



# Comparing Positive and Negative Numbers

Let's compare numbers on the number line.

## 3.1 Which Three Go Together: Inequalities

Which three go together? Why do they go together?

A

$$\frac{5}{4} < 2$$

B

$$8.5 > 0.95$$

C

$$8.5 < 7$$

D

$$10.00 < 100$$



## 3.2

## Comparing Temperatures

Here are the low temperatures, in degrees Celsius, for a week in Anchorage, Alaska.

day	Mon	Tue	Wed	Thurs	Fri	Sat	Sun
temperature	5	-1	-5.5	-2	3	4	0

1. Plot the temperatures on a number line.
2. Which day of the week had the lowest low temperature?
3. On a winter day, the low temperature in Anchorage, Alaska, was  $-21$  degrees Celsius, and the low temperature in Minneapolis, Minnesota, was  $-14$  degrees Celsius.

Jada said, "I know that 14 is less than 21, so  $-14$  is also less than  $-21$ . This means that it was colder in Minneapolis than in Anchorage."

Do you agree? Explain your reasoning.

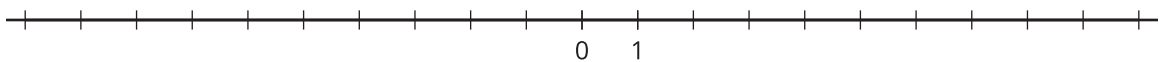
### Are you ready for more?

Another temperature scale frequently used in science is the *Kelvin scale*. In this scale, 0 K is the lowest possible temperature of anything in the universe, and it is  $-273.15$  degrees in the Celsius scale. Each 1 K is the same as  $1^{\circ}\text{C}$ , so 10 K is the same as  $-263.15^{\circ}\text{C}$ .

1. Water boils at  $100^{\circ}\text{C}$ . What is this temperature in K?
2. Ammonia boils at  $-35.5^{\circ}\text{C}$ . What is the boiling point of ammonia in K?
3. Explain why only positive numbers (and 0) are needed to record temperature in K.

## 3.3 Rational Numbers on a Number Line

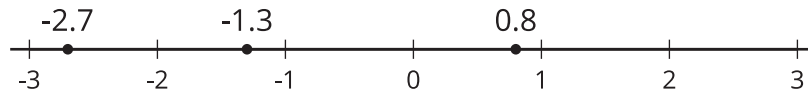
1. Plot the numbers -2, 4, -7, and 10 on the number line. Label each point with its numeric value.



2. Decide whether each inequality statement is true or false. Be prepared to explain your reasoning.
  - a.  $-2 < 4$
  - b.  $-2 < -7$
  - c.  $4 > -7$
  - d.  $-7 > 10$

### Lesson 3 Summary

The phrases “greater than” and “less than” can be used to compare numbers on the number line. For example, the numbers -2.7, 0.8, and -1.3, are shown on the number line.



Because -2.7 is to the left of -1.3, we say that -2.7 is less than -1.3. We write:

$$-2.7 < -1.3$$

In general, any number that is to the left of a number  $n$  is less than  $n$ .

We can see that -1.3 is greater than -2.7 because -1.3 is to the right of -2.7. We write:

$$-1.3 > -2.7$$

In general, any number that is to the right of a number  $n$  is greater than  $n$ .

We can also see that  $0.8 > -1.3$  and  $0.8 > -2.7$ . In general, any positive number is greater than any negative number.