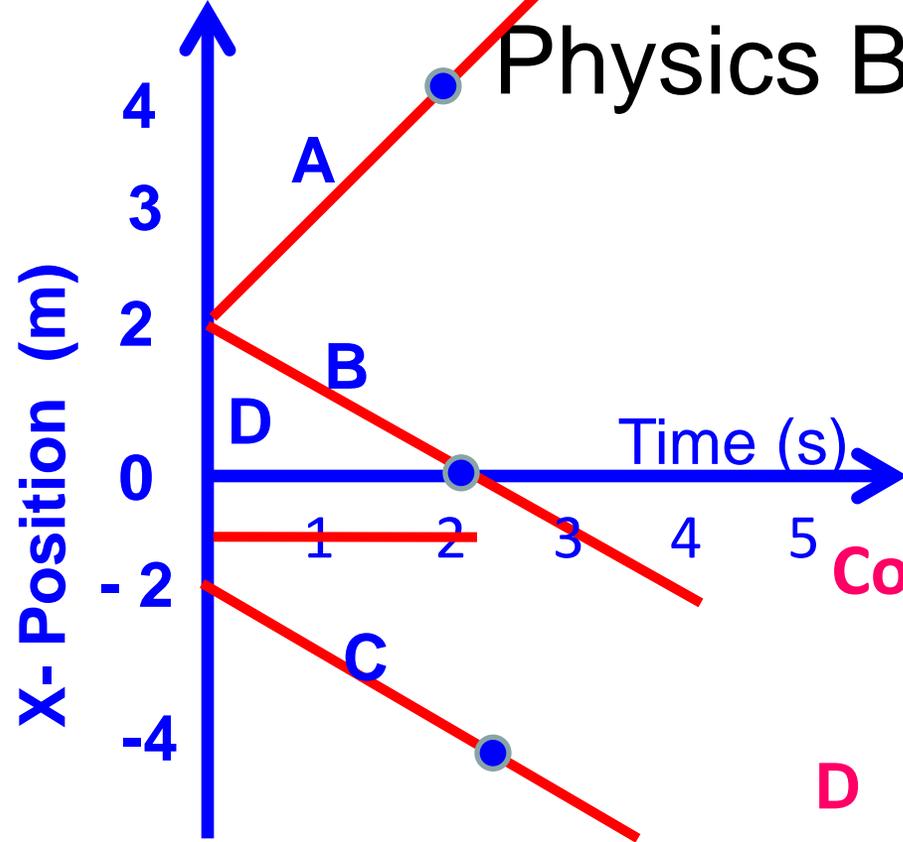


Bell Work, Feb 2 – 6, 2015

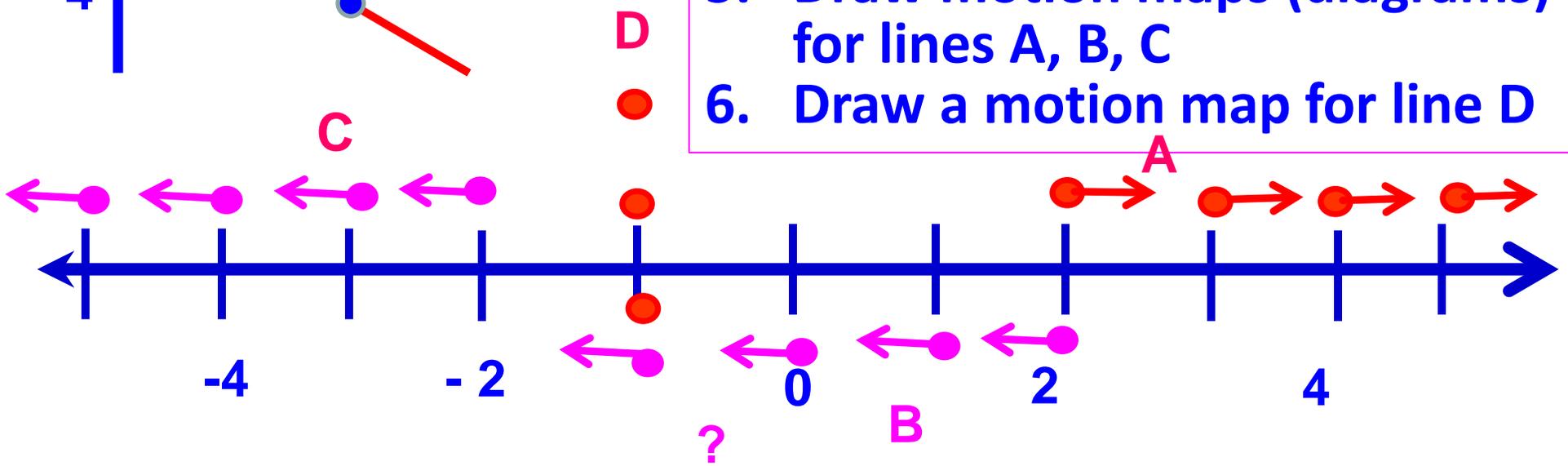
IB Physics: Constant Velocity

Position, motion, displacement, distance, speed

Physics Bell Work, Monday, Feb 2



1. How many slopes does line A have? **One slope.**
2. Is the slope of line A changing or constant? **Constant.**
3. Is the slope of line B or C changing or constant? Why?
Constant slopes because they are linear.
4. The slope of the line is velocity.
5. Draw motion maps (diagrams) for lines A, B, C
6. Draw a motion map for line D



Physics Bell Work, Tuesday, Feb 3

1. Compare and contrast distance and displacement.

Both distance and displacement are lengths.

Distance is the length from a reference point or an origin.

Distance, by definition, is always a positive number and has no information about direction.

Displacement is the straight-line distance between the initial and final positions. Displacement is a vector; thus it conveys information about the direction of motion. $\Delta x = x_f - x_i$

2. What is Path length?

Path length = total distance traveled along a path to move from the starting position to the ending position.

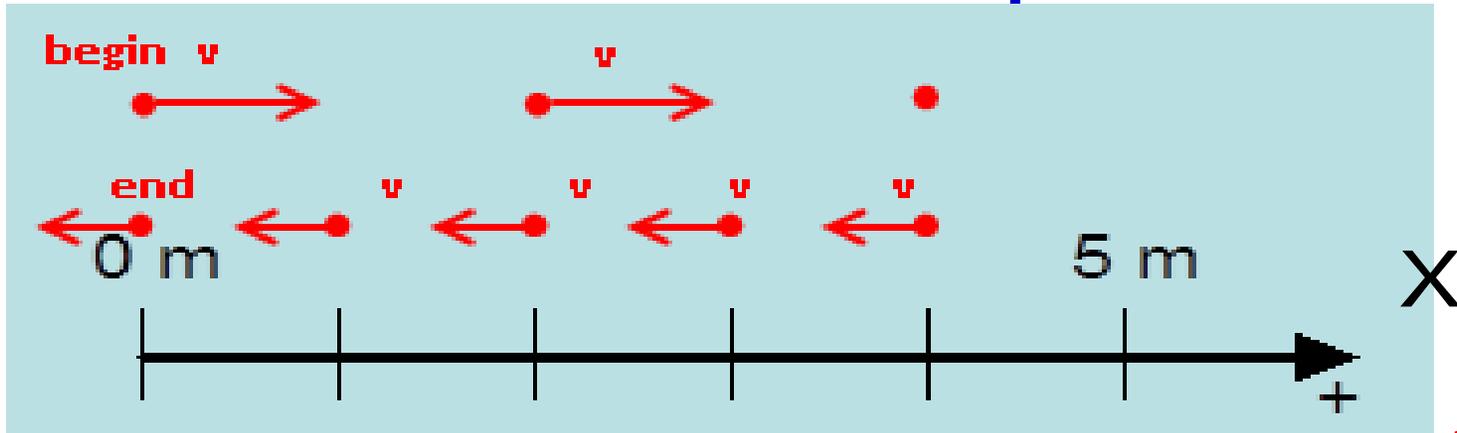
3. What is Average Speed

Average Speed = path length / change in time

Speed is a scalar quantity and is always a positive number

Physics Bell Work, Wednesday, Feb 4

1. Explain how to draw a motion map



- A pair of time dots is one time interval (defined by you).
- An arrow represents the velocity and shows the direction of motion. Arrows should not be drawn all the way to a dot.
- To show an object is moving twice as fast, double the size of the arrow.
- A dot with no arrow means the object is not moving.
- The “x” graph shows the position (meters) of a time dots.

2. Describe the motion in the above motion map ($\Delta t = 1\text{ s}$)

- The object starts at 0, moves in the + direction at 2 m/s for 2 s, then stops for 1 s, then moves in the negative direction at $\frac{1}{2}$ the original velocity, which is 1 m/s, for 4 s.

Physics Bell Work, Thursday, Feb 5

1. What does the slope of a position time graph tell you about the motion of an object?

Average velocity of the time interval.

2. The area between the line and the horizontal axis have physical meaning.

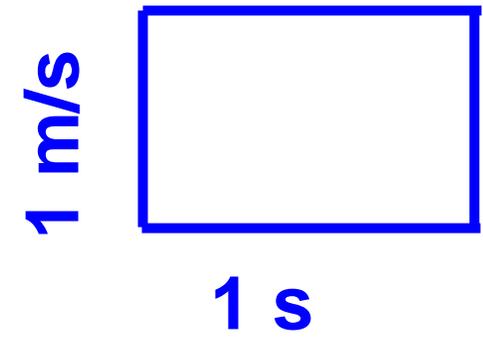
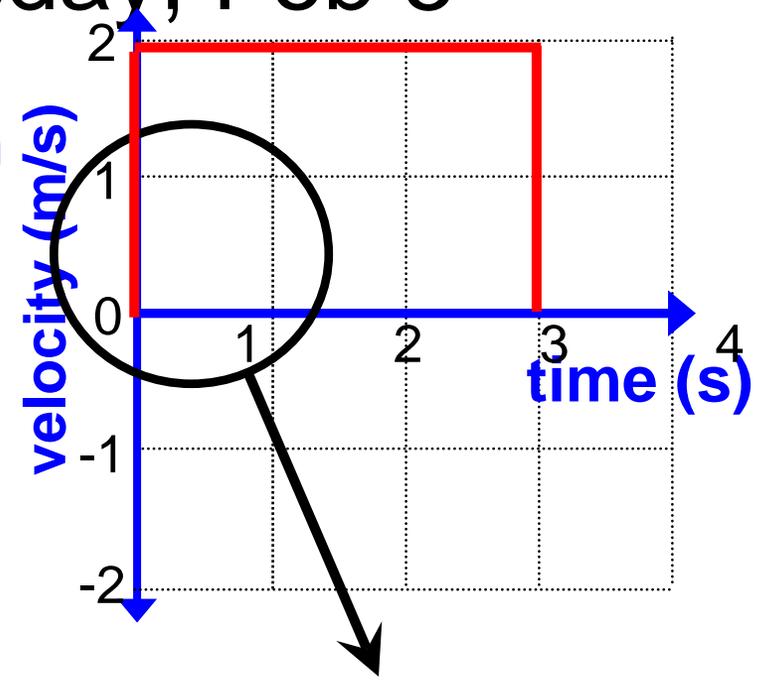
a. determine the units and the area for a square of area on the graph.

$$1 \cancel{s} * \frac{1m}{\cancel{s}} = 1 m$$

b. What does the area "under the velocity-time graph" tell you about the motion of an object?

The area under a velocity vs. time graph tells you Δx , the change in position during that time interval. So: $\Delta x = v \cdot t$

Or you can count the squares on a v-t graph to get Δx



Physics Bell Work, Thurs, Feb 5

3. What is a particle model?

A particle model is a simplified version of a motion diagram that represents the object in motion by a series of single points.

4. What represents the motion of an object?

A motion diagram (motion map).

5. What is an example of a motion diagram where the object is replaced by a series of single points?

Particle model.