Physical Science Velocity/Acceleration Names \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Design a Slow Flyer Activity

**Objective**: The purpose of this experiment is to practice measuring speed by testing the effect of

wingspan on the speed of a paper flyer.

**Procedure**

1. Each group will make four paper flyers by folding pieces of paper. Each flyer must be 30

centimeters long (the length of a sheet of typing paper). The four planes will have different

wingspans.

2. Record the wingspan of the wings in centimeters on the table. Write on each plane its wingspan.

* Test your plane several times before starting the actual experiment

3. When making measurements during the experiment, follow these rules:

* Throw the plane parallel to the ground
* Throw with a gentle snap of the wrist – don’t use your whole hand or arm, or to much force. For good results you need to be constant!
* If the plane hits the wall or ceiling, throw again
* Measure the flight from where the plane was RELEASED ( a tape line on the floor helps with this) to where it hits the ground (slides do not count)
* If the plane curves, measure flight as a straight line
* If in hallway, work quietly
* Each team will need a person to throw the plane, another to be the other “spotter” (to see where it lands), and a timer

4. Record both the time and the distance it traveled. Divide to find the speed. Average the speed from the three trials and use that as your final speed for that plane.

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| --- | --- | --- | --- | --- | --- | --- |
| Plane number |  | Wingspan  (centimeters) | Time  (seconds) | Distance  (meters) | Speed  (m/s) | Avg Speed of 3 trials |
| Plane 1 | Trial 1 |  |  |  |  |  |
|  | Trail 2 |  |  |  |  |  |
|  | Trail 3 |  |  |  |  |  |
| Plane 2 | Trial 1 |  |  |  |  |  |
|  | Trail 2 |  |  |  |  |  |
|  | Trail 3 |  |  |  |  |  |
| Plane 3 | Trial 1 |  |  |  |  |  |
|  | Trail 2 |  |  |  |  |  |
|  | Trail 3 |  |  |  |  |  |
| Plane 4 | Trail 1 |  |  |  |  |  |
|  | Trail 2 |  |  |  |  |  |
|  | Trail 3 |  |  |  |  |  |

**Analysis**:

1. On graph paper make a graph of average speed verses wingspan. Average speed will go on the vertical and wingspan will go on the horizontal. Transfer the data from above to the table below to make it easier for you to graph.

|  |  |
| --- | --- |
| On the Horizontal  **Wingspan (cm)** | On the Vertical  **Average Speed (m/s)** |
|  |  |
|  |  |
|  |  |
|  |  |

1. The dependent variable is the measured factor that is dependent on the independent variable. What is the dependent variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The independent variable is the factor adjusted by the experimenter. What will be the independent variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Conclusion** (Restate the objective, summarize the procedure, summarize the results.)

Did the wingspan affect the speed of the paper flyer? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_