Bell Work, Jan 26– 30, 2015

IB Physics: Constant Velocity
Position, motion

Physics Bell Work, Monday, Jan 26

1. **What is motion?**

Motion is a change in position.

2. **Explain position**

It is the distance and direction from a reference point. Position is measurable. The reference point can be a measurement.

3. **What is the significance of defining a coordinate system to study the motion of an object?**

A coordinate system tells about the location of the zero point of the variables defining the motion of the object to be studied. The coordinate system also explains the direction in which the values of the variables increase or decrease.

Physics Bell Work, Tues, Jan 27

1. What variables did we use to determine the motion of the toy car? Time & position from zero.

2. What was the reference point for position? Zero.

How can we model the motion of the toy car with a graph?

Motion can be modeled by plotting time on the x axis & x-position (or "x") on the y axis. This is called a position - time graph.

3. What is a time interval?

It is the amount of time between two clock events. The time interval is found by the final time subtract initial time. $\Delta t = t_f - t_i$

4. What is a position interval?

Position interval is the change in position found by the final position subtract initial position. $\Delta x = x_f - x_i$

5. How are all changes calculated in Physics

All changes are final value minus initial value.

Physics Bell Work, Weds, Jan 28

1. **What is magnitude?**

Magnitude is the size of a number.

2. **What is a scalar?**

A quantity that tells magnitude (how much); i.e., speed, time, mass

3. **What is a vector?**

A quantity that tells both magnitude and direction, i.e., velocity.
A vector is represented with an arrow. ⟶
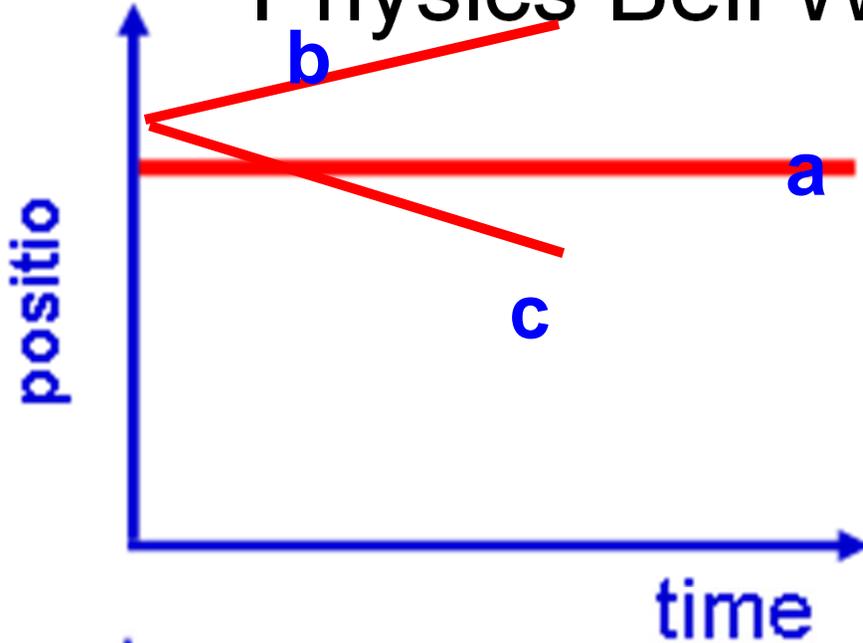**A longer arrow means greater magnitude, a shorter arrow means less magnitude. The arrow shows direction.**

4. **What is a average velocity?**

Average Velocity $= \dfrac{\text{change in position}}{\text{change in time}} = \dfrac{x_f - x_i}{t_f - t_i} = \dfrac{\Delta x}{\Delta t}$

5. **What is displacement?**

Change in position $= \Delta x = xf - x_i$

Physics Bell Work, Thursday, Jan 29

position (vertical axis label)

b

a

c
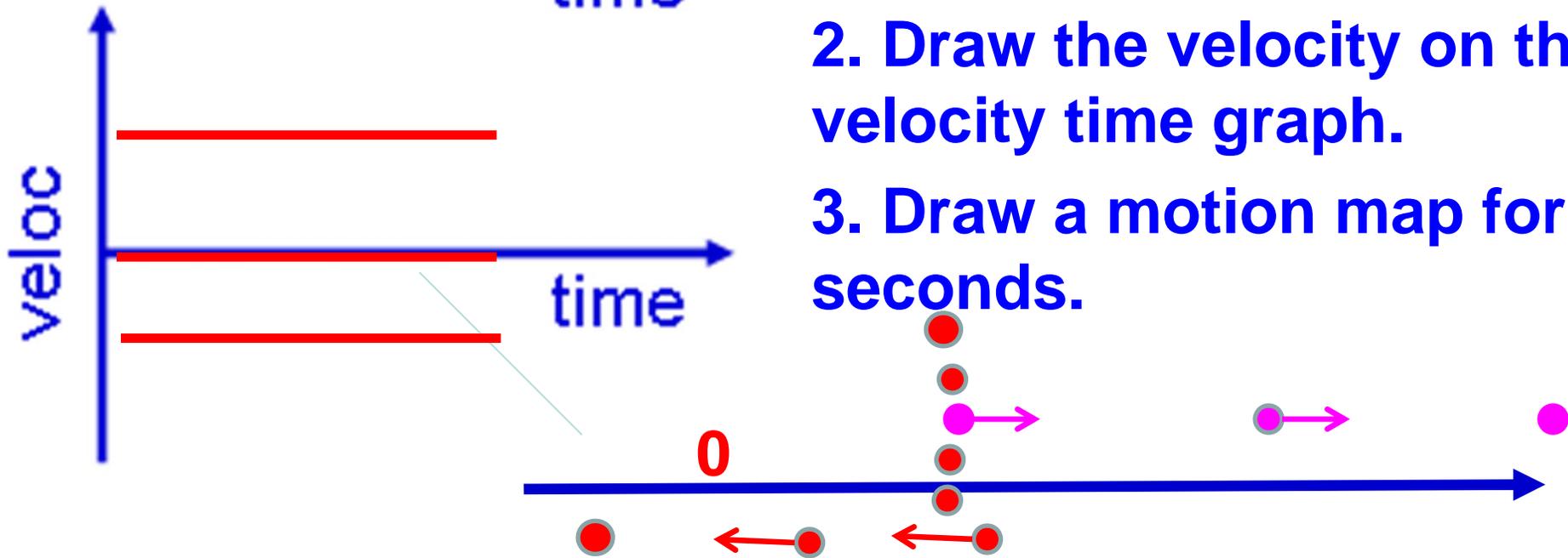
time

veloc (vertical axis label)

time

1. Describe the motion

a. Position is not changing at CV.

b. Moving away from detector CV.

c. Moving towards the detector at CV

CV = constant velocity

2. Draw the velocity on the velocity time graph.

3. Draw a motion map for 5 seconds.

0

Physics Exit Work, Thur, Jan 29

1. Write a mathematical model for the position from zero of your toy car.

2. Slope is a rate of change per an interval. Explain what is changing and what the interval is on your graph?

3. For each time interval what is changing in question # 2?

4. What physical quantity or physical property is represented by slope of your time-position graph?

5. Is the slope on *your* graph changing or is it constant?