(a) Design an experimental procedure to determine the formula for time of flight for a projectile, dropped from height **h** on a planet with gravitational acceleration **g**, using only the given equipment (stopwatch, ruler, ball).

- Include a clear **step-by-step procedure**.
- Identify what quantities you will **measure directly**.
- Explain how you will use your measurements to calculate time of flight.

_____

_____

_____

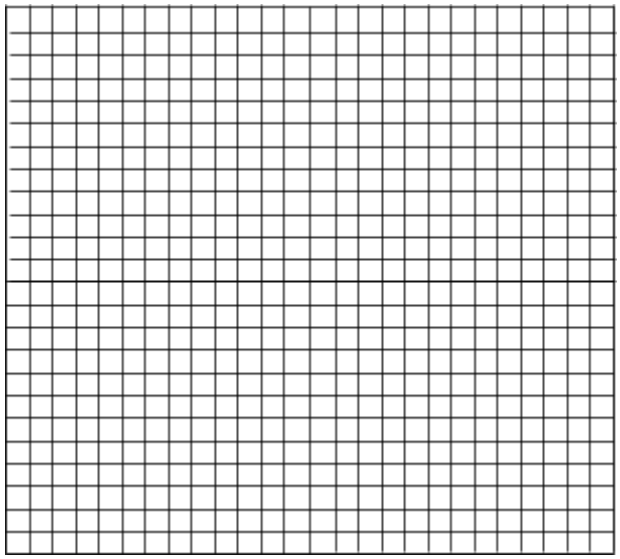
_____

_____

(b) Enter the respective values into their respective boxes as you are following the simulation.

| Time of flight (seconds) | Height ball is dropped from (meters) |
|---|---|
| | |
| | |
| | |
| | |
| | |

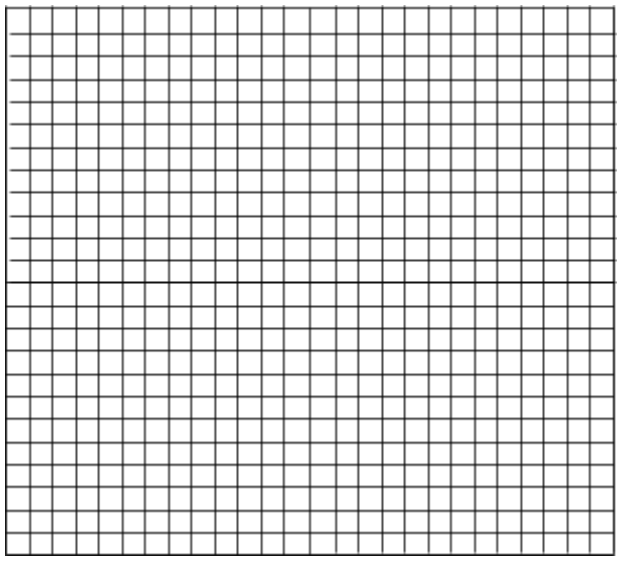
(c) Graph the data you just gathered in order to determine the relation between time of flight and height ball is dropped from.



(d) Enter the respective values into their respective boxes as you are following the simulation.

| Time of flight (seconds) | Gravitational acceleration (meters/second$^2$) |
|---|---|
| | |
| | |
| | |
| | |
| | |

(e) Graph the data you just gathered in order to determine the relation between time of flight and gravitational acceleration.



(f) Now establish a relationship between height, gravitational acceleration, and time of flight. Make sure to recognize a constant **k** to represent the proportionality factor in the relation. Then, find the value of k.

(g) What are some ways you can verify this relationship?

_____

_____

(h) If a ball is dropped from a height of 50 meters, how long will it take to reach the ground on Earth (g = -9.81 m/s$^2$)?