

Forces

1. Name three effects that a force can have on the motion of an object.

- The object's motion can speed up.
- The object's motion can slow down.
- The object's motion can change direction

2. Name three types of stress that a force can cause inside an object.

- Tension
- Compression
- Shear
- Torsion

3. (a) What is the difference between a live load and a dead load?

Live Load The forces acting in or on a structure.
Dead Load The weight of the structure itself – caused by gravity.

(b) Classify as live load or dead load:

- wind blowing against a tree Live Load
- the weight of the tree Dead Load
- the weight of a bird that is sitting in the tree Live Load

4. Identify the type of strength that is shown by

- (a) the chain that connects a ship to its anchor Tensile Strength
- (b) a piece of dried meat that is too tough to bite through Shear Strength
- (c) a bolt that is being tightened with a wrench Torsion Strength
- (d) the legs of the chair you are sitting on Compressive Strength

5. What can you infer about the forces between the particles in a piece of bubble gum from each fact below?

(a) The dry stick of gum snaps easily between your fingers.

Snapping indicates a tensile failure. This would mean that it does not have strong forces pulling the particles together.

(b) After chewing, the gum stretches in all directions so you can blow a bubble.

Being able to stretch in all directions means that the gum has good tensile strength. Also, being able to move in all directions would indicate that all of the particles are attracted to particles in multiple directions, meaning it would have good torsion strength.

(c) Moist gum sticks to many surfaces.

If the gum sticks to other surfaces, that would suggest it also has a high attraction to other particles (the particles from the other substance).

6. List four stages of a product's life cycle. Identify two decisions that must be made at each stage.

Needs – Where does it go? What purpose does it serve?

Production – What is the production cost? What machinery will be needed? Produce ourselves, or pay someone to do it?

Sales and Marketing – How will we advertise to meet people's desires? What will we call our product? How will the product be packaged? Should a celebrity be used to advertise?

Disposal – Are there any government regulations on disposal of the product? Do the factories need any special equipment?