

Year 5 Design Technology: Mastering Structures

Learning objective: To understand the properties of materials and techniques used to create stable, strong, and durable structures.

Use these flashcards to test your knowledge of structural engineering. Read the term or question on the left, then reveal the answer on the right to check your understanding.

What is a 'Shell Structure'?

A structure that uses a thin, curved outer layer to provide strength, such as an egg or a football.

Define 'Compression' in the context of structures.

A force that pushes or squeezes materials together, making them shorter or more compact.

What is 'Tension'?

A pulling force that acts in opposite directions, attempting to stretch a material.

Why is 'Triangulation' used in frame structures?

Because triangles are the only polygon that cannot be deformed without changing the length of one of its sides, providing immense rigidity.

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

A strut resists compression (pushing), while a tie resists tension (pulling).

What does 'Stability' mean for a structure?

The ability of a structure to maintain its position and balance without toppling over under its own weight or external forces.

Explain 'Reinforcement' in design.

Adding extra material or support to a structure to help it withstand greater loads or stress.

What is a 'Frame Structure'?

A structure composed of separate members (like beams or columns) joined together to support a load, like a house skeleton.

What is a 'Mass Structure'?

A structure created by piling up materials into a specific shape, such as a dam or the Great Pyramid.

How can increasing the 'base' of a structure affect its stability?

A wider base lowers the centre of gravity, making the structure much more stable and less likely to tip over.