



(20 pts) Approx. 2 days

Aerospace engineers care a lot about materials research because better materials mean more efficient planes! Real planes are made out of a variety of materials: wood, plastic, composites, and metal. Throughout our course, we'll look at different types of materials – the entire Unit 5 for example is all about composite materials – and here we'll take some time to look at metals and metalworking processes. The first part of this unit will review the Materials Life Cycle (MLC). The MLC tries to describe the cycle that things like metal go through when we use it in the manufacture of a product. For example, the steel that ends up in a Boeing 747 needs to be harvested as iron from the ground and refined into steel. This process has some byproducts. The steel is then used in the manufacture of planes, and when the plane is old and done being used that steel might be recycled or reused.

As we continue this part, we'll watch three videos on metalworking that help describe different ways that metal can be shared and formed for use in engineering. We'll take some notes on those processes; then we'll look at the details of various materials by watching the *Aerospace Materials* and *Materials Properties* presentations. Take your time and take some good notes.

1. Start by watching the *Materials Life Cycle Assessment* video and reviewing the "Materials Life Cycle" diagram. Begin your notes with ideas about the Materials Life Cycle and how it impacts engineers.
2. Continue your notes as you watch the three (3) Metalworking videos. Most planes are made out of metals, and you want to take a few notes on the different processes used to work with metal. Think also about the Materials Life Cycle and how it fits into the world of metalworking. *You should have 1 full page of notes from these first 4 videos.*
3. Start your second page of notes by reviewing the *Aerospace Materials* and *Materials Properties* presentations. Take good notes, but don't stress too much about any mathematical formulas. The focus here should be on concepts, vocabulary, and general properties rather than specific calculations.

Part 1: Tasks	10 points	8-5 point	4-0 points
 Notes on Metalworking & MLC	+ You took a full page of notes on the <i>Materials Life Cycle Assessment</i> , and the three <i>Metalworking</i> presentations + Your notes include a detailed flow chart of the Materials Life Cycle	- Your notes do not cover all topics - Your notes are lacking important parts	- Your notes are missing - Your notes are missing many important parts
 Notes on Materials & Properties	+ You took a full page of notes on <i>Aerospace Materials</i> and <i>Materials Properties</i> presentations + Your notes include reasonable details	- You did not take a full page of notes - Your notes do not include one of the topics	- Your notes are too brief - Your notes are missing

