

Name: _____

Essay due Friday, March 2, 2018
Carrier due Thursday, March 8, 2018

Honors Physics Egg Drop Project

Each student will engineer a carrier for a raw egg to be dropped safely from the top of the second floor of the school campus to the first floor of the main hallway.

Materials:

Students may use any or all the following materials:

Sheets of copy paper

Rubber bands

Drinking straws

Popsicle sticks

String

Cotton Balls

Glue/Tape: Used **only** as an adhesive and not to strengthen the egg; cannot wrap around or glue the egg together.

Construction Requirements, Rules, and Remarks:

1. Your container must be constructed using only the materials listed above. No other “add-ons” may be used. You do not have to utilize all the above materials.
2. Do **NOT** bring an egg to school. An egg will be provided by your teacher on the day of the drop.
3. The project must be designed so that a student can quickly and easily insert an egg inside the carrier on the day of the drop.
4. No project will be accepted without a completed and acceptable ESSAY turned in Canvas.

Project Turn-in:

- Absent students should arrange to have projects dropped off in the front office with student name and teacher’s name attached to it; otherwise, a zero will be earned on the project grade. The project must be date stamped by front office personnel.
- Projects are due when the tardy bell rings; any projects not in class or not complete at that time will **not be accepted**.
- Any student earning a zero on the project may take the 9-weeks comprehensive retake to replace the zero on the major project.

Grading:

- 1.0 Brings a container that fits the above criteria and the egg breaks and oozes.
1.5 Brings a container that fits the above criteria and the egg breaks but does not ooze.
2.5 Brings a container that fits the above criteria and the egg survives with no injuries.

Essay

Due Date: Friday, March 2, 2018 23:59:59 **Points: 2.5 Major Points**

Details:

You will conduct a research study on a topic that you select from the choices. Next, you will write an expository essay that discusses your findings. The expository essay will focus on a topic of your selection from a list of three approved topics.

Per *Owl Purdue Online Writing Lab* (2017) “an expository essay is a genre of essay that requires the student to investigate an idea, evaluate evidence, expound on the idea, and set forth an argument concerning that idea in a clear and concise manner. This can be accomplished through comparison and contrast, definition, example, the analysis of cause and effect, etc.”

General Requirements:

Use the following information to ensure successful completion of the assignment:

- Focus on the main topic that you select. Be sure all subtopics are addressed as indicated.
- Collect information related to the chosen topic. Be sure that your sources are authentic, reputable, and trustworthy. Sites that are generally acceptable include .edu, .gov, encyclopedias (other than Wikipedia), science publications such as *Science Daily Physics News*, *PHYS.ORG*, *Discover Physics and Math*, *NASA.gov*, etc.
- State and support your facts within text citations. Interpret the facts by expounding on the information in your own words.
- The essay will be submitted in Canvas “Egg Drop Essay” major assignment.
- The essay must include a thesis statement and purpose. See the section below called “Sample Thesis and Purpose Statement.”

Directions:

Select one of the following three topics and write an expository essay.

____ **TOPIC 1:** Discuss the Mars Exploration Rover Mission (MER)

1. What is the purpose of the MER mission?
2. Select one of the rover missions (i.e. Spirit or Opportunity) and discuss the history, construction, technological abilities, and costs.
3. Discuss any accomplishments and failures of the Spirit or Opportunity missions.
4. Discuss how the concept of momentum and impulse relate to the descent and landing of a rover on the surface of Mars.

To receive full credit, all four subtopics must be addressed.

____ **TOPIC 2:** Discuss the SpaceX program.

1. Discuss the history, purpose, goals, achievements, and failures of the SpaceX program.
2. Discuss how SpaceX is funded.
3. Select one of the rocket designs (i.e. Falcon 9, Falcon Heavy, or Dragon), and discuss its history, construction, technological capabilities, and missions.
4. Discuss how the concept of momentum and impulse relate to the SpaceX rocket launches and landings.

To receive full credit, all four subtopics must be addressed.

____ **TOPIC 3:** Discuss the New Horizons Mission to Pluto.

1. What is the purpose of the New Horizons Space Probe?
2. Discuss the history, construction, technological abilities, and costs of New Horizons Space Probe.
3. Discuss the missions of the New Horizons Space Probe.
4. Discuss how the concept of momentum and impulse relate to the New Horizons Space Probe (e.g. Jupiter flyby).

To receive full credit, all four subtopics must be addressed.

Specific Requirements:

- Word count must be between 400-600 words.
- Use MLA or APA format for citations and references.
- Use a computer word processor when writing your essay.
- Your essay must be typed and double-spaced with 1" margins on all sides.
- The essay must use 12 pt. Times New Roman font.
- You will upload your word processing file to Canvas. The following file types should be acceptable by Turnitin (.doc, .docx, .wpd, .html).
- If you are using Google Docs, choose FILE, DOWNLOAD AS, and choose Microsoft Word (.docx). Save the file on your computer, and then upload the file to Canvas.
- Do not use the WYSWYG editor in Canvas.
- Your essay must include a reference section with a minimum of three authentic sources in APA or MLA format.
- There must be at least one citation in the essay for each source, and the citation must be properly formatted according to APA or MLA.
- Center the title on the top of your essay. Write in paragraph form. Use section headings according to APA or MLA format.
- Use formal, scientific tone appropriate for 11th grade.
- Turnitin similarity score cannot exceed 25%.

Rubric:

Word count is 400-600 words	1.5 points
At least 2 citations and references	0.25 points
MLA or APA formatting for citations and references.	0.25 points
Written in formal, scientific tone appropriate for the 11th grade. Essay is mostly free of grammatical errors.	0.25 points
The essay includes an acceptable thesis and purpose statement. And all topics and subtopics are addressed.	0.25 points
Total	2.5 points

Sample Thesis and Purpose Statement:

Topic 1: The purpose of this essay is to learn more about the Mars Exploration Program (MER). This paper will discuss details about the MER mission including the history, construction, technological abilities and accomplishments. The concept of momentum and impulse will be discussed as it correlates to landing design of the rover.