.	[3, 7]	All real #s ≥ 3 **and** ≤ 7
- Brackets **INCLUDE** the # (closed interval)	(3, 7)	All real #s > 3 and < 7
- Parenthesis **DO NOT INCLUDE** the # (open interval)	(3, 7]	All real #s > 3 and ≤ 7
	[3, 7)	All real #s ≥ 3 and < 7

* ∞ (infinity) is used when an interval has only one endpoint and will always appear next to parenthesis

[-6, ∞) All real #s greater than or equal to -6 (-∞ , 2) All real #s less than 2

Set Notation – {x|x is ….} which means x such that x is ……..	{x|x$\in$ integers and x > 5}	x such that x is an integer > 5

Examples that include what a graph would look like and how it would be written as a compound inequality.

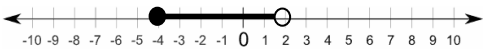
Description in Words	Interval Notation	Set Notation	Graph Example	Compound Inequality
The set of all real #s between 1 and 5, but not including 1 and 5	(1, 5)	{x|x is all real #s > 1 but < 5}		1 < x < 5
The set of all real #s between 1 and 5, including 1 and 5	[1, 5]	{x|x is all real #s ≥ 1 and ≤ 5}		1 ≤ x ≤ 5
The set of all real #s between 1 and 5, not including 1 but including 5	(1, 5]	{x|x is all real #s > 1 but ≤ 5}		1 < x ≤ 5
The set of all real #s between 1 and 5, including 1 but not including 5	[1, 5)	{x|x is all real #s ≥ 1 and < 5}		1 ≤ x < 5
The set of all real #s greater than 1	(1, ∞)	{x|x is all real #s > 1}		x > 1
The set of all real #s less than or equal to 5	(-∞, 5]	{x|x is all real #s ≤ 5}		x ≤ 5

Write the following inequalities as a compound inequality, using interval notation and using set notation.

1.

Compound Inequality: Interval:

Set Notation:

2. 

Compound Inequality: Interval:

Set Notation:

3.

Compound Inequality: Interval:

Set Notation:

4.

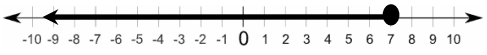
Compound Inequality: Interval:

Set Notation:

5.

Compound Inequality: Interval:

Set Notation:

6. 

Compound Inequality: Interval:

Set Notation:

7.

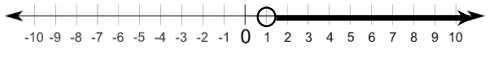
Compound Inequality: Interval:

Set Notation:

8.

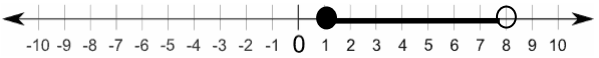
Compound Inequality: Interval:

Set Notation:

9. 

Compound Inequality: Interval:

Set Notation:

10. 

Compound Inequality: Interval:

Set Notation: