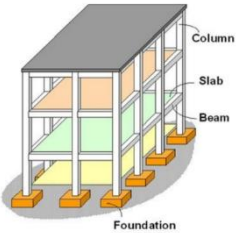


# DT Knowledge Organiser

## Frame Structures - Space Bases

### Did you know?



- \* Frame Structures are rigid support structures that use beams, columns and slabs to hold large forces of gravity and weight.
- \* Unlike shell structures, frame structures have joints.
- \* The pictures here use frame structures.



### Key Vocabulary

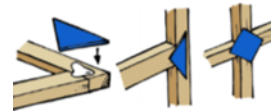
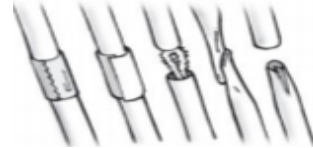
- Malleable:** shape changing e.g. pipe cleaners are easily malleable.
- Reinforce:** make stronger
- Rigid:** stiff
- Stability:** being still and steady
- Triangulation:** using triangles for strength.

### Designing

- \* Frames need a strong foundation (base) and should be able to stand on their own.
- \* Consider the best materials based on their properties e.g. weight, toughness, malleability, strength and presentation.
- \* Triangulation make structures stronger. This is important to consider when creating stable joints. Triangulation can make your structure more rigid from different angles when force is applied.
- \* The design stage should include a plan that lists tools & materials.

### Making

- \* You could use straw or rolled paper with tape and glue, or pipe cleaners inside to join.
- \* These structures are not as strong as wood and card structures but great for prototypes.
- \* Creating a rigid frame requires the creation of secure joints. Card strips and triangles all add stability.



### Evaluating

- \* How well does your structure work? Does it meet its purpose?
- \* How did you make your base strong and rigid? How could you make it even more strong and rigid?
- \* Which materials did you use and why?
- \* What restraints did you have? How would you have changed your product without these restraints?
- \* How does your product look? How could you make it more appealing?



### Character

How do frame structures protect us?

### Critical thinking

What is the difference between a shell structure and a frame structure?

### Creativity

Can you create a base at home for your favourite toy?

### Communication

Explain what makes a good frame structure to someone else.

### Citizenship

Can you reuse and repurpose any existing packaging to include in your base?

### Collaboration

Can you make suggestions and listen to others in your design group?

