Newton's law gravitational force

Newton's law of gravitation: every particle of matter in the universe attracts every other particle with a force that is proportional to the product of their masses and inversely proportional to the square of the distance between them. The formula is: 

\[ F = G \frac{m_1 m_2}{r^2} \]

where 
- \( F \) is the force between the masses 
- \( G \) is the gravitational constant 
- \( m_1 \) and \( m_2 \) are the masses of the objects 
- \( r \) is the distance between the objects

Newton's law of gravitation is the foundation of classical mechanics and plays a crucial role in celestial mechanics, determining the motion of planets, moons, and stars in the solar system. It also explains the orbits of satellites and the tides on Earth.

Activities:
1. How do you think your curve would have looked different if Point F had been closer (or further away)?

2. Before you experiment, describe what you feel in your arm as you pull the string up to the swivel washer.

3. As you pull your string, the washer may become airborne. What is happening with your string?

4. When you pull the string, observe the acceleration of your arm. What are you doing with your arm?

5. As you pull the string, you observe the washer becomes airborne. Why?

6. As you pull the string, what do you notice about the washer?

7. As you pull the string, what do you notice about the washer?

8. As you pull the string, what do you notice about the washer?

B. How do you think your curve would have looked different if Point F had been closer (or further away)?

C. As you pull the string, what do you notice about the washer?

D. As you pull the string, what do you notice about the washer?