PreAP Physics

Ms. Zimmer

Lesson Title:	**Gravity Force Lab**
Standards (TEKS)	5B
Learning Objectives:	• Determine qualitatively what the force of gravity between two objects depends on. • Develop a procedure and determine experimentally using a PhET Simulation the Universal Gravitational constant G.

AGENDA	KEY POINTS
1. Qualitative Observations 2. Quantitative Measurements	• Gravitational forces are created between all massive bodies. • The force of gravity is direction proportional to the mass of the objects, and inversely proportional to the distance between the objects.

Time	**Learning Activity**
90	This lab begins with students completing a prelab where they write the formula for the Law of Universal Gravitation. There are two parts to the PhET Lab. Part 1 – Qualitative Observations Students study the formula and use the simulation to explore how changing the masses and distance between the two masses affects the force of gravity between them. Part 2 – Quantitative Measurements Students use the simulation and Excel to experimentally determine the constant G. *Possible issues* – once students have their data they struggle with where to go next. You will need to push them to look at the formula and consider what they could graph and what the slope would represent. They also need to record the constants as they will need them to find G once they get their best fit line. There is a sample idea on the lab handout that students can use to guide their thinking,