Graphing Motion Worksheet

1. Answer the following questions about the car whose motion is graphed in the figure below.

   ![Position-time graph](image)

   a. When was the car 30 m east of the origin? ______
   b. Where was the car at 70 s? ______
   c. The car suddenly reversed direction. At what time did this occur? ______

2. Rank the average velocities from largest (1) to smallest (4) for each of the position-time graphs shown in the figure below.

   ![Position-time graph](image)

   A ______  B ______  C ______  D ______

3. Consider the motion of the bike riders in the following figure.

   ![Position-time graph](image)

   a. Write the equation that represents the motion of rider A.

   b. Where will rider A be at 1.0 s?

   c. Write the equation that represents the motion of rider C.

   d. When will rider C be at -10.0 m?
4. Use the figure below to determine the velocity of object A at:

\[ v(m/s) \]

\[ 82 \]
\[ 80 \]
\[ 78 \]
\[ 76 \]
\[ 74 \]
\[ 72 \]
\[ 70 \]
\[ 0 \]
\[ 1 \]
\[ 2 \]
\[ 3 \]
\[ t(s) \]

a. 1.0 s. __________
b. 2.0 s. __________
c. 2.5 s. __________

5. Look at the v-t graph of the toy train in the figure below.

a. During which time interval or intervals are the speed constant?

b. During which interval or intervals is the train’s acceleration positive?

c. During which time interval is its acceleration most negative?

6. Using the figure above, find the average acceleration during the following time intervals.

a. 0 to 5 s  

b. 15 to 20 s  

c. 0 to 40 s