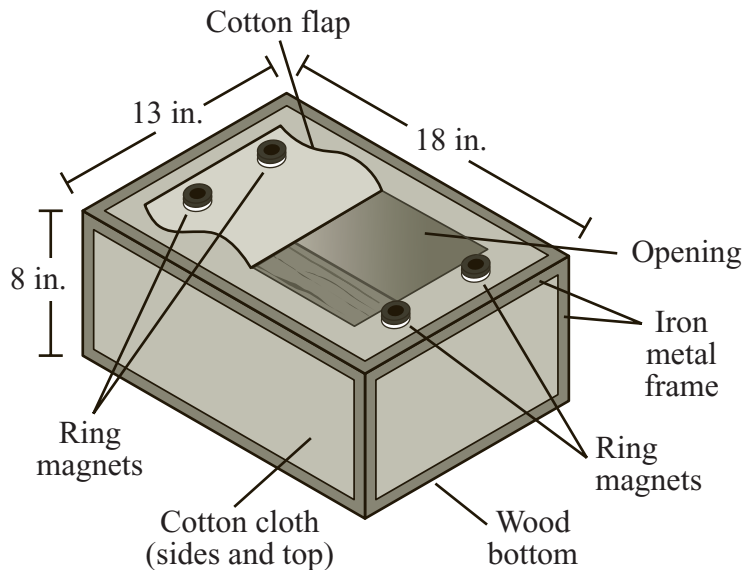


A student is designing a cat carrier that can be placed under a seat on an airplane. The carrier must meet the following requirements:

- The maximum carrier size is 18 in. long by 13 in. wide by 8 in. high.
- The carrier must be lightweight.
- Air must be able to flow easily through the carrier.
- The carrier must have soft sides.
- The bottom of the carrier must be waterproof.
- The carrier must be able to be folded for storage.
- The carrier must have space for the cat to turn around and lie down.

The diagram below shows the design features of a prototype that the student built.



- Identify **two** requirements the student was trying to meet by using cotton cloth for the sides and top of the carrier.
- Identify **two** design features (characteristics) of the prototype that do **not** meet the requirements. Explain how you know **each** feature does not meet the requirements.

The student included a flap in the prototype so a cat could be easily moved in and out. When the flap is closed, the magnets on the flap should be attracted to the magnets on the top of the carrier. However, when the student tried to close the flap, the magnets on the top of the carrier pushed the flap away.

- Explain why the magnets pushed the flap away **and** how the magnets could be fixed.