

Changing Position

Software

- VPython, Python and the graphical user interface (GUI) IDLE

Objective

Gain experience writing VPython programs

- Use new statements (`make_trails`) and conditionals (`while`, `if`, `for`)

Learn how to animate an object with constant velocity

Learn how to effectively search for help in tutorials and reference manuals

Group

Plot two balls that are different colors on the screen

- Give each ball a different magnitude velocity
- Animate the balls to get them to move for a second
- Use `make_trails` to visualize the objects' motion
- Use dots and adjust interval so you can see individual dots
- Make one ball change direction after half the time interval
- Specify velocities that cause the balls to move approximately perpendicular to each other.

Individual

You can always modify (correct) programs you have received feedback on prior to the programming due date.

This week you will model the cart on the horizontal track you did in *Lab 1: Simple Motion*.

Complete Computational Problem 1.P.122

- Note 1: trial and error is a totally acceptable method for figuring out how to line up objects.
- Note 2: use the actual physical cart and track dimensions to make modeling simpler – choose a unit for your numbers

Advanced

Create a program of your own choosing.

- Make an object move with a constant acceleration
- Add a graph of position vs time
- Add a graph of velocity vs time

NOTE: You only need to complete one A-level lab exploration.

Use comments in your program.

Include a header:

```
# Name (full)
```

```
# Course name
```

```
# Program name and Date
```

```
# Lab section and Instructor
```