# Max’s Structural Engineering Challenge

*Learning objective: To evaluate the strength, stability, and purpose of a designed structure.*

Use the prompts below to write a detailed report about your structural design. Think like an engineer—focus on how your materials work together to create a stable shape.

To ensure my structure was fit for its purpose, I carefully considered which materials would provide the greatest stability and strength.

*Word bank: triangulation · sturdy · reinforcement · load-bearing · compression · consequently · furthermore · in addition to · despite · subsequently*

**1. The Design Brief: What is the primary purpose of your structure, and who is the intended user? Start by saying: The main purpose of my structure is... (2 marks)**

**2. Material Selection: Justify your choice of materials. Why are these materials better suited for this structure than others? Explain why... (3 marks)**

**3. Structural Integrity: Describe the techniques you used to make your structure stable. Did you use triangulation or reinforcement? Start by saying: To ensure the structure did not collapse, I... (3 marks)**

**4. Comparative Analysis: Compare your design to a different shape. What might happen if you had chosen a different base structure? Compare and contrast... (4 marks)**

**5. Self-Evaluation: If you were to build this again, what improvements would you make to increase its load-bearing capacity? Justify your answer... (3 marks)**

**6. Future Application: How could your design be adapted to be more environmentally friendly or cost-effective? Start by saying: In order to improve the sustainability of the design, I could... (3 marks)**

*Extension challenge: Imagine your structure needs to support a load of 5kg. Calculate the total cost of your build using the following prices: Cardboard sheets at £0.50 each, masking tape at £1.20 per roll, and wooden dowels at £0.75 each. List your materials and calculate the total cost. How would you adjust your design if you had a budget of only £5.00?*