## Experiment: Bottle Rockets

These notes are provided as reference. Do not simply print these and expect that this suffices as a complete science write-up.

## Purpose: to discover the optimum conditions for

 launching bottle rocketsMethod: Please describe the steps to repeat this experiment.
Materials: 2L plastic pop bottle one air pump launching pad water plug and tire valve
Diagram: Please draw a labelled diagram showing the launcher, the pump, the bottle and the expected trajectory of the rocket.

## Observations:

| water |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| capacity | 2 L | 2 L | 2 L | 2 L | 2 L |  |  |
| water volume | 0 ml | 20 <br> ml | 30 <br> ml | 40 <br> ml | 50 ml | 250 ml | 400 ml |
| angle | 45 | 45 | 45 | 45 | 45 |  |  |
| distance <br> travelled | 3 m | 6 m | 8 m | 12 <br> m | 12 m | 20 m | 3 m |
| aerodynamics | x | x | x | x | x | x | x |


| aerodynamics |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| capacity | 2 L | 2 L | 2 L | 2 L |  |  |
| water volume | 100 ml | 100 ml | 100 ml | 100 ml |  |  |
| angle | 45 | 45 | 45 | 45 |  |  |
| distance <br> travelled | 15 m | 12 m | 4 m |  |  |  |
| aerodynamics | cone | wing | 2 wings |  |  |  |

Make sure to seat the valve firmly in order to create a tight seal when launching the rocket. This seemed to make the biggest difference to ensure a successful launch.

Conclusions and Reflection: Please any conclusions about how to make a successful launch for this experiment. You must also include at least two sources of error.

