**Structures and Forces: Vocabulary Hunt**

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| ARCHES | BALANCE | BRACES |
| CANTILEVERS | CENTREOFGRAVITY | COMPRESSION |
| EFFICIENCY | EXTERNALFORCES | FORCE |
| FRAME | GUSSETS | INTERNALFORCES |
| LOAD | MAGNITUDE | MASS |
| PILLARS | PLANEOFAPPLICATION | POINTOFAPPLICATION |
| SHEAR | SHELL | SOLID |
| STABILITY | STRESS | STRUCTURALFAILURE |
| STRUCTURALFATIGUE | STRUTS | TENSION |
| TIES | TORSION | TRUSSES |

Group activity:

* In groups of 2 or 3, Sort the pictures of structures into categories
* Create **category names** to identify characteristics of the different types of structures.

**Classifying Types of Structures**

**There are three types of structures: *solid, frame,* and *shell.***

• *Solid structures* are made of solid piece(s) of strong material

(a stone bridge*,* Great Wall of China, castle, dam, cliffs along the sea, iceberg)

• *Frame structures* are made of parts connected into a set arrangement

(framing for a house, tower, umbrella, stairway, skeleton).

• *Shell structures* are moulded into a shape that provides strength and stability

(basketball, quinzhee, tent, ball, wasp nest, cocoon, freshwater clam shell, canoe, tipi).

**\*\*Note: Many structures are actually combinations of types**. Brainstorm 2 examples and identify the structure types within the combinations.

**Class Activity: Structure Walk**

Walk through the neighbourhood to identify various structures and structure types.

Complete the following chart, and then answer the questions below, as you observe the structures around you:

1. Fill in the following chart with examples you saw on the structure walk:

|  |  |  |
| --- | --- | --- |
| Solid Structures | Frame Structures | Shell Structures |
|  |  |  |

2. Did you observe any structures that were a combination of two types? If so, identify the structures and the types involved in their construction.

3. What type of structure is the human body? **Explain.**

**Classifying Structures Exit Slip: Solid, Frame, or Shell?**

*Identify the following as* ***solid, frame, or shell*** *structures.*

\_\_\_\_\_\_\_\_\_\_\_\_ 1. stone bridge

\_\_\_\_\_\_\_\_\_\_\_\_ 2. igloo

\_\_\_\_\_\_\_\_\_\_\_\_ 3. Eiffel Tower

\_\_\_\_\_\_\_\_\_\_\_\_ 4. dam

\_\_\_\_\_\_\_\_\_\_\_\_ 5. staircase