

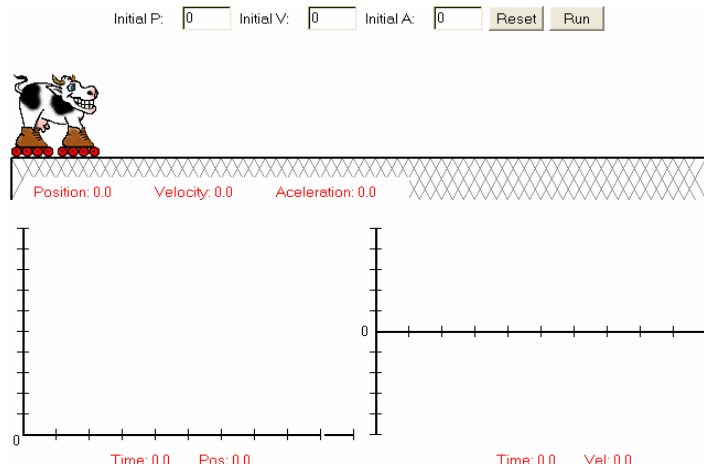
Graphs of Motion in One Dimension

Purpose:

to examine and compare the shapes of position-time and velocity-time graphs for objects moving in one dimension

Procedure:

Use the simulation at the web site <http://jersey.uoregon.edu/vlab/block/Block.html> to complete the summary table illustrating shapes of graphs for objects experiencing one-dimensional motion.



Use the knowledge you gain from this simulation and class discussion to complete the parts of the table illustrating motion that the simulation will not run.

| Initial Position | Initial Velocity | Acceleration | Sketch of Position-Time Graph | Sketch of Velocity-Time Graph |
|------------------|------------------|--------------|-------------------------------|-------------------------------|
| 0 | Positive | 0 | | |
| 0 | Negative | 0 | | |
| 0 | 0 | Positive | | |
| 0 | 0 | Negative | | |
| Positive | 0 | Positive | | |
| Positive | 0 | Negative | | |

| Initial Position | Initial Velocity | Acceleration | Sketch of Position-Time Graph | Sketch of Velocity-Time Graph |
|------------------|------------------|--------------|-------------------------------|-------------------------------|
| Negative | 0 | Positive | | |
| Negative | 0 | Negative | | |
| 0 | Positive | Positive | | |
| 0 | Positive | Negative | | |
| 0 | Negative | Positive | | |
| 0 | Negative | Negative | | |
| Positive | Positive | 0 | | |
| Positive | Negative | 0 | | |
| Negative | Positive | 0 | | |
| Negative | Negative | 0 | | |
| Positive | Positive | Positive | | |

| Initial Position | Initial Velocity | Acceleration | Sketch of Position-Time Graph | Sketch of Velocity-Time Graph |
|------------------|------------------|--------------|-------------------------------|-------------------------------|
| Positive | Positive | Negative | | |
| Positive | Negative | Positive | | |
| Positive | Negative | Negative | | |
| Negative | Positive | Positive | | |
| Negative | Positive | Negative | | |
| Negative | Negative | Positive | | |
| Negative | Negative | Negative | | |
| 0 | 0 | 0 | | |
| Negative | 0 | 0 | | |
| Positive | 0 | 0 | | |

Questions:

1. What is indicated by a **velocity-time** graph that crosses the **x-axis**?
2. How can you tell by looking at a **position-time** graph whether or not the object was changing speed?
3. How can you tell by looking at a **velocity-time** graph whether or not the object was changing speed?
4. What is the effect of changing the initial position on **position-time** and **velocity-time** graphs?
5. What is represented by the **y-intercept** on a **position-time** graph?
6. What is represented by the **y-intercept** on a **velocity-time** graph?
7. What is represented by an **x-intercept** on a **position-time** graph?
8. What is represented by an **x-intercept** on a **velocity-time** graph?
9. No matter what the initial position and initial velocity are, the **velocity-time** graph of an object with a **positive acceleration** will always ...
10. No matter what the initial position and initial velocity are, the **velocity-time** graph of an object with a **negative acceleration** will always ...
11. No matter what the initial position and initial velocity are, the **velocity-time** graph of an object with **no acceleration** will always ...