****Physics 11, 2019**

**Task 3 : Energy Efficient House and Heat Transfer Mechanism**

There are 3 main types of heat transfer mechanisms, conduction, convection and radiation. You are going to design and build a simple model of an energy efficient house using these mechanisms. This means that the house has to be cool in summer (on a hot day) and remain warm in winter (on a cold day). You will then conduct a scientific investigation to see if your house works as designed.

**You can’t have airconditioning or use electrical power !!!!**

You will work in groups of 3. You can divide the tasks up but everyone must understand all parts.

You will have 4 periods in class to do this. The rest will have to be done out of class time. You are welcome to come into the class to work on this if you have spare time.

**Part A: Theory**

Understand the heat transfer mechanisms of

Radiation

Conduction

Convection

Investigate different methods used to keep a house cool in summer and hot in winter

**Part B: Design**

(i) Design a simple model of an energy efficient house that uses or modifies at least one of each heat transfer mechanism.

Produce a detailed drawing of your design

Produce a list of materials that you need, including measurements. We will get these for you and if anything requires cutting up with specialist tools Belinda’s class has offered to do this. We do have standard tools, hacksaw, drills, screwdrivers etc

For example a piece of plywood, 10cm by 15 cm. Be creative you don’t have to use building materials, ie cardboard box might be able to be used as a base.

(ii) Design an experiment to test the effectiveness of your energy efficient house.

Produce a list of equipment and materials that you need.

**The list of equipment needed is due by Thursday 7/03/2019**

**Part C: Conducting**

(i) Build your energy efficient house

(ii) Conduct your experiment.

**Part D: Analyse**

Analyse your results.

Discuss how effective your house design was and how it could be improved.

**Part E: Conclusion**

Summarise the results you obtained.

**Part F: Relation to real-life**

Write a paragraph explaining to a builder why it is important to incorporate energy efficient design into new houses and buildings

**All building and measurements need to be done by Wed 20/03/2019 and whole project is due Mon 25/03/2019.**