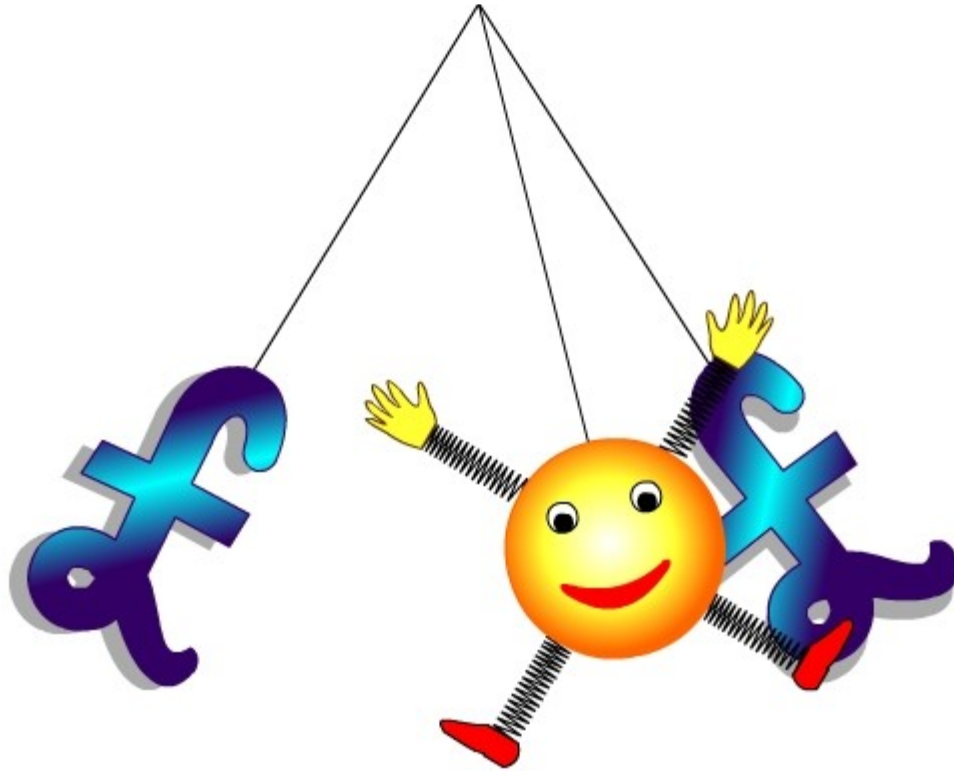


Swinging Shop Display



Introduction

A shop owner wants to attract attention to the shop window display. The shop owner knows that movement attracts attention so she has decided that a number of swinging shapes such as "£" signs should be used.

Design Brief

Devise a method of making a wooden, plastic, metal or card "£" sign swing from side to side (oscillate) continuously in a shop window.

Specifications

- The "£" sign must be made to swing from side to side (oscillate) continuously.
- The "£" sign must be large enough to be seen from a short distance, e.g. 10 metres.
- There must be a way of starting the swinging motion and stopping the swinging motion.
- The swinging "£" sign must be a complete working system that shop keepers can use without having to use tools to install it, or to stop and start it.
- If more than one swinging "£" sign or other object is used, the objects must not collide as they swing.
- The swinging sign must withstand continuous use, i.e.
 - it must not fall apart during use
 - it must not overheat
 - moving parts in contact must not wear out
- The swinging sign must be safe to use
- The swinging "£" sign system must have a bright, colourful finish.

Learning Objectives

Students will develop their D&T capability by designing and making an original product of good quality that satisfies the requirements of the design brief.

By the end of the assignment, students will know that:

- movement attracts attention
- mechanisms are used to:
 - transmit motion and force
 - convert one type of motion and force into another type of motion and force
- a mechanical system consists of input, process/control and output blocks and may incorporate feedback in the system, e.g. a heat sensor that monitors the temperature of a motor and switches it off when it gets too hot
- the effects of friction must be considered when designing mechanisms
- safety must be considered when designing the swinging display and safety features must be incorporated into it
- when choosing materials, designers must consider:
 - the cost of the material
 - the physical properties of the material
 - the effect of the material on the environment, i.e. the effects of:
 - mining
 - transporting the raw materials to the processing plant
 - processing the raw material
 - manufacturing processes use to make products
 - the ease with which materials can be used to make products using the tools available
 - the ease with which products can be recycled
- risk assessments of the hazards should be carried out
- ready made components such as gears and pulleys may be incorporated into mechanical systems
- safe working practices should be adopted when making the swinging display.

Success criteria

Each student:

- has designed and made an original product that satisfies the given design brief and specification
- has demonstrated an understanding of mechanisms by choosing appropriate devices to create the movement required by the design
- has considered the positive and negative effects of the use of the materials chosen to make the swinging display
- has strived to achieve quality in marking out, cutting, shaping, finishing and joining their chosen materials
- has assessed the risks associated with working with the tools and materials chosen for the project and has worked safely throughout the assignment
- has evidence of having evaluated his/her work.