**Experiment #2: Determination of the Acceleration of Gravity**

**Objective:** In this experiment, you will determine the acceleration of gravity by studying golf balls as they fall.

**Materials:** golf ball, stopwatch, meter stick, chair

**Procedure:**

1. Select wall space to use in Mr. Mills’ classroom or lab.
2. Have one group member stand in a chair and measure 2.0 meters above the floor. At the 2.0 meter point, place a small star sticker to mark the height.
3. The group member standing in the chair will position a golf ball at the star sticker.
4. The ball is released at the exact moment another group member hits the start button on the stopwatch. Be careful to drop the ball from rest and not throw it downward.
5. As soon as the ball hits the ground, hit the stop button on the stopwatch and record the time in the data section below.
6. Conduct this experiment 20 times.

**Data:**  In this section, you will record the time for each of the 20 trials.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
17. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
18. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
19. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
20. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Calculations:**

First, calculate the average time from the 20 trial that you conducted.

Secondly, use the average time and other known information to calculate the acceleration of gravity in m/s2.

**Experimental Errors:**

Identify three valid experimental errors that may have affected the results of this experiment.