Materials 2 Questions set 1
Materials foundation, and the WHAT framework

1. What are the important and interesting materials in your engineering discipline, and why?

2. Consider the objects in the photograph below, from left to right they are: a spoon, a teacup and a water bottle for outdoor sport use.
Briefly answer the following (*answer based on what you know already, or you can find out easily. We will cover properties and small scale structure of materials in in the course*):
a) Identify the materials in the objects.
b) What are the objects used for (i.e. what are their applications)?
c) What properties of materials are needed in these applications?
d) What can you say, or speculate, about how the materials and objects have been processed / manufactured?

*This question links to the **WHAT** framework, and learning the foundations of engineering materials.*

WHAT Framework
Materials
- **Classifications**
- **Properties**
- **Small scale structure** (microstructure)
- Processing / manufacturing
- **Applications**

3. Imagine if glass suddenly didn't exist. What wouldn't you be able to do anymore?

4. Questions about the interactive activity: **Learning the WHAT framework**
"Learning by awareness" Part 1 – making observations and linking them to what you already know, and fitting them into the **WHAT** framework.

In the video
a) Where can you see examples of materials which are linked to chemical, civil, and mechanical engineering in practice?

b) What would happen if the following materials were used?
concrete : saddle • rubber : frame • aluminium alloy : tyres • polymer foam : block

c) What material properties are needed for: bike frame, saddle, tyres, and structural block?