

## Owl's Opus - Invention Project

### General Information

- Every RMA student is required to complete an **original** Invention Project.
- An inventor's journal (paper or electronic), model (prototype) and backboard/poster or digital presentation (DE Board Builder, video, PowerPoint etc.) is required. **Projects are due March 5.**
- MOST of the work for this project will be done outside of the classroom by students.
- Invention projects must be pre-approved.
- Every student will sign a contract and create an original invention to the best of their ability.
- A supervising adult's signature (parent/guardian/relative) is also required on the contract.

### Journal Entries:

**Invention Brainstorming:** Brainstorm things you use or do. What could you invent or how could you improve upon an existing invention?

**Invention Title & Description:** The name of your invention and a short explanation about it.

**Invention Trademark & Logo:** What are you going to call your invention? Come up with a creative and catchy name and logo - An easy way to remember your invention.

**Statement of the problem:** What is the problem. How does it impact you and your family, community or the global population? How does that make you feel and why are you inspired to fix the problem?

**Category:** how does your invention/innovation relate to one (or more) of 3M's expertise. Manufacturing, Energy, Safety, Health Care or Transportation

**Science:** explain the science, technology, engineering and/or mathematics behind your innovation

**Contribution:** How does your invention/innovation address the everyday problem you've identified and/or have a broader impact locally or globally.

**Existing Technology:** What is the closest existing technology to the invention?

**Improvement on existing technology:** How does your invention improve upon the existing technology?

**Invention Description:** Describe your invention/innovation in detail. What does it do? How does it work?

**Invention Drawing/Photo:** Create a detailed, labeled and colored drawing of your invention.

**Obstacles:** What problems did you encounter? (Problems with the idea itself, the design, the prototype) etc. Did anything go wrong while you were designing your invention?)

### **Digital Presentation**

Your Digital presentation (Board Builder, PowerPoint or Video (1-2 minutes)) **Must:**

- **Explain** the problem. How does it impact you and your family, community or the global population? How does that make you feel and why are you inspired to fix the problem?
- **Describe** a **new** innovation or solution that could solve or impact the problem;
- **Explain** how the innovation relates to one (or more) of 3M's expertise areas listed below.
- **Explain** the science, technology, engineering and/or mathematics behind their innovation; and
- **Illustrate** how your innovation could both address the everyday problem you've identified and have a broader impact locally or globally.

**Inventions/Innovations will be scored using the following judging criteria:**

- Creativity (ingenuity and innovative thinking) (30%);
- Scientific knowledge (30%);
- Persuasiveness and effective communication (20%); and
- Overall presentation (20%).

## CATEGORIES:

**Manufacturing:** From automobile makers to home appliance manufacturers to food & beverage professionals, science is essential to making the industrial plants and facilities run more efficiently across every category, improving both the way manufacturers operate and the products they put into the world.

What kinds of technologies, innovations, or solutions might:

- Ensure clean breathing air for people in all communities?
- Help increase the production of goods without the use of fossil fuels?
- Improve the efficiency of production at minimal costs?

**Energy:** Energy is the key to keeping the world working and one of the most fundamental parts of our daily lives. By using science, we can help conserve and create energy in new and innovative ways.

What kinds of technologies, innovations, or solutions might:

- Provide electricity to underdeveloped countries?
- Provide safe drinking water to people across the world?
- Find a way to help people reduce their environmental footprint by using alternative energy sources?
- Reuse energy in creative ways?

**Safety:** Whether you're on the sports field or crossing the street, safety should always come first. Not only can we use science to protect our bodies from physical conditions, but we can also help improve quality of life by making the things we consume (food, drinks and air) safer and cleaner.

What kinds of technologies, innovations, or solutions might:

- Improve air and water quality in highly polluted areas?
- Detect and alert people of the likelihood of an accident happening?
- Reduce the risk of injury during a fall?
- Prevent a sports related injury from happening?
- Protect people from workplace dangers?

**Healthcare:** Living a healthy lifestyle and ensuring the health of others is crucial to having long and productive lives. Not only does science solve our biggest problems inside the human body, but it also helps us create the tools that doctors, nurses and other healthcare professionals need to improve – and save – lives.

What kinds of technologies, innovations, or solutions might:

- Deliver effective and affordable medical products to hospitals and doctor's offices all over the world?
- Improve the quality of food and its packaging?
- Detect and alert people of the onset of health problems?
- Make healthcare products available to underdeveloped communities?
- Perform diagnostics without the use of modern technology?

**Transportation:** Science and innovation can help make cities "smarter" as populations move toward urban areas. Smart vehicles, road safety and public transportation are a few of the transportation mechanisms that will become increasingly important as we figure out how to improve movement within and between the planet's most populated locations.

What kinds of technologies, innovations, or solutions might:

- Make airplanes, cars and trains run more efficiently?
- Connect the traffic and safety functions of a city with vehicles on the roads and rails?
- Make transportation easier without automation?
- Create affordable housing for city dwellers that is also safe and easily accessible?
- Make infrastructure able to withstand weather and traffic conditions of cities with growing populations?

**INTENT TO INVENT – Invention Contract**

PLEASE READ THIS STATEMENT CAREFULLY, THEN SIGN BELOW.

By signing this contract, I understand that I am responsible for completing this project to the best of my personal ability.

Student Name: \_\_\_\_\_ Teacher: \_\_\_\_\_

Student Signature: \_\_\_\_\_ Date: \_\_\_\_\_

PLEASE READ THIS STATEMENT CAREFULLY, THEN SIGN BELOW.

The “Supervising Adult” is a parent/guardian or relative who is aware of this project and the timeline for completion. This adult can provide moral support and guidance, but it is not required. The actual planning and work must be done by the student.

Name of Adult: \_\_\_\_\_ Relationship to student: \_\_\_\_\_

Signature of Supervising Adult: \_\_\_\_\_ Date: \_\_\_\_\_