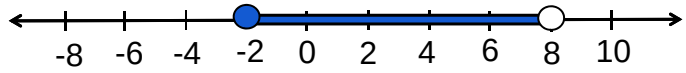
# 1.5 Intervals

Brackets are very important in math and they mean different things. There are 3 types

| | | | |
|---|---|---|---|
| **Round**: | P(0,5) | an ordered pair (x=0,y=5) | order is important so, it is not the same as (5,0) |
| **Curly**: | S= {0,5} | a set of 2 elements That is 0 & 5 ∈ S | order is not important so, it is the same as {5,0} |
| **Square**: | I= [0,5] | an Interval. That is all the real numbers from 0 to 5 | same as saying $0 \leq x \leq 5$ |

1

## Number Line




- Filled: the end number IS in the set
- Not filled/Empty: the end number IS NOT in the set
- Identifies the interval of numbers

2

## Interval Notation (square brackets)

[ -2, 8 [

Lowest # Highest #

[ -5, 7 ] 

FACING/HUGGING brackets mean the end number is CONTAINED in the set.

]5, 9 [ 

BACK FACING brackets means the end number is NOT CONTAINED in the set.

3

## Set builder Notation {Inequalities}

Review: fill in the correct sign so that x is

Less than 5 _____

Greater than 10 _____

At Most 22 _____

At Least 15 _____

We read the inequality from left to right.

$\{x \in R \mid -2 \leq x < 8\}$

x is a real # Lowest # Highest #

**EFF** RULE:
**E**qual sign
**F**illed circle
**F**acing bracket

4

## Bounded Intervals

| Interval | Set-Builder | Number Line |
|---|---|---|
| [0,3] | | |
| | $\{x \in R \mid -1 \leq x < 5\}$ | |
| | |   |
| | $\{x \in R \mid a < x < b\}$ | |

5

## Unbounded Intervals

| Interval | Set-Builder | Number Line |
|---|---|---|
| ]-∞,3] | | |
| | $\{x \in R \mid x \geq 3\}$ | |
| | |   |
| | $\{x \in R \mid x < b\}$ | |

Practice Page 26 # 1-5

6