**9.1: Representing Inequalities (day 1)**

**Inequalities** are generally when you have an imbalance of 2 things.

|  |  |
| --- | --- |
| > | “is greater than” |
| < | “is less than” |
|  | “is greater than or equal to” |
|  | “is less than or equal to” |
|  | “does not equal” |

Examples:

* Ms. Dobson is **shorter than** her student.
* Cheetahs can run **faster than** 100 km/hr.
* The sale is **up to** 70% off.

Ex. 1: Write an inequality for the following scenarios:

a) A number is always smaller than 40



b) Sally always earns more than her friend Amy.



c) My iPod cost less than the cost of my phone.



We often display inequalities graphically on a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



For example the inequality x > 5 is shown as follows:





this is the same graph as for 5 < x. (why?)



To graph inequalities:

1. Find the key value(s).
2. Mark the key value(s) on the number line.

- We use a **closed dot** to show that the end point is included. ( or )

- We use an **open dot** if the end point is not included. (> or <)

3. Determine if the line goes left or right.

- If x is bigger  right

- If x is smaller  left



Ex. 2: Express the inequality shown on the number line algebraically and as a sentence.



a)





b)







Ex. 3: Express the inequality graphically. Write a sentence describing the inequality.

a)  



b)  



**PRACTICE:** Pg. 347 # 5, 8, 9, 10, 11, 12