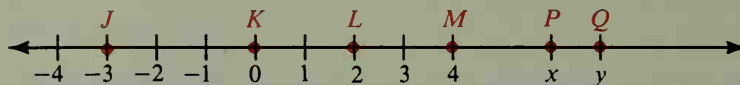


Notice that since a length must be a positive number, you subtract the lesser coordinate from the greater one. Actually, the distance between two points is the absolute value of the difference of their coordinates. When you use absolute value, the order in which you subtract coordinates doesn't matter.



$$JL = |-3 - 2| = |-5| = 5$$

or

$$JL = |2 - (-3)| = |5| = 5$$

$$PQ = |x - y|$$

or

$$PQ = |y - x|$$

There are many different ways to pair the points on a line with numbers. For example, the red coordinates shown below would give distances in centimeters. The blue coordinates would give distances in inches.



Once you have chosen a unit of measure, the distance between any two points will be the same no matter where you place the coordinate 0. For example, the black coordinates below show another way of assigning coordinates to points on the line so that distances will be measured in inches.



Using number lines involves the following basic assumptions. Statements such as these that are accepted without proof are called **postulates** or **axioms**. Notice that the Ruler Postulate below allows you to measure distances using centimeters or inches or any other convenient unit. But once a unit of measure has been chosen for a particular problem, you must use that unit throughout the problem.

Postulate 1 *Ruler Postulate*

1. The points on a line can be paired with the real numbers in such a way that any two points can have coordinates 0 and 1.
2. Once a coordinate system has been chosen in this way, the distance between any two points equals the absolute value of the difference of their coordinates.

Postulate 2 *Segment Addition Postulate*

If B is between A and C , then

$$AB + BC = AC.$$