

Grade 4 Design Technology: Mastering Structures

Learning objective: To understand the key technical terms and principles behind creating stable and strong structures.

Use these flashcards to test your knowledge of structural engineering. Read the question on the front, think of the answer, then reveal the back to check your understanding.

What is a structure?

A structure is anything that is built to support a load, such as a building, a bridge, or a chair.

What is a 'load' in structural engineering?

A load is the weight or force that a structure must support, such as people, furniture, or the structure's own weight.

Define 'Compression'.

Compression is a pushing force that tries to squash or squeeze an object together.

Define 'Tension'.

Tension is a pulling force that tries to stretch an object apart.

Why do engineers use 'Triangulation' in frames?

Triangulation is used because triangles are the most stable shape; they do not change shape easily when pushed or pulled.

What is the difference between a 'Strut' and a 'Tie'?

A strut is a structural member that resists compression (pushing), while a tie is a member that resists tension (pulling).

What is a 'Foundation'?

A foundation is the base of a structure that transfers the weight of the building safely into the ground.

Max the monkey is building a bridge with a £5.50 budget. What does 'Rigidity' mean in his design?

Rigidity is the ability of a structure to resist bending or changing its shape when a force is applied.

What is 'Reinforcement'?

Reinforcement is the process of adding extra strength to a structure to help it withstand heavy loads or stress.

What does it mean for a structure to be 'Stable'?

Stable means the structure is balanced and unlikely to tip over, collapse, or move unexpectedly.

How can you improve the stability of a tall tower?

You can increase the size of the base, use heavier materials at the bottom, or add diagonal bracing.

Give an example of a 'Shell structure'.

A shell structure is a hollow object that provides strength, such as an egg, a tin can, or a helmet.