

Max's Magnificent Bridge Challenge

Learning objective: To understand how structural shapes and reinforcement improve the strength and stability of a bridge.

Max the monkey is designing a bridge to span the River Wiggle. Use the information in your word bank to label your diagram and ensure your structure is strong enough to hold the weight of the BookFlik friends. Remember to think about how different shapes, like triangles, help to distribute forces.

Draw: Draw a side-view of a bridge crossing a river. Use a ruler to ensure your beams and trusses are straight. Include a 'zoom-in' bubble on the side of your page to show a close-up of a triangular joint. The style should be a neat technical diagram, similar to an engineer's sketch, with clear lines and labels.



Label words: Truss · Beam · Arch · Foundation · Reinforcement · Compression · Tension · Span

Steps:

1. Step 1: Draw a bridge design that uses at least two different types of structures (e.g., a beam and an arch). Label your diagram using the words from the bank.
2. Explain why adding a triangular truss helps make a bridge structure stronger.
3. If Max needs to build a bridge that costs £500, and he uses 10 steel beams costing £30 each, how much money is left for the foundation?

4. Label the part of your bridge that would experience the most 'compression' when a heavy load is placed in the center.
5. List one material you would choose to build your bridge and explain why it is suitable for this structure.