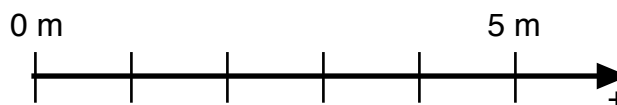
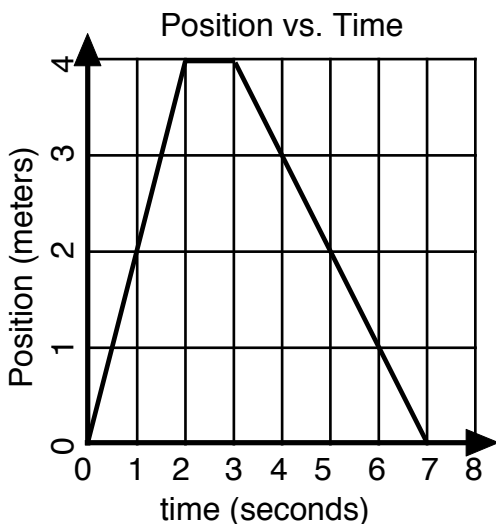


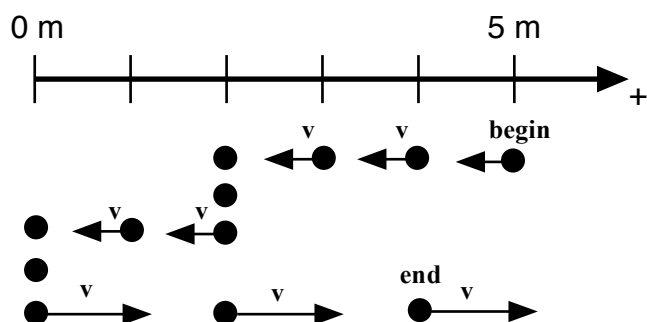
Worksheet 1: Motion Maps and Position vs. Time Graphs

1. Given the following position vs. time graph, draw a motion map with one dot for each second.

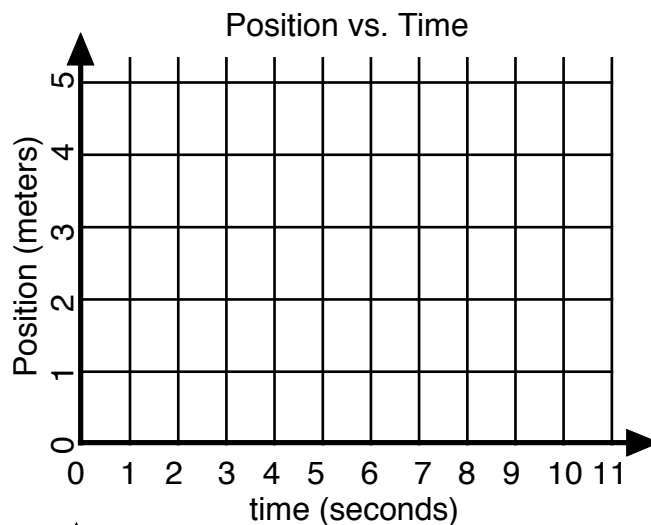


Describe the motion of the object in words:

2. Given the following motion map, where positions have been recorded with one dot each second, draw a position vs. time graph.



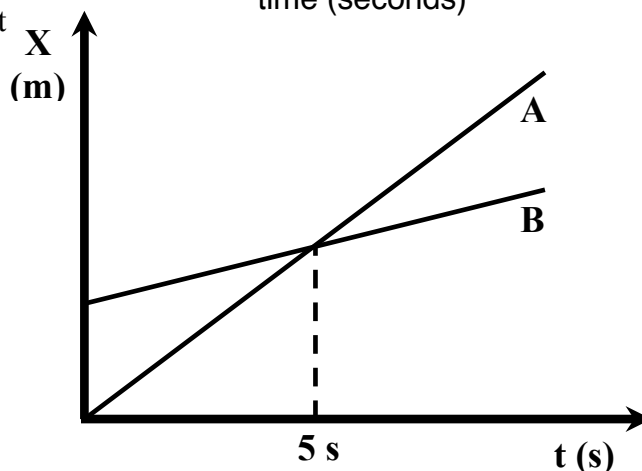
Describe the motion of the object in words:



3. Consider the position vs. time graph to the right for cyclists A and B.

a. Do the cyclists start at the same point? How do you know? If not, which is ahead?

b. At $t = 7\text{s}$, which cyclist is ahead? How do you know?

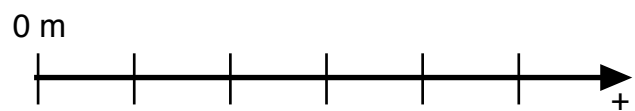


c. Which cyclist is traveling faster at 3s? How do you know?

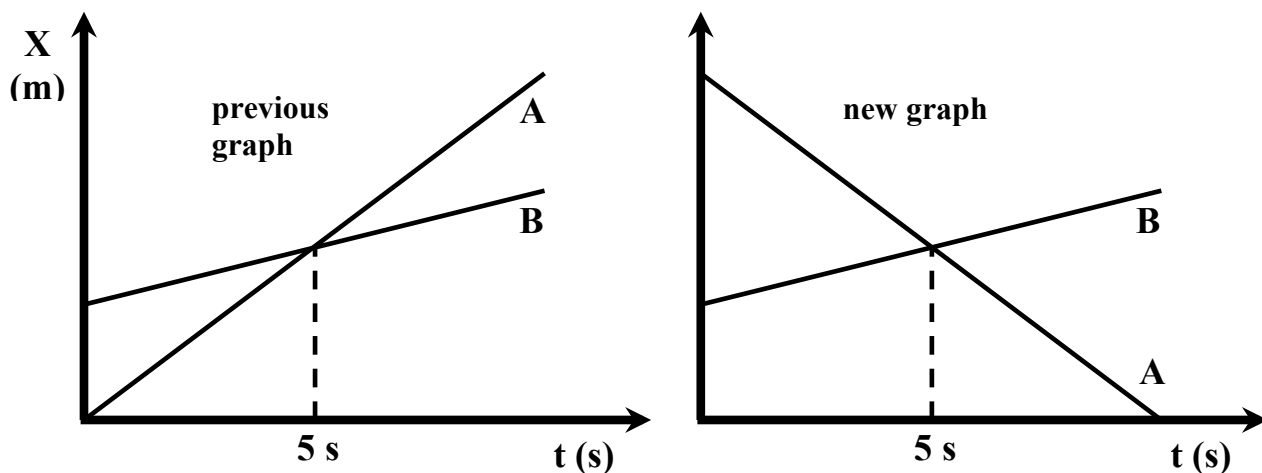
d. Are their velocities equal at any time? How do you know?

e. What is happening at the intersection of lines A and B?

f. Draw a motion map for cyclists A and B.



4. Consider the new position vs. time graph below for cyclists A and B.



a. How does the motion of the cyclist A in this graph compare to that of A in question 3?

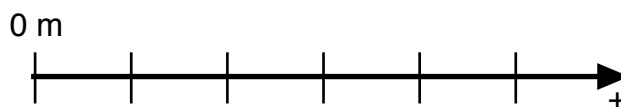
b. How does the motion of cyclist B in this graph compare to that of B in question 3?

c. Which cyclist has the greater speed? How do you know?

d. Describe what is happening at the intersection of lines A and B.

e. Which cyclist has traveled further during the first 5 seconds? How do you know?

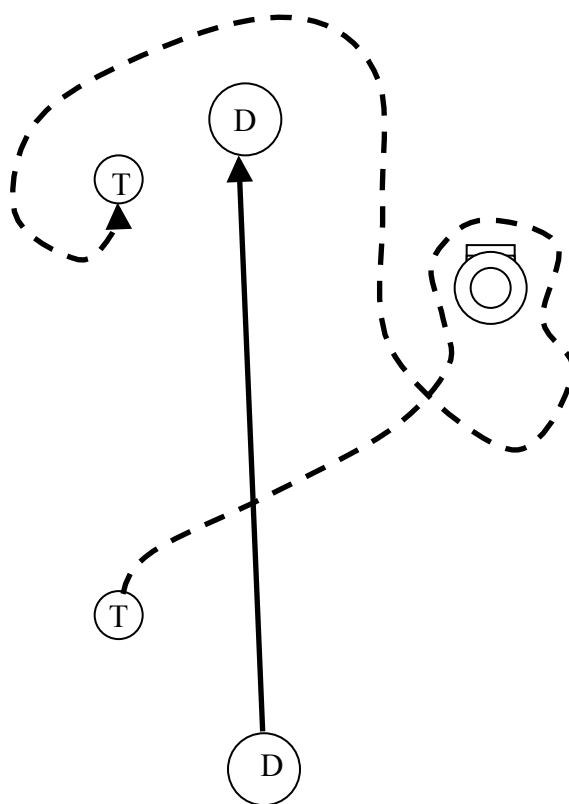
f. Draw a motion map for cyclists A and B.



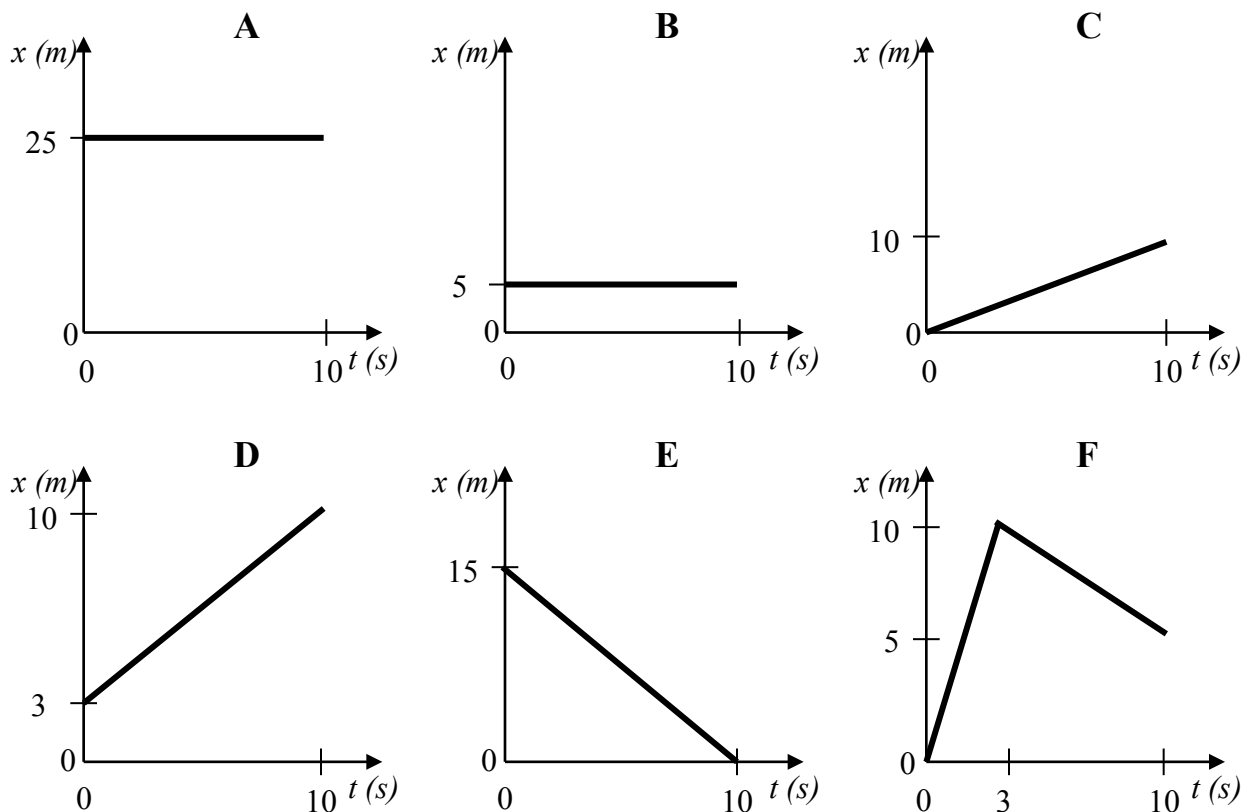
5. An overhead snapshot of Dorothy and Toto walking along the yellow brick road is shown to the right.

a. From start to finish, who travels farther?
Justify your answer.

b. Develop two different definitions for
measuring “how far” something travels.



6. To rank the following, you may need to look at the key ideas sheet for the difference between *displacement* and *odometer reading*.



a. Rank the graphs according to which show the greatest **displacement** from the beginning to the end of the motion.

Most positive \rightarrow 1_____ 2_____ 3_____ 4_____ 5_____ 6_____ \leftarrow Most negative

Explain your reasoning for your ranking:

b. Rank the graphs according to which show the greatest **odometer reading** from the beginning to the end of the motion.

Greatest 1_____ 2_____ 3_____ 4_____ 5_____ 6_____ Least

Explain your reasoning for your ranking: