

Design Technology: The Power of Prototyping

Learning objective: To understand the purpose of prototyping in the design process and how to test, evaluate, and refine products.

Read each question carefully. Use the word bank to help you with your answers. Ensure your explanations are clear and refer to the design process.

Max the monkey is helping his friends design a new fruit-picking tool for the orchard. Before they make the final version out of strong metal, they build a model using cardboard, masking tape, and string. This allows them to see if the grabbing mechanism works correctly and if it is comfortable for the user to hold.

Word bank: Prototype · Iteration · Functionality · Feedback · Refine · Materials · User · Modification

1. Why is it important for Max to build a prototype before making the final product? Give two reasons. (2 marks)

2. Define the term 'iteration' in the context of the design process. (2 marks)

3. If Max discovers that his prototype is too heavy, what is one 'modification' he could make to improve the design? (2 marks)

4. How does gathering feedback from other friends help improve a prototype? Explain why 'user testing' is a vital stage. (4 marks)

5. Imagine Max's prototype costs £4.50 to build using card and tape. The final version made of aluminium will cost £12.75. Explain why spending money on a cheaper prototype first is a smart design choice. (4 marks)

6. Describe the cycle of prototyping. Why do designers often go back to the drawing board even after they think their product is finished? (6 marks)

7. List three specific materials you might use to create a quick, low-cost prototype and explain why they are suitable. (5 marks)

Draw: Draw a labelled sketch of a simple prototype for a new classroom pencil case. Label two features that you would test for functionality.



Extension challenge: Total: /25