Physics Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Drones and Net Force**

Distance to target height = \_\_\_\_\_\_\_\_ m

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Drone Setting (describe) | Mass (g)  Mass (kg) | Time to height Trial 1 (s) | Time to height Trial 2 (s) | Time to height Trial 3 (s) | Average time to height (s) |
| 1. Drone alone |  |  |  |  |  |
| 2. |  |  |  |  |  |
| 3. |  |  |  |  |  |
| 4. |  |  |  |  |  |
| 5. |  |  |  |  |  |

**Calculations**

1. Using your *average* time to height, calculate the average acceleration of the drone for each setting. Show your work here. (Hint: d = vit + ½at2)

2. Using Newton’s second law, determine the net force (Fnet) acting on the drone for each setting. Show your work here.

3. Find the *weight* of the drone (Fw) for each setting. Show your work here.

4. Now determine the *applied* force (Fa) provided by the drone’s rotors for each setting. Show your work here.

5. How does the applied force compare from setting to setting? What does that tell you about the performance of the drone?

**Do, See, Learn**

Summarize the results of your experimentation. In at least three complete sentences, what did you DO (with your hands), what did you SEE (with your eyes), and what did you LEARN (with your mind)?