

Project Marble Drop

Project Title: _____

Group Members' Names:

Due Date: _____

Checklist

- | | | |
|--------------------------|---|-----------|
| <input type="checkbox"/> | Preliminary Sketch | /4 |
| <input type="checkbox"/> | Structure meets height and length requirements | /4 |
| <input type="checkbox"/> | Structure meets the design criteria | /4 |
| <input type="checkbox"/> | Structure meets the material criteria | /4 |
| <input type="checkbox"/> | Marble moves from start to finish unaided | /3 |
| <input type="checkbox"/> | Marble stops when it reaches the floor | /2 |
| <input type="checkbox"/> | Marble goes through 7 steps from start to finish | /4 |
| <input type="checkbox"/> | Design Paragraph | /4 |
| <input type="checkbox"/> | Materials Paragraph | /4 |
| <input type="checkbox"/> | Design Difficulties and Changes Paragraph | /4 |

Total: **/37**

Project Marble Drop

You have entered the Great Canadian Science Challenge. The challenge this year is to build a structure that will successfully allow a marble to travel, without assistance, from a starting height of at least 1 meter down to the floor.

Criteria:

- Your structure must be at least 1m high
- Your structure must be no longer than 1m from start to finish.
- Your structure must include the following: truss (triangles), an arch or dome, a beam, suspension, at least 2 rigid joints, at least 2 mobile joints.
- You must include the following materials: at least 5 pipe cleaners, at least 10 straws, and at least 1 clothespin.
- The marble must stop when it reaches the floor (it cannot continue to roll).
- Your structure must have 7 main steps (no less, no more – including the start and finish as two of the steps).

1. You must include a detailed preliminary sketch of your design. This sketch should be labelled and easy to read and understand. Graph paper must be used in this step.

4 – Excellent preliminary design sketch. Labelled, easy to read, with no information about materials, structure missing.	3 – Good preliminary design sketch. Most is labelled and easy to read.	2 – Adequate preliminary design sketch. Some is labelled and easy to read.	1 – Minimal information is included in the preliminary sketch.
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2. Structure is at least 1m high. /2

3. Structure is no longer than 1m from start to finish. /2

4. Design Criteria

4 – The following are included in the design: truss (triangles), an arch or dome, a beam, suspension, at least 2 rigid joints, at least 2 mobile joints.	3 – Missing 1 or 2 of the required elements.	2 – Missing 3 to 5 of the required elements.	1 – Missing more than 5 of the required elements.
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5. Material Criteria

4 – The following materials are included in the design: at least 5 pipe cleaners, at least 10 straws, and at least 1 clothespin.	3 – Use of one of the materials is not complete, or one material is missing.	2 – Use of two of the materials is not complete, or more than one material is missing.	1 – Use of all materials is not complete.
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6. The marble goes from the start to finish unaided. (1/3 of the way will get you 1 mark; 2/3 of the way will get you 2 marks). /3

7. The marble stops when it reaches the floor. (A roll and stop will get you 1 mark as long as the roll isn't more than 10cm). /2

8. Steps from start to finish.

4 – Structure has 7 distinct steps including the start and finish.	3 – Structure has 5 or 6 distinct steps including the start and finish.	2 – Structure has 3 or 4 distinct steps including the start and finish.	1 – Structure has less than 3 distinct steps including the start and finish.
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9. In paragraph form, explain whether or not your structure meets the design criteria. Explain why or why not.

<p>4 – Excellent explanation. Comments are concise and backed up with scientific information learned in this unit.</p>	<p>3 – Good explanation backed up with scientific information learned in this unit.</p>	<p>2 – Adequate explanation, but missing evidence.</p>	<p>1 – Minimal explanation is given.</p>
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10. In paragraph form explain why you chose the materials that you did.

<p>4 – Excellent explanation. Comments are concise and backed up with scientific information learned in this unit.</p>	<p>3 – Good explanation backed up with scientific information learned in this unit.</p>	<p>2 – Adequate explanation, but missing evidence.</p>	<p>1 – Minimal explanation is given.</p>
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11. Describe any design difficulties you had and how your design idea changed from your preliminary sketch to your end product.

<p>4 – Excellent explanation. Comments are concise and a comparison is made between your preliminary sketch and your end product.</p>	<p>3 – Good explanation. A comparison is made between your preliminary sketch and your end product.</p>	<p>2 – Adequate explanation, but missing comparison.</p>	<p>1 – Minimal explanation is given.</p>
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