

MAKING A STRUCTURE

KEY IDEAS

- Structures are made for particular purposes
- Structures must be strong enough to withstand the force acting upon them
- The shape, design and the materials used are all important in a structure
- Structures are built by humans and other animals

EXAMPLE QUESTIONS

- What do you think a 'structure' is?
- What kinds of structures do you make use of every day?
- What is it that makes a structure strong enough for the job?

STRUCTURES ARE BUILT FOR A PURPOSE

- Structures are designed to do a particular job (for example, homes in which to live and bridges to cross over rivers).

STRUCTURES MUST BE STRONG ENOUGH TO DO THE JOB

- All structures have to be strong enough to do the job for which they were designed.
- They need to be strong enough to withstand any of the forces that will be applied to them.

THE STRENGTH OF A STRUCTURE DEPENDS UPON ITS DESIGN AND MATERIALS

- Forces can change the shape of an object (for example, a hammer can change the shape of a piece of clay).

- Structures need to be designed in a way that will ensure that they can withstand the forces that are likely to act upon them.
- Two things are important here: first, the design of the structure, and second, the strength of the material, or materials, used to build the structure.
- The most efficient structures are those which successfully combine design with material strength in an economic way.

HUMANS ARE NOT THE ONLY ANIMALS THAT BUILD STRUCTURES

- Many animals have developed ways of making structures (for example, spiders build webs, birds build nests and beavers build dams).
- These structures are strong enough for the job because of their designs, shapes and the materials from which they are made.

SOME STRUCTURES ARE NATURAL

- There are many examples of natural structures that protect animals:
- Eggshells are structures that protect unborn young
- A tortoise has a protective shell, as do many molluscs and crustaceans
- The skeleton of a human being, and other vertebrates, is a supporting structure
- The structure of a tree has evolved to withstand the forces that act upon it

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