

## Describing Motion and Position Assessment Key and Rubrics

Question 1 Rubric:

Item/Score	0	1	2	3
<b>Mathematical Concepts</b>	Velocity and acceleration are not related.	An incorrect relationship between velocity and acceleration is presented.	A relationship between velocity and acceleration is correct but does not demonstrate understanding (e.g. m/s/s).	Acceleration is defined as the change in velocity over change in time.
<b>Explanation</b>	Fails to state that Frank accelerated at a faster rate.	Claims that Frank accelerated at a faster rate without an explanation.	Claims that Frank accelerated at a faster rate with a partial explanation (e.g. steeper graph).	Claims that Frank accelerated at a faster rate with with an explicit explanation (e.g. steeper graph means that velocity changes at a faster rate which means a higher value of acceleration).

Question 2 Answer Key:

Position vs. time                      Object is not moving

Velocity vs. time                      Object is moving at constant velocity

Acceleration vs. time                      Object is accelerating at a constant rate

Direction vs. time                      Object is moving in a straight line

Question 3 Rubric:

<b>Item/Score</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Accuracy of Plot</b>	Points are not plotted correctly or extra points were included.	Most points are plotted correctly or some points are missing.	All points are plotted correctly and are easy to see but may not have carefully drawn lines.	All points are plotted correctly and are easy to see. A ruler is used to neatly connect the points or make the bars, if not using a computerized graphing program.
<b>Title</b>	A title is not present.	A title is present at the top of the graph but does not relate to the graph.	Title relates to the graph but may not be completely correct.	Title is explicit and printed at the top of the graph.
<b>Labeling of X-Axis</b>	The X axis is not labeled.	The X axis has a label without units.	The X axis is labeled with the units only (e.g. seconds, minutes)	The X axis has a clear, neat label that includes the units used for the independent variable (e.g, time).
<b>Labeling of Y-Axis</b>	The Y axis is not labeled.	The Y axis has a label without units.	The Y axis is labeled with units only (e.g, m/s, meters).	The Y axis has a clear, neat label that includes the units for the dependent variable (e.g, velocity, acceleration, distance, direction).