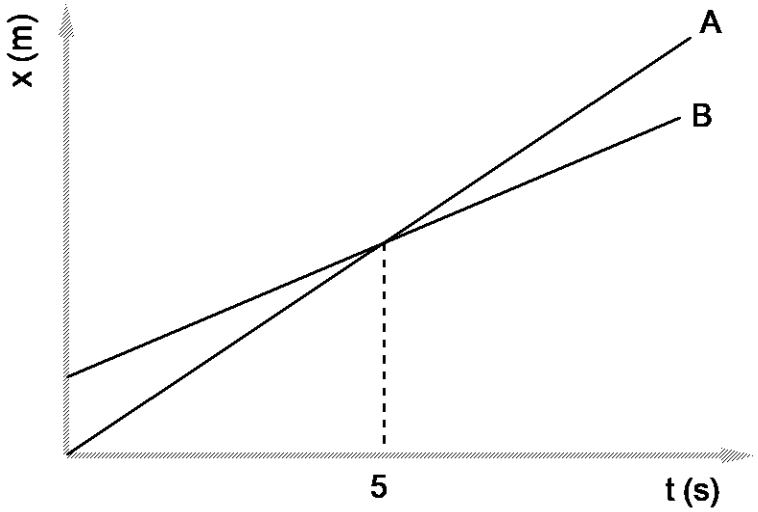
**Name**_____ **Date**_____ **Pd**____

# UNIT II Worksheet 1

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




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

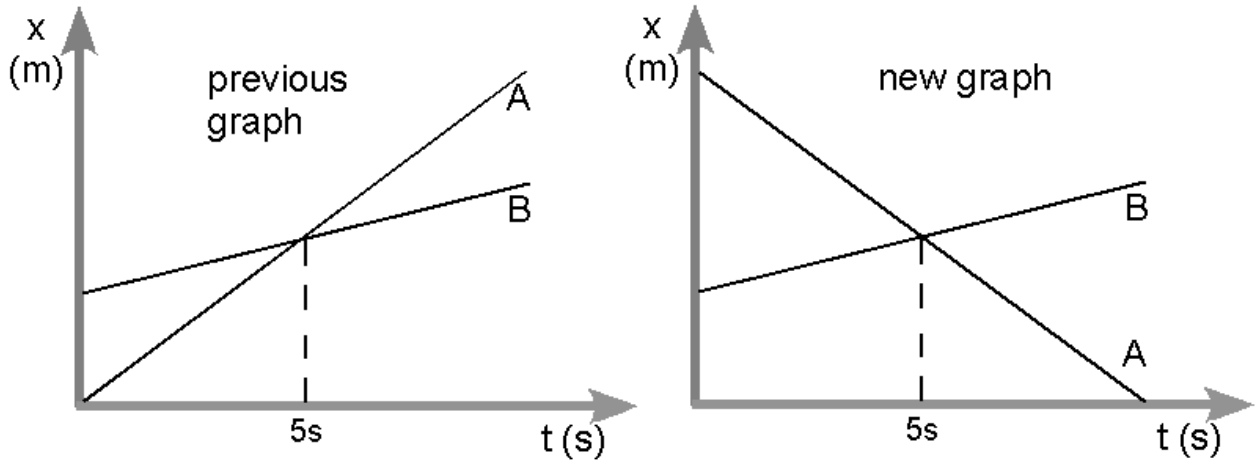
b. At t= 7s, which cyclist is ahead? How do you know?

c. Which cyclist is travelling faster at t = 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?

2. Consider the 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 the previous graph on page one?

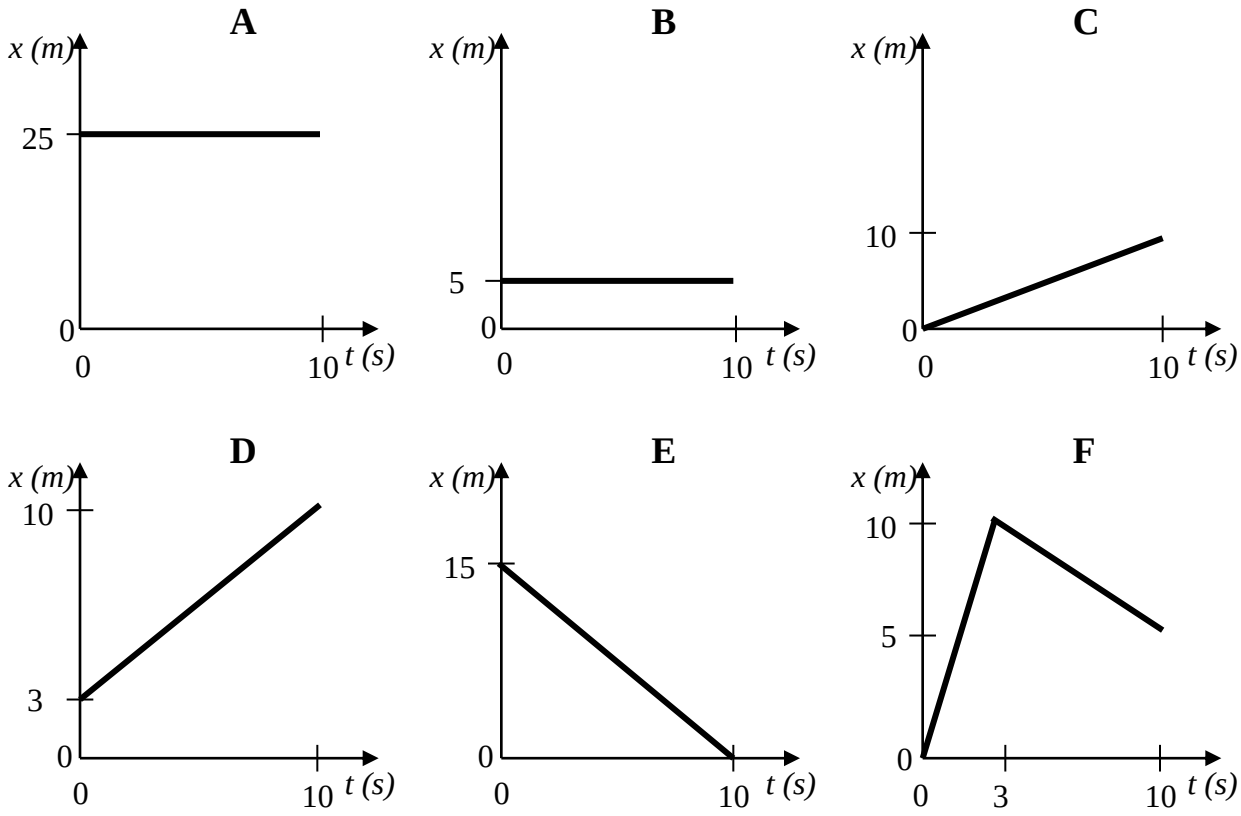
b. How does the motion of cyclist B in this graph compare to that of B in the previous graph on page one?

c. Which cyclist, on the new graph, has the greater speed? How do you know?

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

e. Which cyclist traveled a greater distance during the first 5 seconds? How do you know?

3. 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 → 1_____ 2_____ 3_____ 4_____ 5_____ 6_____ ← Most negative

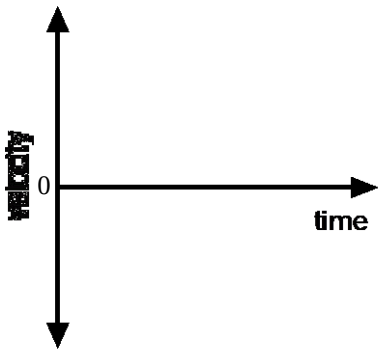
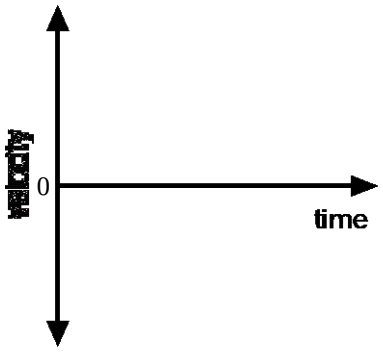
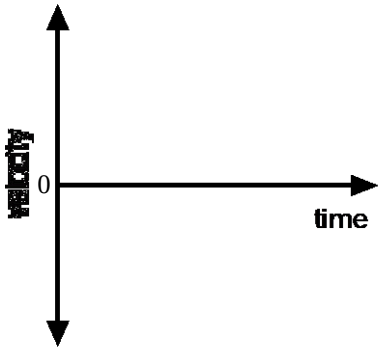
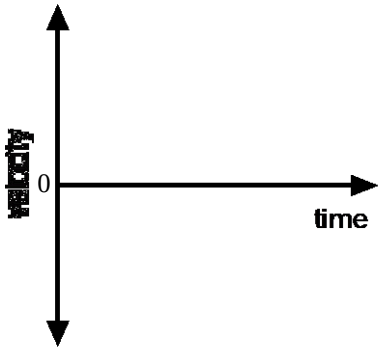
Explain your reasoning for your ranking:

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

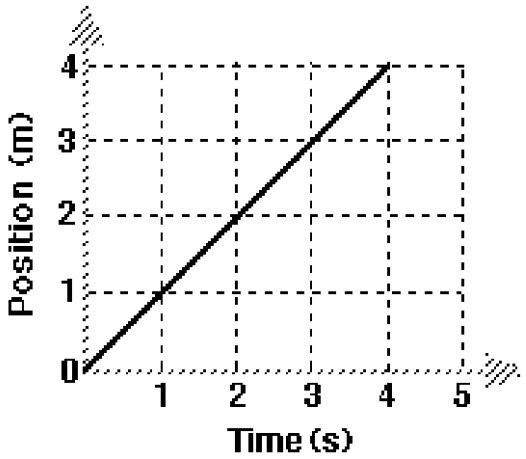
Explain your reasoning for your ranking:

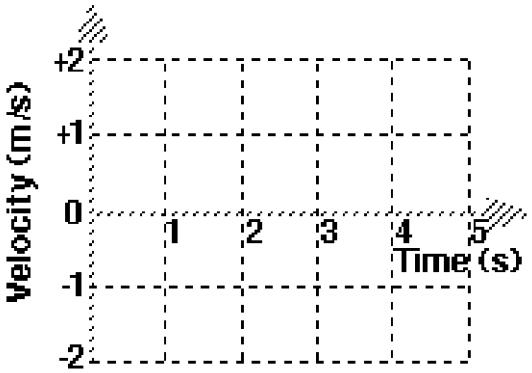
Sketch velocity vs time graphs corresponding to the following descriptions of the motion of an object.

| | |
|---|---|
| 4. The object is moving in the positive direction at a constant (steady) speed. |   |
| 5. The object is standing still. |   |
| 6. The object moves in the negative direction at a steady speed for 10s, then stands still for 10s. |   |
| 7. The object moves in the positive direction at a steady speed for 10s, reverses direction and moves back toward the negative direction at the same speed. |   |

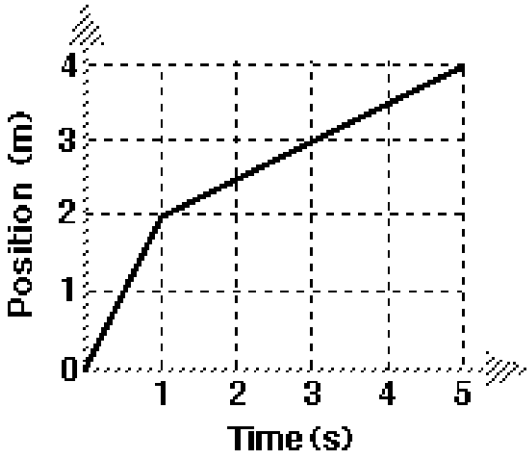
Draw the velocity vs time graphs for an object whose motion produced the position vs time graphs shown below at left.

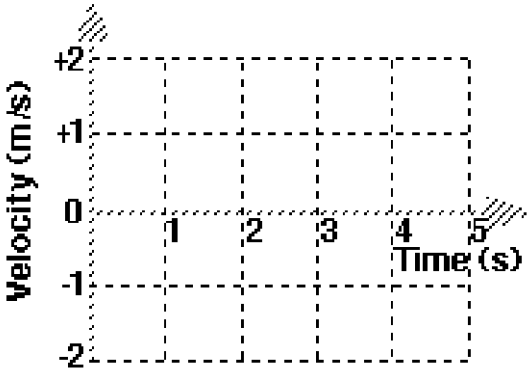
8.



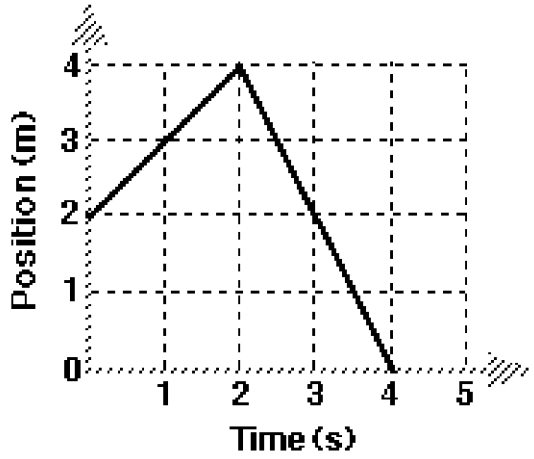



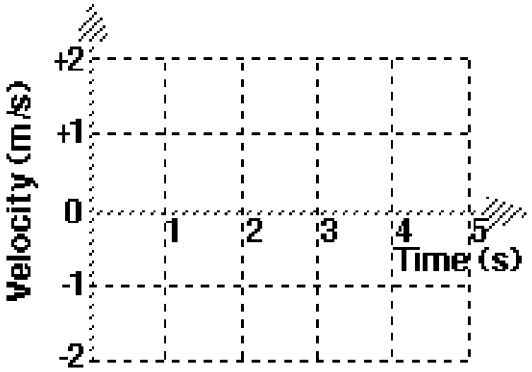

9.




10.




11. For many graphs, both the **slope** of the line and the **area** between the line and the horizontal axis have physical meanings.

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

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