What is Distance?

Distance is the amount of space between two points. It is typically measured in units like centimeters, inches, miles, or kilometers. The key to understanding distance is understanding what two points are being compared.

Distance between points

If you already know what points you want to compare, simply use a reference tool like a meter stick to see how many units’ worth of space are between them. That amount is the distance between the two points.

Check Understanding:
1. Distance is always measured between two...
   a. Points in space
   b. Objects
   c. Times
   d. Choices

Distance and objects

Objects are not points! A point is a single tiny spot, whereas an object can be quite large. The point at the front of an object is not the same as the point at the back! Before measuring, you must choose specific points which you will measure between.

The distance between two points on opposite ends of the same object describe its “length”. Depending on how the object is positioned, this could also be a “height” or “width”.

If you have two objects, you might be interested in the distance between their two closest points to see if something could fit between them. Or, you might choose to measure the distance between their centers instead. Choose the most appropriate points for the task!
Distance moved: Displacement

One way of measuring the amount that an object has moved is to look at the difference between where it starts and where it ends up. What specific point or points on the object should you choose, though?

To be fair and consistent, the “starting point” and “ending point” should represent the start and end positions of the same part of the object. It would not make sense to compare an object’s front at the start with its back at the end. Instead, choose a common point on the object for comparison—a “reference” point. The reference point can be any part of the object, as long as it is the same part in every measurement.

Check Understanding:
2. Do the two points in the picture above represent “consistent measurement points” on the moving object?
3. Does the distance between the two points in the picture above accurately represent “the distance the object moved”?