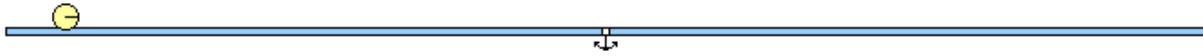


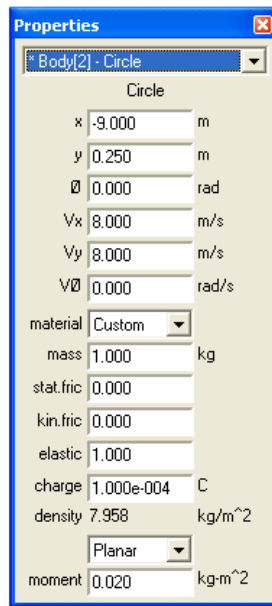
Interactive Physics Instructional Activity #1

Name: _____

From the teacher-share directory (the “T” drive) open the file called “**Instruction1.ip.**” You should see something like this:



Click the “**Run**” button to see what happens when the simulation runs. Hit the “**Stop**” and “**Reset**” buttons to reset the simulation. Now double-click the circle on the left to open its properties window. It should look like this:



Try changing “**V_x**” and “**V_y**” values (one at a time), and notice what happens when you run the simulation. Now try changing other properties, hitting the “**Run**” button each time to see what effect the change had on the simulation. Remember to hit the “**Stop**” and “**Reset**” buttons after each run.

- 1) What do the “**V_x**” and “**V_y**” properties change about the object?
- 2) What do the “**x**” and “**y**” properties change about the object?
- 3) What does the “**V_θ**” property affect?
- 4) What does the “**elastic**” property affect?

Now, change all properties back to their original values, and from the top menu, click “**World**” > “**Accuracy**,” and notice that the “**Animation Step**” is currently set for **100/s**. This means that the computer is calculating 100 frames per second. In other words, the simulation is broken into 100 small steps per second. Click “**Run**” and notice in the lower left corner of the screen that the number of elapsed frames is displayed. You can control the simulation using the slider bar, which looks like this:



Adjust the slider bar to 100 frames. This represents 1 second.

- 5) After 1s of the simulation, what are the x- and y-position values of the circle?

Now, change the “**Animation Step**” from 100/s to 1000/s, and rerun the simulation.

- 6) How has the simulation changed as a result of greatly increasing the “**Animation Step**?”

Now, after resetting the simulation, single-click the circle, and then from the top menu, click “**Measure**” > “**Velocity**” > “**All**,” and notice the box that appears:

Velocity of Circle 2	
V_x	V_x 8.000 m/s
V_y	V_y 8.000 m/s
$ V $	$ V $ 11.314 m/s
V_θ	V_θ 0.000 rad/s

This box allows you to monitor the velocity of the circle at any time.

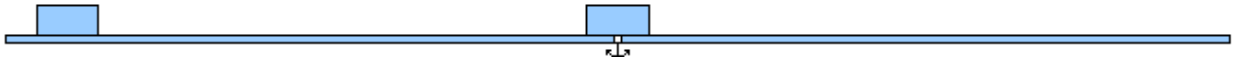
- 7) What is meant by the symbol “ $|V|$?”

Reset the simulation. Select both the circle (the “ball”) and the rectangle (the “floor”), and from the top menu, click “**Object**” > “**Do Not Collide**.” Notice what happens when you run the simulation.

- 8) What effect does this have on the simulation?

Interactive Physics Instructional Activity #2

Open the file named “**Instruction2.**” It should look like this:



Check the properties of all three rectangles (the two “blocks” and the “floor”), and notice that, for each object, the “**stat. fric**” and “**kin. fric**” values are set to 0.000. Run the simulation.

9) What do you suppose these two values affect?

Reset the simulation, and try changing the “**kin. fric**” value of the block on the left to 1.000. Run the simulation.

10) Did the simulation change? If so, how?

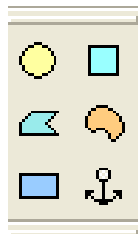
Reset the simulation, and change the “**kin. fric**” value of the floor to 1.000 as well. Run the simulation.

11) How did the simulation change?

12) What conclusion(s) can you draw about how the “**kin. fric**” property changes a simulation involving more than one object?

Interactive Physics Instructional Activity #3

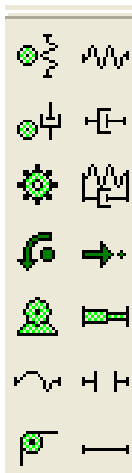
Now that you’ve had some experience with Interactive Physics, follow your teacher’s instructions to determine how to use each of the tools in the following toolbar:



Again following your teacher’s instructions, learn how to use each of the following tools:



Last, learn how to use each of the following tools:



13) In the spaces above, label the name of each tool, and write a brief description of what it is used for.