**Timing a Tube with Torricelli**

1. Open the valve and add some water to prime the device until water flowed out of the spigot. Close the valve.
2. Add 40 mL of water to the device. Time how long it takes for the device to empty. Record in the table below.
3. Repeat the process for 80 mL, 120 mL, 160 mL, 200 mL, 240 mL, 280 mL, 320 mL, 360 mL, and 400 mL.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Volume (mL) | 40 | 80 | 120 | 160 | 200 | 240 | 280 | 320 | 360 | 400 |
| Time (s) |  |  |  |  |  |  |  |  |  |  |

1. Plot the results on the next page.
2. Do the points appear to be in a straight line? Is there some other pattern that you see?
3. Complete the following table:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Volume (mL) | 40 | 80 | 120 | 160 | 200 | 240 | 280 | 320 | 360 | 400 |
| Time (s) |  |  |  |  |  |  |  |  |  |  |
| Time Squared |  |  |  |  |  |  |  |  |  |  |
| \_\_\_Volume\_\_Time Squared |  |  |  |  |  |  |  |  |  |  |

1. Find the mean of the ratios of volume to time squared.
2. Estimate how long it would take for a volume of 500 mL to drain.
3. What volume of water should be used to make a 1-minute timer?