
Paper Vault Activity Guidelines



What is the best way to support an arch or vault?

Design Goal: Design and build a paper vault that is able to support books or other heavy objects. Try to minimize the amount of paper that you use.

Supplies:

- Heavy paper or poster board (~15cm wide x 1m long x2)
- Cardboard or foam-core (~50cm x 50cm) [optional]
- Tape and/or hot glue
- Scissors

Question: Research different arches and vaults. How are they supported? Is it better to create a taller or shorter vault or arch? What types of supports seem to work best?

Brainstorm: Sketch or build lots of different ideas for vaults and supports.

Select Alternatives: Select alternatives that meet your design goal of being able to support a load while minimizing the amount of material used.

Design and Prototype: Create your paper vault using a strip of heavy paper or poster board that is ~15cm wide x 1m long. Note: you may need to tape multiple pieces of paper together to get a strip that is 1m long. Fold ~2cm at each end of the strip and tape the ends to a piece of cardboard or foam-core or to a table. You get to decide how far apart you place the supports; do you think a short or tall vault will carry more load? Now you have a vault but not a very strong one. Design and build supports for your vault. Be creative!



Test and Reflect: How do the forces flow through your vault? How much load does it support?

