

Part II – Graph Predicting

Given a Motion ...

You are shown the motion of an object over time. After viewing the motion using the link above,

a) Sketch a graph for position vs. time.

b) Sketch a graph for velocity vs. time.

c) Sketch a graph for acceleration vs. time.

Now discuss your graphs with your partners. Do your predictions match? Once you feel confident in your responses check using the link below. **DO NOT** click the link below until you have **WRITTEN** down and **DISCUSSED** your predictions.

Where you correct? If not, explain.

Given a Position Graph...

You are shown a graph representing the position of an object over time. After viewing the graph using the link above,

a) Describe in words what the motion would look like.

b) Sketch a graph for velocity vs. time.

c) Sketch a graph for acceleration vs. time.

Now discuss your description and graphs with your partners. Do your predictions match? Once you feel confident in your responses check using the link below. **DO NOT** click the link below until you have **WRITTEN** down and **DISCUSSED** your predictions.

Where you correct? If not, explain.

Given a Velocity Graph...

You are shown a graph representing the velocity of an object over time. After viewing the graph using the link above,

a) Describe in words what the motion would look like.

b) Sketch a graph for position vs. time.

c) Sketch a graph for acceleration vs. time.

Now discuss your description and graphs with your partners. Do your predictions match? Once you feel confident in your responses check using the link below. **DO NOT** click the link below until you have **WRITTEN** down and **DISCUSSED** your predictions.

Where you correct? If not, explain.

Given an Acceleration Graph...

You are shown a graph representing the acceleration of an object over time. After viewing the graph using the link above,

a) Describe in words what the motion would look like.

b) Sketch a graph for position vs. time.

c) Sketch a graph for velocity vs. time.

Now discuss your description and graphs with your partners. Do your predictions match? Once you feel confident in your responses check using the link below. DO NOT click the link below until you have WRITTEN down and DISCUSSED your predictions.

Where you correct? If not, explain.

Now view this [set of graphs](#). Notice that the acceleration graph is identical to the one above. The velocity graph is shifted and the position graph is completely different. What is going on? Are these graphs also correct? Explain.

Part III – Mathematical Connections

In this section you are given a graph of either $x(t)$ or $v(t)$ and asked find a mathematical function. Try to figure out the correct formula using ideas from kinematics rather than just guessing and plugging.

Find $x(t)$ given a $x(t)$ graph. (Note that the graph depicts the position as a function of time.)

$$x(t) =$$

Find $v(t)$ given a $x(t)$ graph. (Note that the graph depicts the position as a function of time.)

$$v(t) =$$

Find $a(t)$ given a $x(t)$ graph. (Note that the graph depicts the position as a function of time.)

$$a(t) =$$

Find $x(t)$ given a $v(t)$ graph. (Note that the graph depicts velocity as a function of time)

$$x(t) =$$

Find $v(t)$ given a $v(t)$ graph. (Note that the graph depicts velocity as a function of time)

$$v(t) =$$

Find $a(t)$ given a $v(t)$ graph. (Note that the graph depicts velocity as a function of time)

$$a(t) =$$