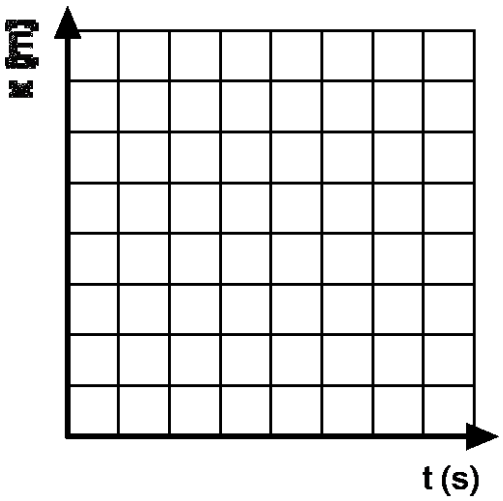
Name_____ **Date**_____ **Pd**____

UNIT II: Worksheet 2

1. Robin, roller skating down a marked sidewalk, was observed to be at the following positions at the times listed below:

t (s)	x (m)
0.0	10.0
1.0	12.0
2.0	14.0
5.0	20.0
8.0	26.0
10.0	30.0



a. Plot a position vs. time graph for the skater. Be sure to label the x and y axis.

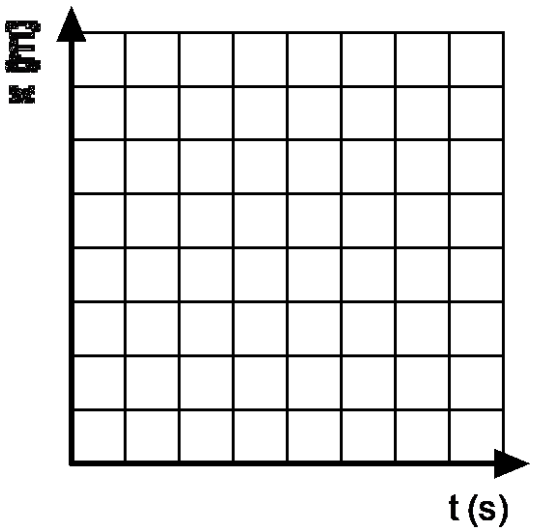
b. Write a mathematical model to describe the curve in (a).

c. How far from the starting point was she at t = 6s? How do you know?

d. Was her speed constant over the entire interval? How do you know?

2. The following data was obtained for a second trial:

t (s)	x (m)
0.0	4.0
2.0	10.0
4.0	16.0
6.0	22.0
8.0	28.0
10.0	34.0



a. Plot the position vs. time graph for the skater. Be sure to label the x and y axis.

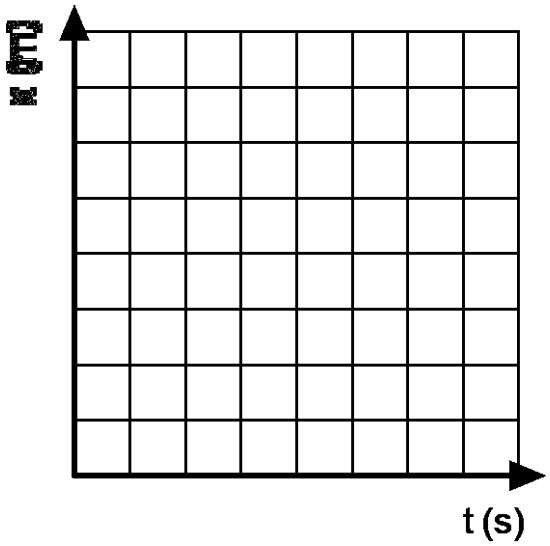
b. How far from the starting point was she at t = 5s? How do you know?

c. Was her speed constant? If so, what was it?

d. In the first trial the skater was further along at 2 s than she was in the second trial. Does this mean that she was going faster? Explain your answer.

3. Suppose now that our skater was observed in a third trial. The following data was obtained:

t (s)	x (m)
0.0	0.0
2.0	6.0
4.0	12.0
6.0	12.0
8.0	8.0
10.0	4.0
12.0	0.0



a. Plot the position vs. time graph for the skater. Be sure to label the x and y axis.

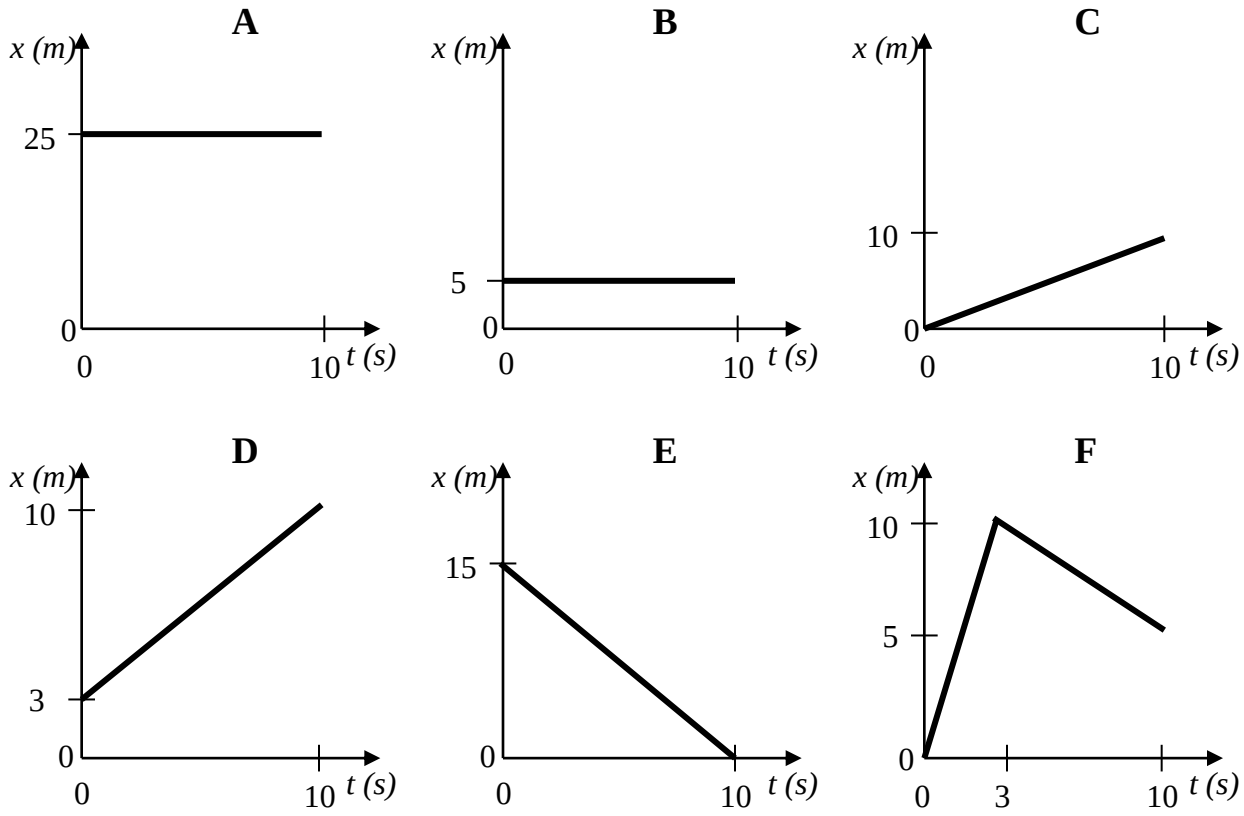
b. What do you think is happening during the time interval: t = 4 s to t = 6 s? How do you know?

c. What do you think is happening during the time interval: t = 6 s to t = 12 s? How do you know?

d. Determine the skater's average **speed** from t = 0 s to t = 12 s.

e. Determine the skater's average **velocity** from t = 0 s to t = 12 s.

4. Rank the following:



a. Rank the graphs according to which show the greatest **average velocity** from the beginning to the end of the motion. (Zero is greater than negative, and ties are possible.)

Most pos. v 1_____ 2_____ 3_____ 4_____ 5_____ 6_____ Most neg. v

Explain your reasoning for your ranking:

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

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

Explain your reasoning for your ranking: