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## Lesson Plans

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## Critical Load

### Download Full Lesson Plan

(Full teacher resource documents are included)

### Lesson Focus

Lesson focuses on issues civil engineers face, including critical load and how to reinforce the design of a structure to hold more weight.

### Lesson Synopsis

The Critical Load activity explores the concepts of structural engineering and how to measure the critical load, or the maximum weight a structure can bear. Students learn about basic structures, how to reinforce, materials selection, and working as a team, design and build a prototype structure to hold increasingly greater weights.

**Age Levels:** 8-14

### Objectives

- Learn about civil engineering and the testing of building structure.
- Learn about efficiency ratings and critical load.
- Learn about teamwork and the engineering problem solving.



### Lesson Activities

Students learn about how to test structures for maximum load by designing prototypes of buildings out of cards. Topics examined include problem solving, teamwork, and the engineering design process. Students work first individually to build a structure, then combine materials in student teams to design the strongest structure, evaluate the load

capacity and critical load, and discuss why the strongest design worked best. Students also learn about famous failed and successful building structures.

### Resources/Materials

- Teacher Resource Documents (attached)
- Student Resource Sheet (attached)
- Student Worksheet (attached)

### Alignment to Curriculum Frameworks

Curriculum alignment sheet is included in [PDF](#).

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