**Marble Run Challenge and Grading Rubric**

For this lesson, you will design a marble run using only simple materials. The challenge is to create a run that will take exactly 60 seconds for the marble to complete.

You will use cardboard, scissors, tape, and a marble to create your run. Those are the only “rules”!

1.Watch the Dyson Engineering Challenge video for Marble Runs at this link

<https://www.youtube.com/watch?v=IN0Wn0XgPXQ&feature=youtu.be>

2. Design your marble run. This will be a process. Plan to spend time tweaking the run to make it longer or shorter to meet the 60 second time limit for the marble to complete the run.

3. Create a flipgrid video showing your marble run. Remember that the marble must complete the run in 60 seconds! In your flipgrid video, explain the steps you took to create your run and how you modified it to make it longer or shorter (did you add more ramps, did you make the cardboard bumpy, etc.).

4. Use this link <https://www.alsde.edu/sec/sct/COS/2015%20FINAL%20Science%20COS%2010-1-15.pdf> to review the Alabama Course of Study for Science. Locate the big ideas in science that this lesson might address (Hint-Read page 12-13). Review the specific content standards for K, 3rd, and 4th grade. Which standards do you think you can teach with the marble run lesson (Hint-Read K standards page 16, 3rd grade standards page 23, and 4th grade standards page 26). Include this information in your discussion of your flipgrid video.

Grading Rubric:

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|  | Innovating (3) | Applying (2) | Unsatisfactory (0) |
| Construction | Flipgrid video shows the student constructed marble run.  The run is constructed only of cardboard and tape. | Flipgrid video shows the student constructed marble run.  The run is constructed from materials including, but not limited to cardboard and tape. | Video was not submitted. |
| Demonstration | The video includes the a demonstration of the marble run and the marble completes the run in 60 seconds. | The video includes a demonstration of the marble run.  The marble takes more or less than 60 seconds to complete the run. | Video was not submitted |
| Explanation of Process | The student explains his/her process for how the run was constructed and explains modifications made for making the run longer or shorter. The explanation is clear, complete, and specific in nature. | The student explains his/her process for how the run was constructed and explains modifications made for making the run longer or shorter.  The explanation is clear, but is lacking in specificity and examples. | The student does not explain his/her process for how the run was constructed and modifications were made for making the run longer or shorter OR the explanations are vague and general without helping the listener understand the process. |
| Explanation of connected standards | The student explains which big idea(s) and grade level standards (k, 3, 4) might be addressed by this lesson.  The explanations are specific, clear, and complete. | The student explains which big idea(s) and grade level standards (k, 3, 4) might be addressed by this lesson.  The explanations are general without using specific examples from the Alabama Science Course of Study. | The student does not explain which big idea(s) and grade level standards (K, 3, 4) might be addressed by this lesson OR the explanations are so general that they are not helpful to the reader. |

Engineering Cards

<https://www.jamesdysonfoundation.co.uk/content/dam/pdf/JDF_with%20cover%20challenge-cards_DIGITAL.pdf?>

<http://aclassofone.blogspot.com/2013/12/apologia-anatomy-physiology-unit-three.html?m=1> making a robotic hand (this one needs a glue gun)

<https://www.kaplanco.com/ii/diy-robot-hand?CategoryID=28> simple robotic hand (no hot glue gun needed)

<http://adventuresinmommydom.org/stem-challenge-design-bridge/?utm_medium=social&utm_source=pinterest&utm_campaign=tailwind_tribes&utm_content=tribes> build a bridge that holds 100 pencils