



Hawke's Bay
Tai Ahuriri

SKELETONS AS STRUCTURES

INVESTIGATE TWO KINDS OF STRUCTURES,
FRAME AND SHELL STRUCTURES.





- HOW DOES A SKELETON OR SHELL KEEP THINGS SAFE INSIDE?
- DO HUMANS HAVE SHELL OR FRAME STRUCTURES?
- HOW DO YOU MAKE A STRUCTURE REALLY STRONG?

- A STRUCTURE IS SOMETHING THAT IS ARRANGED OR PUT TOGETHER IN A SPECIFIC WAY AND IS MADE UP OF DIFFERENT PARTS. A JUNGLE GYM IS AN EXAMPLE OF A STRUCTURE. IT HAS MANY DIFFERENT PARTS LIKE BEAMS, ROPES, AND BARS, THAT ARE PUT TOGETHER IN A SPECIAL WAY.

- MOST STRUCTURES ARE DESIGNED TO REMAIN STABLE AND RIGID WHICH MEANS THEY SHOULD NOT BREAK AND CRUMBLE OR TOPPLE AND FALL OVER IF SOMETHING HEAVY IS PLACED ON TOP OF OR AGAINST THEM.

STRUCTURES HAVE DIFFERENT JOBS OR FUNCTIONS. THEY:

- SUPPORT
- PROTECT
- ENCLOSE - THAT MEANS THEY KEEP SOMETHING IN OR THEY KEEP THINGS FROM GETTING IN (LIKE A TIN OF JUICE OR A FENCE AROUND A BUILDING).
- HELP WITH MOVEMENT

WE GET THREE KINDS OF STRUCTURES:

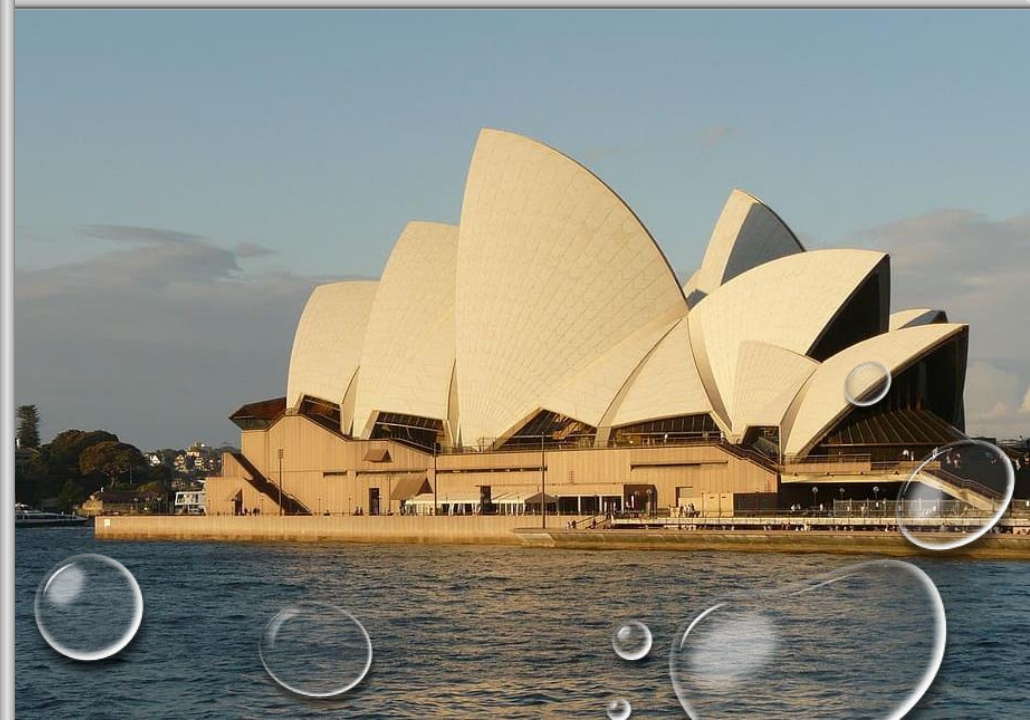
- FRAME STRUCTURES
- SHELL STRUCTURES
- SOLID STRUCTURES

IN ALL STRUCTURES, THE SHAPE OF THE STRUCTURE IS VERY IMPORTANT. A STRUCTURE WILL BE ABLE TO RESIST OR HOLD A CERTAIN WEIGHT DEPENDING ON ITS SHAPE.

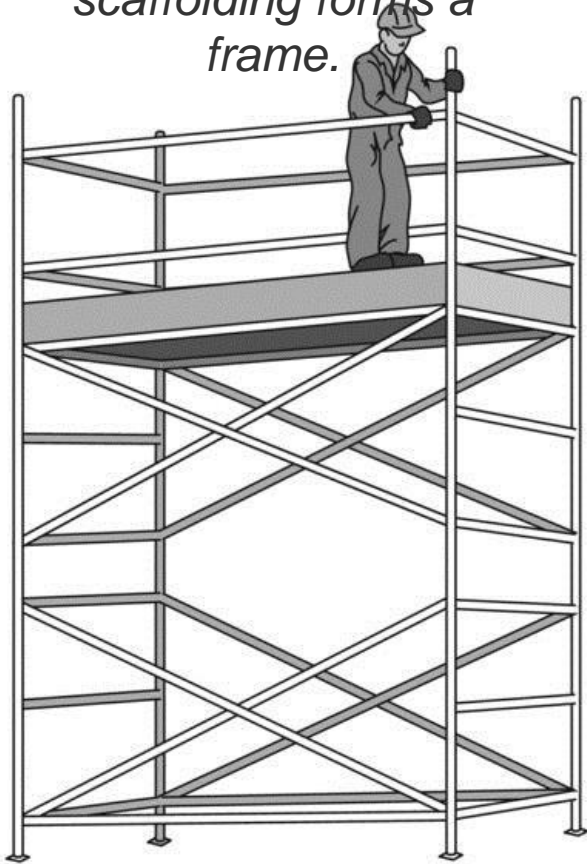


QUIZ QUESTION

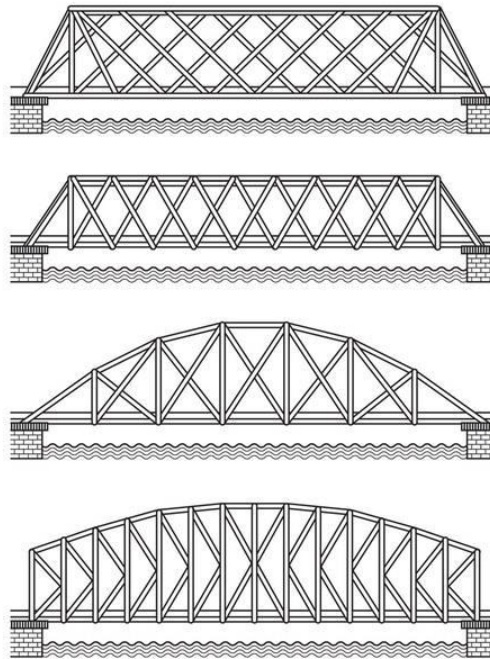
- TURN TO A FRIEND AND THINK ABOUT THE WORDS "SHELL STRUCTURE" AND "FRAME STRUCTURE" AND THINK WHAT THESE COULD MEAN. THEN THINK OF EXAMPLES OF FRAME STRUCTURES AND OF SHELL STRUCTURES THAT YOU CAN SEE IN BUILDINGS OR PERHAPS ON YOUR WALK OR RIDE TO SCHOOL. REPORT BACK AND DISCUSS THESE WITH YOUR CLASS.



Construction workers use scaffolding. The scaffolding forms a frame.



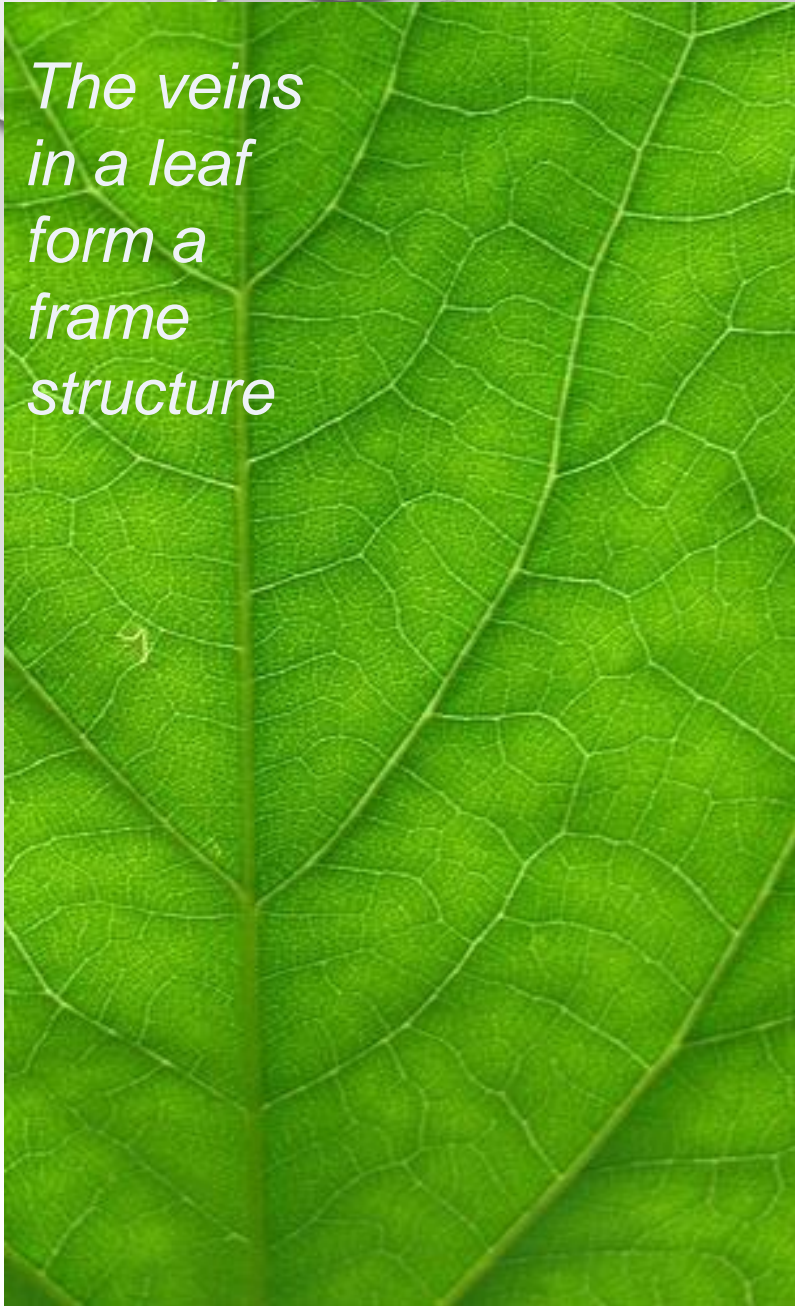
All of the triangles in these bridges make them strong frame structures.



FRAME STRUCTURES

- FRAME STRUCTURES ARE EASY TO IDENTIFY BECAUSE THEY HAVE A FRAME OR A SKELETON. THESE STRUCTURES ARE BUILT OR PUT TOGETHER BY ATTACHING PIECES OF MATERIAL TOGETHER TO MAKE A FRAME. LOOK AT THESE PHOTOS OF FRAME STRUCTURES.

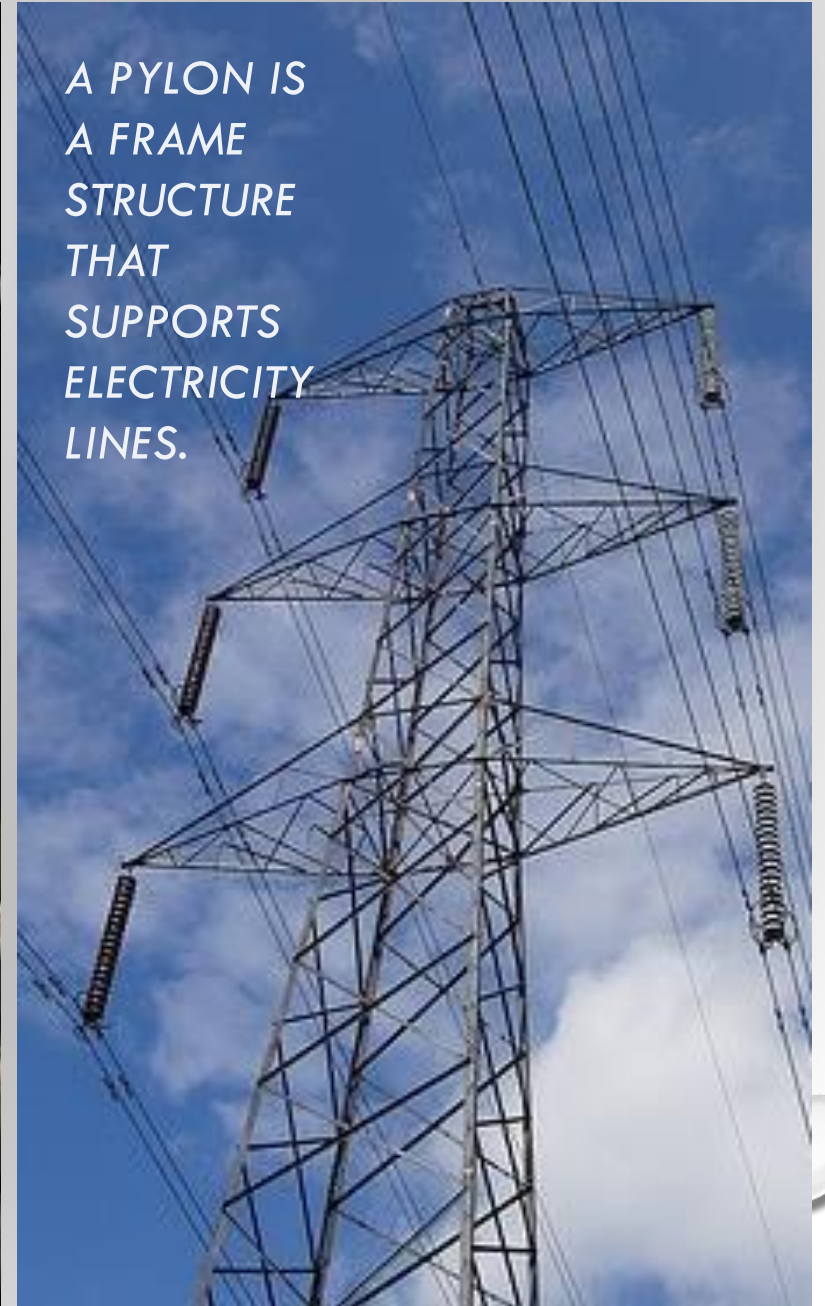
*The veins
in a leaf
form a
frame
structure*

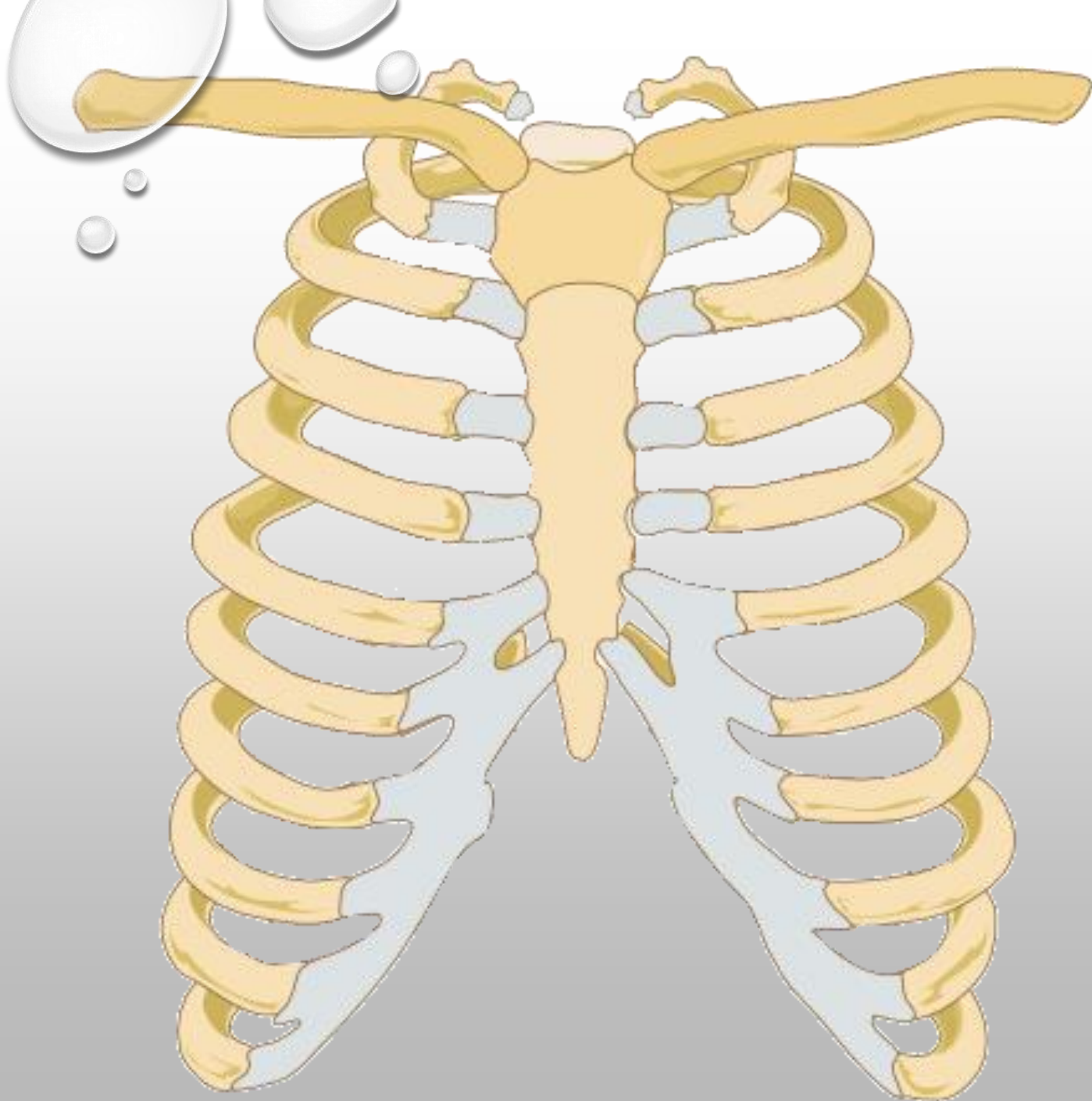


*A
spider's
web is a
frame
structure.*



**A PYLON IS
A FRAME
STRUCTURE
THAT
SUPPORTS
ELECTRICITY
LINES.**





- ONE OF THE MOST IMPORTANT FRAME STRUCTURES FOR ALL VERTEBRATE ANIMALS IS THEIR SKELETON. THE MATERIAL USED TO MAKE THIS FRAME IS BONE THAT IS ATTACHED TO THE MUSCLES THAT MOVE THE SKELETON. THE SKELETON SUPPORTS THE MUSCLES AND PROTECTS THE ORGANS.
- HERE IS A PICTURE OF A HUMAN RIB CAGE. CAN YOU SEE HOW IT MAKES A FRAME STRUCTURE?

Which organs does the rib cage protect?

In general, we can say that all vertebrates have a frame structure as a skeleton. This is because vertebrates have an endoskeleton which supports/makes a frame to support the body.

SHELL STRUCTURES

- SHELL STRUCTURES GENERALLY HOLD OR PROTECT THINGS INSIDE THE STRUCTURE. HUMANS MAKE SHELL STRUCTURES TO PROTECT AND HOLD THINGS LIKE A DISH, A TIN, A CAR OR HOUSE.

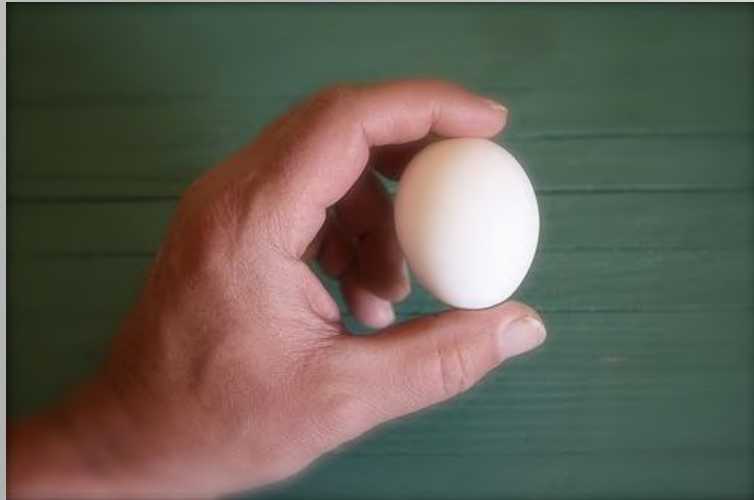


These guavas are contained in a basket which is a shell structure.



A car has shell structure which protects the passengers inside.

IN NATURE, EGGSHELLS AND THE EXOSKELETONS OF INVERTEBRATES, LIKE CRAB AND CRAYFISH SHELLS, ARE EXAMPLES OF SHELL STRUCTURES. SHELL STRUCTURES ARE MADE TO RESIST A VERY HEAVY LOAD.



An eggshell is an example of a strong shell structure.



A crab has an exoskeleton which is a shell structure.

KEY CONCEPTS

- STRUCTURES CAN BE SHAPED AS A SHELL OR FRAME.
- STRUCTURES HAVE SPECIFIC FUNCTIONS - TO PROTECT, SUPPORT, ENCLOSE OR HELP TO MOVE.
- SHELL AND FRAME STRUCTURES IN NATURE.
- STRUCTURES CAN BE STRENGTHENED.
- STRUTS CAN STRENGTHEN STRUCTURES.