**Year 7 Science – Extension Physics Problems**

**With a partner (or by yourself), develop a presentation that addresses each of the problems below.**

**You need to provide evidence for your answer, and relate it to what we have covered in our tutorials this term. Remember, do not copy and paste, USE YOUR OWN WORDS:**

**Problem # 1**   
  
Do heavier objects fall more slowly than lighter objects?   
  
  
  
**Problem # 2**   
  
Why do objects float in liquids denser than themselves?   
  
  
  
**Problem # 4**   
  
How come in free fall you feel weightless even though gravity is pulling down on you? (ignore air resistance when answering this question).   
  
  
  
**Problem # 5**   
  
What is the difference between centripetal acceleration and centrifugal force?   
  
  
**Problem # 6**   
  
What is the difference between energy and power?   
  
  
  
**Problem # 7**   
  
Why is it possible to drive a nail into a piece of wood with a hammer, but it is not possible to push a nail in by hand?   
  
  
**Problem # 8**   
  
An archer pulls back 0.75 m on a bow which has a stiffness of 200 N/m. The arrow weighs 50 g. What is the velocity of the arrow immediately after release?   
  
  
**Problem # 9**   
  
When a moving car encounters a patch of ice the brakes are applied. Why is it desirable to keep the wheels rolling on the ice without locking up? 