Inequalities

Objective 1 Understand the Meaning of Inequalities
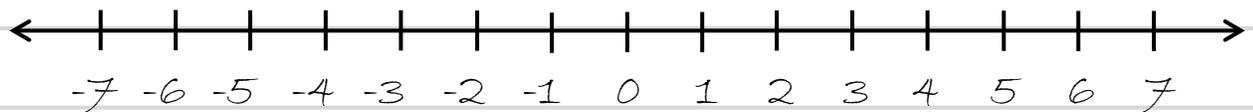
We see that as you move to the right on the number line, the numbers get larger. Notice that -3 is to the right of -4. This means that "-3 is greater than -4". The mathematical symbol for "is greater than" is ">". Notice that this symbol looks like the head of an arrow that points to the right.
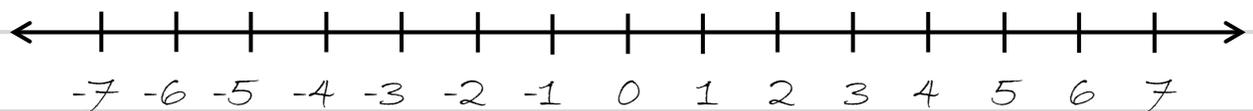
Similarly, we see that as you move to the left on the number line, the numbers get smaller. Notice that -6 is to the left of -5. This means that "-6 is less than -5". The mathematical symbol for "is less than" is "<". Notice that this symbol looks like the head of an arrow that points to the left.
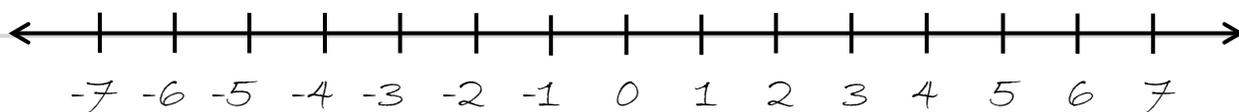
It would be a true math statement if we wrote "-3>-4" since -3 is to the right of -4. It would be false to write "-3<-4".

Similarly, it would be a true math statement if we wrote "-6<-5" since -6 is to the left of -5. It would be false to write "-6>-5".

Example 1: Answer True or False.

a)	0>-1	e)	-37>-36
b)	-5>-4	f)	36<37
c)	3<6	g)	-20<-19
d)	5>-5	h)	20<19

Example 2: Translate each word statement into a math statement.

a) Four is less than seven.

b) Negative seven is greater than negative eight.

Note: The word statement "5 greater than 4" represents the math statement "5+4". However the word statement "5 **is** greater than 4" represents "5>4". Notice how using the word "is" makes a difference!

Example 3: Translate each math statement into a word statement.

    a) $7 < 10$

    b) $-16 > -17$

Example 4: Translate each word statement into a math statement.

    a) The sum of negative eight and ten is less than three.

    b) The difference of negative seventeen and five is greater than negative twenty three.

Answer the following homework questions.

In Exercises 1 – 15, fill in the blank with either ">" or "<" to make the statement true.

1) -5 ___ -6   6) 0 ___ -1   11) -8 ___ -7

2) -1 ___ 0   7) 1 ___ 0   12) -21 ___ 0

3) -8 ___ -9   8) 56 ___ 65   13) 21 ___ 0

4) 4 ___ 7   9) -64 ___ -63   14) 0 ___ -32

5) 8 ___ -8   10) 19 ___ 20   15) 0 ___ 32

In Exercises 16 – 19, translate each math statement into a word statement.

16) $17 > 4$ 18) $0 > -1$

17) $-8 < -5$ 19) $5 > 0$

In Exercises 20 – 22, translate each word statement into a math statement.

20) The quotient of twenty and five is less than five.

21) The product of three and four is greater than eleven.

22) The difference of negative two and six is less than negative seven.