

Name of Activity: Calculating and Displaying Gravitational Force

Approximate Duration: 40 minutes

Relevant Section of Text: 3.6

Write on Board

- Answer the 'planning' questions on a whiteboard **before** starting

Checking Questions/Things to look for

- Students have difficulty with finding the scale factor
 - The video goes through how to make a first approximation, but it is mostly trial and error to find a good scale factor
 - Must multiply the scale factor by the F_{grav} in the axis of the arrow

Grading

- Program runs and looks reasonable
- Correct physics
 - Gravitational force calculated correctly
 - Arrows pointing in the correct direction
 - Arrows have correct relative magnitude
- Reasonable scale factor

General Grading Key for VPython

- 100% of total points for a program that runs correctly and exhibits all the required features.
- 0% for a program that does not run (i.e. produces an error message and quits).
- For partially correct or partially complete programs, give:
 - 90% for a program with no physics errors, but one missing feature
 - 80% for a program with no physics errors, but several missing features
 - 50-70% for a program with some physics errors
 - 40% for a rudimentary program that is not complete