

Form and Function 1: Structures Around Us Forces



Watch the following YouTube videos;
<https://www.youtube.com/watch?v=A9LZriwrSqE>

then look on pg. 268-273 in the textbook.

Discuss and then answer the following questions as a partnership.

1. All structures have at least one main **FUNCTION**, which is _____

2. Another feature is the structure's **FORM**, which is _____



DESIGN
IS NOT JUST
WHAT IT LOOKS LIKE
DESIGN IS HOW
IT WORKS
- Steve Jobs

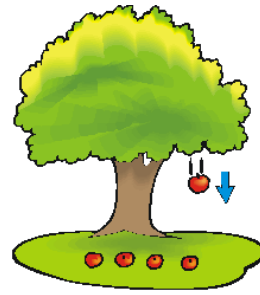
Force



- Force is a push or a pull on an object!
- Forces can change the shape or motion of an object!

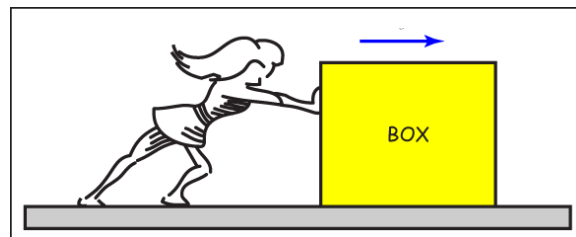
3. **Forces** that push or pull things **without contact** include:

1. _____
2. _____
3. _____



4. **Forces** that push or pull objects when the **objects come in contact** are called applied forces. Common examples of **applied forces** are:

1. _____
2. _____
3. _____



5. All forces have a _____ and a _____.

In diagrams, forces are represented by arrows.

The **arrow's point** shows the _____ of the force.

The **thickness of the arrow** indicates the _____ of the force.



6. **Mass** is _____

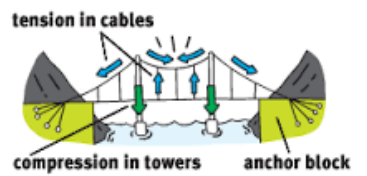


7. **Weight** is _____

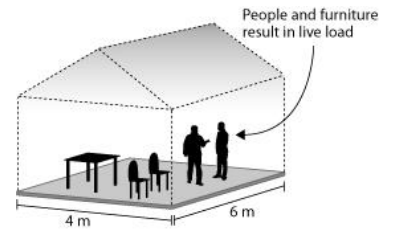


8. A **load** is a force acting on a structure.

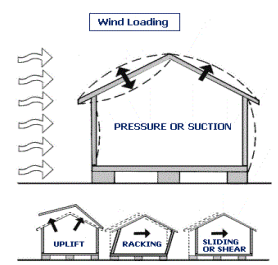
A **dead load** is _____



A **live load** is _____



A **dynamic load** is _____



Form and Function 2:

Classifying Structures Internal and External Forces

Watch the following YouTube videos;
<https://www.youtube.com/watch?v=d1fjGy8tas0>

then look on pg. 274-280 in the textbook.

Discuss and then answer the following questions as a partnership.



- Define each of the following **TYPES OF STRUCTURES**.
Give **two** real life **examples** for each.

Solid Structures _____



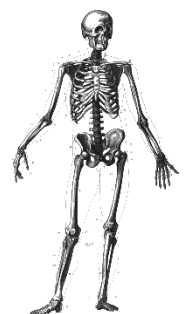
Frame Structures _____



Shell Structures _____



Combination Structures _____



2. What are the **advantages** and **disadvantages** of each **type of structure**?

STRUCTURE	Advantages	Disadvantages
Solid		
Frame		
Shell		

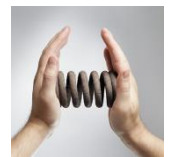
3. An **external force** is _____

4. **Internal forces** are _____

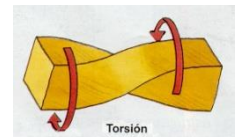
TENSION: _____



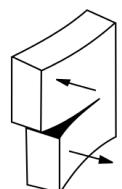
COMPRESSION: _____



TORSION: _____



SHEAR: _____



Form and Function 3:

Stability Making Structures Strong



Watch the following YouTube videos;
<https://www.youtube.com/watch?v=MR2m7c6TG1c>

then look on pg. 290-296 in the textbook.

Discuss and then answer the following questions as a partnership.

1. What is **stability**? _____

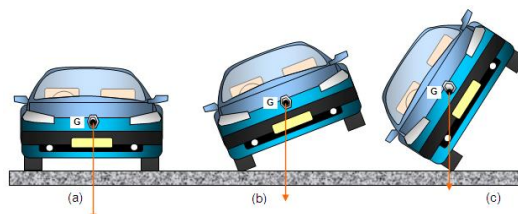


2. An important characteristic of any structure is its **centre of gravity**, which is _____



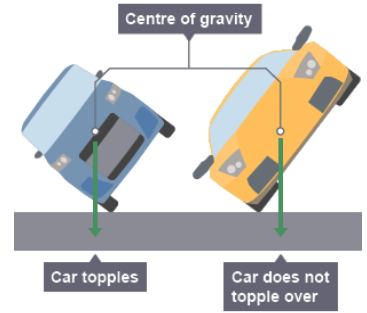
3. Your body's **centre of gravity** changes every time you move or bend your body into different shapes.

The **centre of gravity** of an object **depends on** _____



4. To **maintain stability**, the centre of gravity must _____

If the centre of gravity rises higher, and is no longer above the support base, the object _____.



Making Structures Strong

5. A **beam** is _____



6. **Beams** can be **strengthened** in several ways:



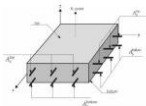
1. _____



2. _____



3. _____



4. _____

7. A **cantilever** is _____

they are **useful** in _____

