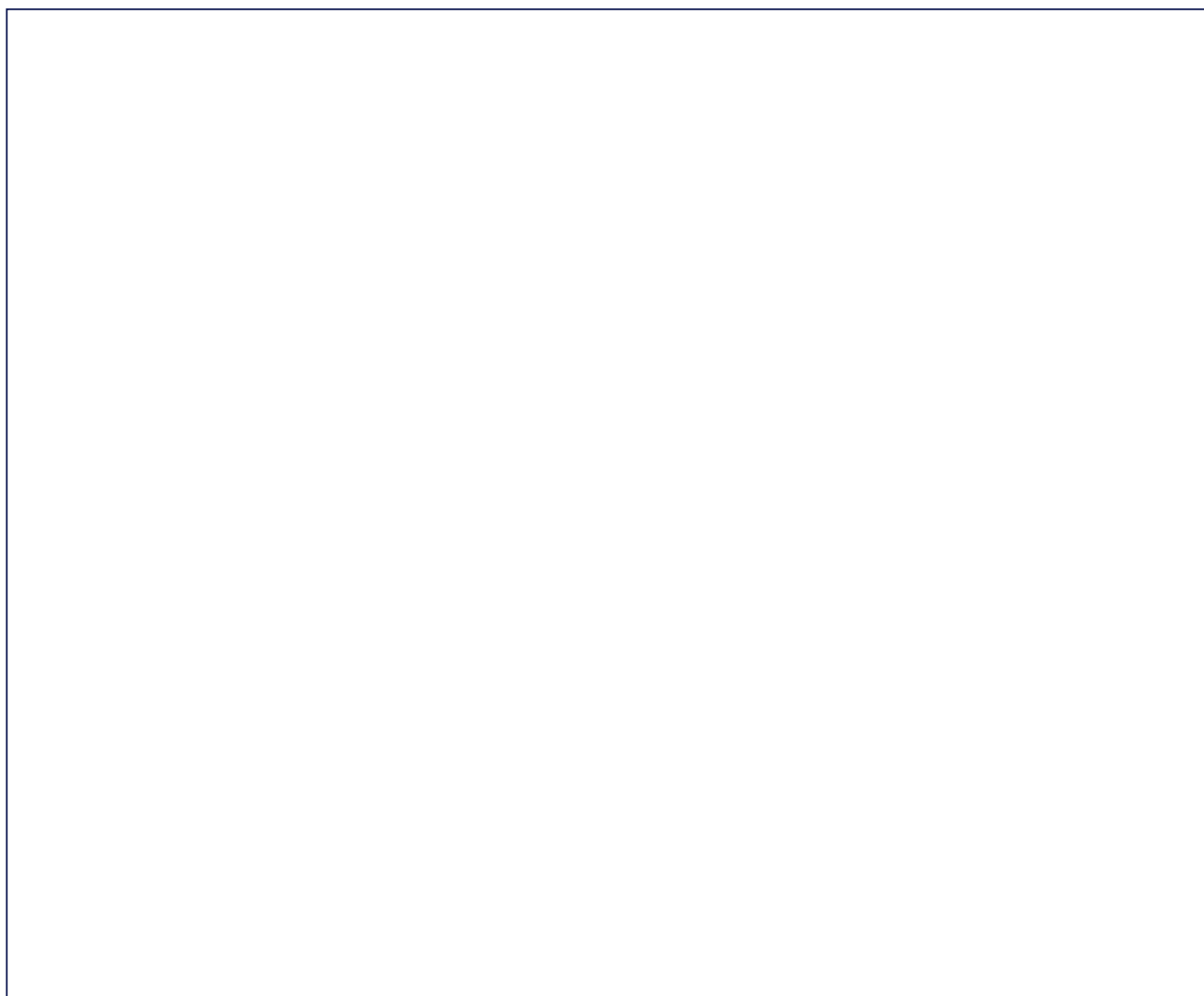


Max's Mechanical Invention Workshop

Learning objective: To understand the purpose of prototyping in Design and Technology by creating a functional design for a moving toy.

Max the monkey is designing a new educational toy that helps children learn about gears and levers. A prototype is a first model of a product used to test if an idea works before making the final version. Follow the steps below to draft your own prototype design.

Draw: Draw a technical diagram of a moving toy invention. Use a clean, 'blueprint' style with thin, dark lines. Show the toy from two angles: a 3D perspective view and a 'side-on' cross-section view to show how the internal mechanism (gears or levers) works. Include clear labels with arrows pointing to your chosen materials and moving parts.



Label words: pivot · lever · gear · frame · mechanism · prototype · annotation · materials

Steps:

1. Label your drawing to show which part of your toy is the 'lever' and which part acts as the 'pivot'.
2. Explain why it is important to build a prototype using cheaper materials like cardboard before using expensive materials like wood or metal.
3. Compare and contrast your prototype design with a finished, mass-produced toy. What might be missing from your draft?

4. Justify your choice of materials. Why are these materials suitable for a child to use safely?
5. What might happen if the mechanism in your prototype is too tight? How would you solve this problem?
6. If your toy cost £4.50 to build, and you wanted to make 10 prototypes for your friends, calculate the total cost in pounds and pence.