The Right Material

**Matter** is used to make things. The term “technology” refers to the way people alter and shape **matter** so that it can be used to make things. For example, gold can be found as metal nuggets. But through technology (for example, the lost wax method), it can be fashioned into jewelry. Through different technology, it can be used to plate electronic components inside a computer.

Part of making any useful object is *choosing the right kind of material for it*. Materials can be any type of **matter**, from the metal in a bicycle frame to the compressed air in a bicycle tire. Some materials are used directly from nature (for example, wood and stone). These are called raw materials. Other materials are made from raw materials that are *refined or processed* in some way. *For example, one of the raw materials used to make glass is sand*.

Think about some everyday manufactured objects. Some are very complex. For example, a car contains thousands of different parts and is made from hundreds of different types of **matter**. Each material used to build the car is chosen for the job it must do. That job is its function. How is this choice made? It is based on several factors, including cost, availability, and most important, the properties of the material.

Scientists and engineers are often on the lookout for better, cheaper, or more readily available materials to replace the traditional materials used in objects. Nowadays, many shoes are made from a variety of materials, each suited or designed to fit the function of that part of the shoe. Soles may consist of a combination of durable, shock-absorbing rubbers or plastics. Uppers are often made of waterproof, breathable synthetic fabrics or stain-resistant plastics with soft linings that cushion the foot and protect from abrasion.

Honors Project

In class you have learned that *different materials have different properties*. Your job is to dig deep and find out a little more about one everyday item. This project asks you to **choose one manufactured household product** and **research** the relationship between **object function, the choice of materials to make the object, and the properties and origins of the materials.**

**Examples of Simple Manufactured Products:** (these are only suggestions!)

Sneakers

Notebook

Pencil

Toothbrush

Thermometer

Light Bulb

Football

Basketball

Cooking Pot

What to Research

The information you must collect and present is divided into **five sections**:

1. **Function**
	1. Explain what the object does or what its use is.
2. **Major Materials**
	1. Give the main materials from which the object is made.
3. **Why These Materials were Chosen**
	1. Tell what properties of the materials make them good choices for use in the object.
4. **Origin of One of the Materials**
	1. Select **one** major material in the object and investigate its raw materials, where they are found, and the processes they undergo to make them usable in the object.
5. **History of the Object**
	1. *Answer these questions*: Was it invested? If so, by whom? When and where did it first appear? How do the original designs and choice of materials differ from those in use today?
6. **Sources (Bibliography)**
	1. At least three reliable sources.

How to Present Your Research

Your work will be displayed within the classroom and hallway for everyone to see! You have the option to place your project on a box or a poster board. If you use a box, I would recommend a tissue box: place one part of your project on each side of the box.

Your work will be displayed within the classroom and hallway for everyone to see! You are to put all five sections of research on a cube shaped box.\* Each side of the box should contain one part of the project’s requirements. Your cube should have or contain:

 A. Font must be large and neat to read. ADD YOUR MATERIAL’S NAME and YOUR NAME.

 B. Must include picture of object, and/or parts of the object.- BE CREATIVE ! Add texture! 3-d objects (glue on with glue gun)

 C. Must be colorful!

\* A CUBE SHAPED TISSUE BOX IS EASILY ADAPTABLE TO THIS PROJECT IF YOU DO NOT WISH TO CONSTRUCT YOUR OWN CUBE FROM WOOD, PLASTIC, ETC.

You can also put all five sections of research on a large poster or tri-fold board. You must include the following on the board/poster:

1. All five sections of research – see above. (if using tissue box-one part per side)
2. Font must be large enough to see from a distance.
3. Must include picture of object.
4. Must be colorful!
5. Your name.