Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour\_\_\_\_

PHYSICS: ACTIVE REVIEW for quiz 6

1.Forces on an incline: go online to PhET, get into physics motion simulations, and find **Ramp: Forces and Motion**. Under “more controls”, set the object position to 5m and the ramp angle to 20 degrees. Under “vectors”, make sure both boxes are checked.

a)Draw the FBD diagram for the object as shown b)how big is the green “sum of forces” vector?

What should the object do when you hit the play button?

c)now hit the play button and note what the object does and doesn’t do, and explain why this is the case:

Now click the pause button and increase the angle of the ramp to 40 degrees.

d)draw an accurate FBD of the object; break the gravitational e)how big is the green “sum of forces”

force vector into components, one parallel to the ramp, vector? What should the object do

and one perpendicular to the ramp when you hit the play button?

f)Hit the play button, note what happens, *and pause the object* g)in which direction is the object moving while

*soon after it hits the horizontal section.* Draw a FBD of the object on the horizontal section? Which direction does

while on the horizontal section (3 arrows). the net force vector point? which way is the object accelerating?

2.Sloshing! go online to PhET, get into physics motion simulations, and find **Forces and Motion: Basics**, and choose the “Acceleration” simulation. Replace the box with the bucket of water ***and pause the simulation.***

a)while still pausing the simulation, apply as much force b)draw a sketch that shows which way the water

to the bucket as possible, and predict which way the actually sloshes after hitting the play button:

water in the bucket will slosh when you hit play:

c)using the word inertia, devise an explanation for the direction of “slosh”:

d)using the cork apparatus supplied by your teacher, **predict** which way the cork will move when you accelerate the device to the right: which way did the cork actually move?

Which way did the water slosh?

### e)Google “[What happens to a helium filled balloon in a car?](https://www.youtube.com/watch?v=FjuMvUbT8gA)” and watch the Youtube video of the green balloon in the back of the pickup truck.

Make a generalized statement that describes which the balloon always moves: