

Prototyping: Building Your Big Ideas

Learning objective: To understand the purpose of prototyping in Design and Technology and how to use models to test and refine a design idea.

Read the questions carefully and use your knowledge of the design process to answer. Think like an inventor as you work through the tasks.

Max the monkey is designing a new fruit-sorting machine for the jungle market! Before he builds the final version out of expensive wood and metal, he makes a small model out of cardboard, tape, and string. This allows him to see if his design actually works before he spends his pocket money on the real materials.

Word bank: Prototype · Evaluation · Materials · Refine · Function · Design · Modification

1. Max decides to build a 'prototype' before making his final machine. Explain in your own words what a prototype is. (2 marks)

2. Why is it a good idea for Max to use cheap materials like cardboard for his first model instead of the final materials? (2 marks)

3. If Max discovers that his fruit-sorting arm is too short during his prototype test, what is the next step he should take? (2 marks)

4. Imagine Max spent £4.50 on his prototype materials. If he wants to build a larger version that costs three times as much, how much will the materials for the final version cost? (2 marks)

5. List two 'functions' a prototype helps an inventor to check before they finish their project. (2 marks)

Draw: Draw a simple prototype of a 'Lunchbox-Opening Robot' that Kit the fox might invent. Label the parts you would use to make it, such as 'cardboard frame' or 'string pulleys'.



Extension challenge: Explain how you would change your design if your prototype failed to work the first time. Why is it important to learn from mistakes in Design and Technology?