**Merrylands High School**

**Junior Assessment Notification**

**Subject**: Science **Stage**: 5 **Year**: 10

**Coordinating teacher:** A. Karahangil & P. Clarke

**You will be awarded a mark from:** 0 to 24

**Topic**: Motion

**Course component:** First hand investigation

**Date assigned:**  **Date due:**

**Task outline:**

You will complete 2 activities to show your understanding of Newton’s laws:

1. Make a balloon-powered car that can travel 30 cm (this can be done in groups). Write an experiment report to explain how the car is made and how the balloon-powered car works based on Newton’s laws (this is to be done individually)
2. Do experiments to see what will make the balloon-powered car travel the furthest (this can be done in groups). A class race will be held. Write an experiment report that describes the experiments and explains why your car travels the further than before (this is to be done individually).

All activities are to be completed in class time. All work must be printed out and handing in as a hard copy or emailed to your teacher.

**Equipment required:**

* Materials to make the balloon-powered car
* School laptop

If you have difficulty obtaining materials to make the balloon-powered car, please speak to your teacher.

**Outcomes assessed:**

A student:

5.6 applies models, theories and laws to situations involving energy, force and motion

5.14 undertakes first-hand investigations independently with safety and competence

5.18 selects and uses appropriate forms of communication to present information to an audience

5.19 uses critical thinking skills in evaluating information and drawing conclusions

5.20 selects and uses appropriate strategies to solve problems

**Coordinating teacher:** P.Clarke & A. Karahangil **Head teacher:** A. Leung

**Balloon powered car marking criteria and feedback – Part 1: Making the balloon-powered car**

**Student’s name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| **Aim** | Aim is clearly stated and starts with ‘To’ | 1 |
|  | 0 |
| **Equipment** | All equipment listed | 1 |
|  | 0 |
| **Method** | Clearly written as a procedure text in present tense with each step starting with a verb; there are diagrams or photos to support the method; the reader can replicate the experiment easily by following the method | 2 |
|  | 1 |
|  | 0 |
| **Results** | Results are clearly presented in appropriate forms, which may include tables, graphs, diagrams and/or photos; Headings, axes titles and units are appropriate | 2 |
|  | 1 |
|  |  |
| **Discussion** | Results were clearly explained using scientific principles using at least two of Newton’s laws | 3 |
| Results were explained using at least two of Newton’s laws | 2 |
| Results were explained using one of Newton’s laws | 1 |
|  | 0 |
| **Conclusion** | Appropriate conclusion related to the aim | 1 |
|  | 0 |

Total Mark (out of 10):

What was done well? Why?

What needs to be improved? How?

**Balloon powered car marking criteria and feedback – Part 2: Designing a faster balloon-powered car**

**Student’s name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| **Aim** | Aim is clearly stated and starts with ‘To’ | 1 |
|  | 0 |
| **Hypothesis** | Hypothesis is a testable statement that is a prediction of the outcome of the experiment | 1 |
|  |  |
| **Equipment** | All equipment listed | 1 |
|  | 0 |
| **Method** | Clearly written as a procedure text in present tense with each step starting with a verb; there are diagrams or photos to support the method; the reader can replicate the experiment easily by following the method | 2 |
|  | 1 |
|  | 0 |
| **Safety precautions** | Safety issues and precautions are identified | 1 |
|  | 0 |
| **Results** | Results are clearly presented in appropriate forms, which may include tables, graphs, diagrams and/or photos; Headings, axes titles and units are appropriate; trends are identified | 3 |
|  | 2 |
|  | 1 |
|  | 0 |
| **Discussion** | Results were clearly explained using scientific principles using at least two of Newton’s laws; possible sources of errors were described; modifications to improve the experiment are suggested | 4 |
|  | 3 |
|  | 2 |
|  | 1 |
|  | 0 |
| **Conclusion** | Appropriate conclusion related to the aim | 1 |
|  | 0 |

Total Mark (out of 14):

What was done well? Why?

What needs to be improved? How?

**Balloon powered car marking criteria and feedback – Part 3: Make your car safe.**

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**Students name**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| 1. | - Identifies 2 safety features that can be added to the car  - identifies 1 safety feature that can be added to the car  - identifies no safety feature that can be added to the car | 2  1  0 |
| 2. | - Justifies use of 2 safety features using Newton’s laws  - Justifies use of 1 safety feature using Newton’s laws  - No justification | 2  1  0 |
| 3. | - Describes how both safety features are manufactured  - Describes how one safety feature is manufactured  - No description | 2  1  0 |

Total Mark (out of 6):