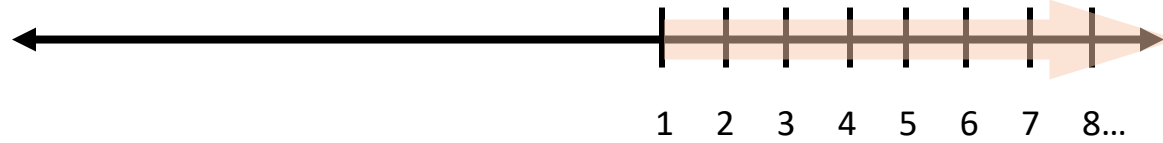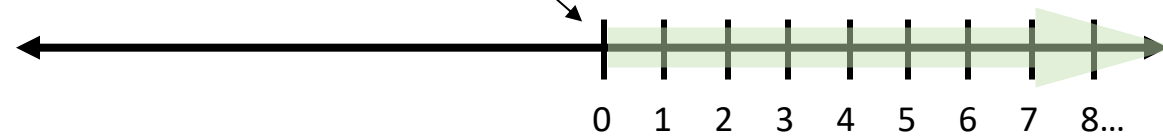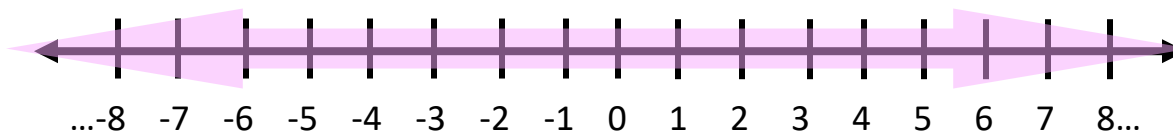# Classification of Real Numbers

When you first learn about #s, you fill in #s on a number line starting with the # 1 and learn to count forever… but, only this side of the # line

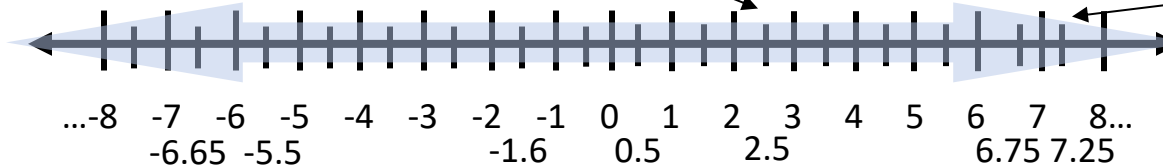**COUNTING #S**

1   2   3   4   5   6   7   8…

Then you learn the concept of zero, but you don't forget about original #s. So, your # line gets longer

WHOLE #S

0   1   2   3   4   5   6   7   8…

As you get older, you learn the concept of negative #s, but AGAIN, you don't forget about original #s

INTEGERS

…-8   -7   -6   -5   -4   -3   -2   -1   0   1   2   3   4   5   6   7   8…

Just when you think your #line is complete, you learn about the #s in between, which include terminating decimals, repeating decimals and fractions

RATIONAL #S

…-8   -7   -6   -5   -4   -3   -2   -1   0   1   2   3   4   5   6   7   8…
-6.65 -5.5   -1.6   0.5   2.5   6.75 7.25

RATIONAL Numbers can be written as a fraction

RATIONAL Numbers END Here, however, the final # line is below…. to **complete** your number line, you include **IRRATIONAL** #s.

REAL #S:
(include all rational & irrational numbers)

IRRATIONAL NUMBERS: non-terminating (don't end) & non-repeating (no pattern) decimal numbers.
Irrational Numbers **cannot** be written as a fraction.
Examples: $\pi, \sqrt{27}, \sqrt{15}$ ($\sqrt{}$ *any number that is not a perfect square*

A number line is made up of ALL REAL #s (this includes all RATIONAL and IRRATIONAL #s)