

Max's Magnificent Prototyping Challenge

Learning objective: To understand the purpose of prototyping in the design process and how models help us test, refine, and improve our inventions.

Max the monkey is busy building a new mechanical nut-cracker. Help him refine his design by answering these questions about prototyping. Read each question carefully and select or write the best answer.

Answer Key: 1. A, 2. B, 3. True, 4. C, 5. False, 6. Iterative, 7. D, 8. Feedback, 9. False, 10. True. Prototyping is an essential stage in Design Technology that allows us to test ideas before making the final product. It saves time and resources by highlighting faults early on.

Word bank: Prototype · Iterative · Evaluation · Model · Refine · Function · Feedback · Design

1. 1. What is a prototype? A) A finished product for sale, B) A preliminary model used to test a design*, C) A drawing in a sketchbook, D) A list of ingredients. (1 mark)

2. 2. Why do we create prototypes? A) To make the object look beautiful, B) To test if the idea works and identify improvements*, C) To hide our mistakes, D) To save money on paint. (1 mark)

3. 3. True or False: Prototyping is often an iterative process, meaning we repeat it to make improvements. (1 mark)

4. 4. Which material is best for a quick, low-cost prototype? A) Solid steel, B) Polished marble, C) Cardboard and masking tape*, D) Expensive glass. (1 mark)

5. 5. True or False: You should never change your design once you have started building a prototype. (1 mark)

6. 6. Fill in the blank: The process of making, testing, and improving a design over and over is called the _____ process. (1 mark)

7. 7. What is 'feedback' in design? A) The sound a machine makes, B) Throwing the prototype away, C) Using strong glue, D) Constructive comments from others to help improve your work*. (1 mark)

8. 8. If your prototype breaks during testing, what should you do? (1 word) (1 mark)

9. 9. True or False: A prototype must be painted to be considered 'finished'. (1 mark)

10. 10. True or False: Prototyping helps designers avoid wasting expensive materials on a design that might not work. (1 mark)

Draw: Sketch a simple prototype for a 'School Bag Organiser' using only cardboard, tape, and string. Label the parts that you would need to test for strength.



Extension challenge: 1. Explain why it is more efficient to build a cardboard prototype rather than a final product immediately. 2. Compare and contrast: How does a rough sketch differ from a 3D prototype? 3. Justify your answer: Why is 'failure' during the prototype stage actually a successful part of learning? 4. What might happen if a bridge designer skipped the prototyping stage? 5. If your prototype cost £2.50 to make, but the final product requires £12.00 worth of materials, why is it vital to test the £2.50 version first? 6. Design a 'user test' for Max's nut-cracker: What three questions would you ask a friend after they try using your prototype?