## Part 1: Velocity and Vectors

**Directions:** Solve the following problems.  For each question show all your work like in the example:
--------------------------------------------------------------------------------
**Example:**
Q: What is the velocity of a scooter traveling 25 meters east in 5 minutes?
A:

| | |
|---|---|
| s = ? | Speed = $\frac{distance}{time}$ |
| d = 25 m | |
| t = 5 min | = $\frac{25\ m}{5\ min}$ |
| v = ? | |
| | = 5 m/min |

Velocity = 5 m/min east

1)  What is the **velocity** of a car that traveled a total of 75 km north in 3 hours?

2)  What is the **velocity** of a plane that traveled 3000 miles from New York (East Coast) to Los Angeles (West Coast) in 5.0 hours?

3)  Brian took 5 minutes to cycle to his uncle's house, which was a total distance of 10 km west of his house.  What is Brian's **velocity** in km/min?

**Directions:** For problems 1-3, explain what is _missing_ to make it a _velocity_.  Then add the missing part to make it an actual velocity.  Your options for what's missing are: **nothing, speed, direction.**
--------------------------------------------------------------------------------
**Example:**
Q: 4 north
A: Missing a speed.  4km/min north

1)  8 km/hr

2)  6 m/min south

3)  10

## Part 2: Change in Velocity

**Directions:** State whether each question is a **change in velocity** and explain why.

1) A car increases its velocity from 0 m/s to 14 m/s in 2 seconds.

2) A bicyclist decreases his speed to turn around a corner.

3) A bus is moving at a constant speed to the north.

## Part 3: Graphing

1) What is this object's **reference point** (starting position) AND final position?
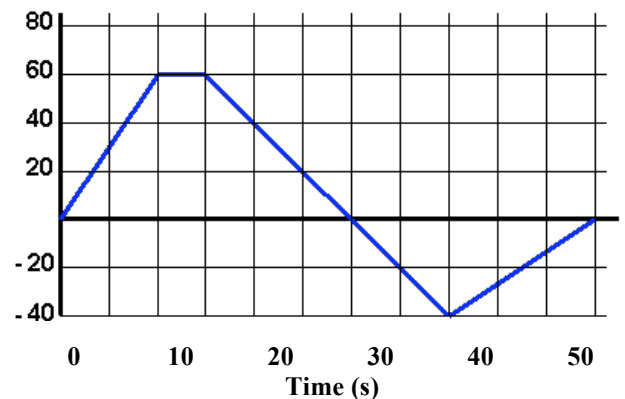
2) Describe the object's **motion** from time 0s-10s.

3) Describe the object's **motion** from time 10s-15s.



4) What **time interval** is this object **returning to start** AND is the **speed** faster or slower than the **speed** from 0s-10s?

5) *Summarize* the **motion** of the object in 2 or more sentences using as many key words as possible (i.e. stationary, constant, reference point, etc.).