**Kinematics**

Studies ____________ without thinking about its ____________

**Position (x)**

The ____________ where something is relative to a ____________ system called a ____________

The most common coordinate system the ____________ coordinate system

**Displacement (∆x)**

The change in position ____________

Has ____________ and ____________

Path does ____________ matter

Only ____________ and ____________ position matters

What is the displacement of the path in the diagram?

![Diagram](image)

**Distance**

The ____________ of the path traveled ____________

Has only ____________

You drive 20 km east, then turn around and drive 15 km west. What is your displacement?

What was your distance traveled?
**Physics 01-02 Displacement and Vectors**

**Homework**

1. What was difficult about measuring the 3x5 card? Why?
2. How are distance and displacement the same? How are they different?
3. How are scalars and vectors the same? How are they different?
4. Classify each measurement as a scalar or vector.
   a. _____ 20 books on a shelf
   b. _____ A car travels 25 km east
   c. _____ A plane flies 500 km
   d. _____ The car drives 100 km/h west
   e. _____ The plane flies 200 mph north
   f. _____ In an experiment, a toy car moves -15 cm
   g. _____ In an experiment, a mouse moves +20 cm
   h. _____ The temperature is -5 °C
5. The road I live on goes east and west. One day, my family and I decide to go west to the beach. I travel 2 miles west when my wife realizes we passed a flock of wild turkeys. I turn around and drive back 1/2 miles before we find the turkeys. What is my displacement at the flock of turkeys (make west negative)? (RW) -1.5 miles
6. What is the distance I traveled to where I stopped by the turkeys? (RW) 2.5 miles
7. Find the following for path A in the diagram: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish. (OpenStax 2.1) 7 m, 7 m, 7 m
8. Find the following for path B in the diagram: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish. (OpenStax 2.2) 5 m, 5 m, -5 m
9. Find the following for path C in the diagram: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish. (OpenStax 2.3) 13 m, 9 m, 9 m
10. Find the following for path D in the diagram: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish. (OpenStax 2.4) 8 m, 4 m, -4 m