

Max's Engineering Experiment-Record: Building Stable Structures

Learning objective: To investigate how to strengthen structures using shapes and materials, as part of the Grade 4 Design Technology curriculum.

Use this experiment-record to plan and evaluate your own stable structure. Choose a goal, such as building a tower that can hold a weight or a bridge that spans a gap. Think like Max the monkey and consider how triangles, struts, and different materials help keep your structure strong.

Word bank: stability · strengthen · triangulation · struts · reinforcement · load-bearing · tensile strength · compression

1. The Challenge: Briefly describe what you are building and what problem your structure is trying to solve. (2 marks)

2. Materials List: List the materials you have chosen and explain why you think they will make your structure strong. (3 marks)

3. Engineering Design: Describe how you will use specific shapes (like triangles) or techniques (like bracing) to increase the stability of your build. (4 marks)

4. The Testing Phase: Describe how you will test your structure to see if it is fit for purpose. How will you measure its strength? (3 marks)

5. Refining the Design: If your structure collapsed or wobbled during testing, what changes would you make to improve its stability? (4 marks)

Extension challenge: Calculate the total cost of your materials. If your budget is £5.00, how much change would you have if you used materials costing £1.25, £0.80, and £0.45? Show your working.