

**Science Unit: Structures****Lesson 6: Structures Wrap Up**

School year: 2008/2009

Developed for: Britannia Elementary School, Vancouver School District

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Grade level: Presented to grades 3 and 4; appropriate for grades 3 – 7 with age appropriate modifications.

Duration of lesson: 1 hour and 15 minutes

Objectives

1. To review the concepts that have been learned throughout the unit.

Background Information

This is the sixth in a six-part series of lessons on “Structures.”

Vocabulary

See vocabulary for lessons 1-5.

Materials

- chalkboard or flipchart
- chalk or marker
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In the Classroom**Introductory Discussion**

1. Review with the students the activities you've completed over the last five weeks..
 - We've gone on a tour of the neighbourhood and looked at the structures that surround us everyday.
 - We've learned about different types of fasteners
 - We've built towers and bridges
 - We've tested bridges to see how strong they were and to learned about what makes different types of bridges strong.
 - We've learned about different types of forces that can act on structures.
2. Today we are going to have a contest to see how much we've all learned!



SCIENTIST IN RESIDENCE PROGRAM

Science Activity

Activity Title: Who Wants To Be A Structural Scientist?

Purpose of Activity: To review the concepts learned in this unit in a fun, contest format.

Instructions:

1. Break the team up into groups of 5-6 students.
2. Explain the contest rules to the students:
 - a. I will ask a question to a team and the team will have time to discuss the topic and agree on the answer. This is a team game, so the team has to discuss the question and agree upon an answer (so students shouldn't just shout out their answer).
 - b. Once the team has decided on an answer, they will tell their answer to the class.
 - c. If they are correct, they will receive 1 point. If they are incorrect, they will receive 0 points and the next team will have an opportunity to answer the question. Thus, all teams should discuss the question as they may be called upon to answer it. And make sure you discuss it quietly as you don't want to give away the answer to another team!
 - d. Once a question has been correctly answered, the next question is asked to the next team.
 - e. The scientist is the judge who determines if questions are answered correctly.
 - f. There will be three rounds of questions.
 - g. The team with the most points at the end of the three rounds wins. In the event of a tie, there will be a tie breaker that will work as follows. The scientist will ask a question of each of the tied teams. Those teams will discuss their answers within their group and will write down the answer. The scientist will review the answers from each team; if only one team gets the correct answer, they win. Otherwise, the contest ends as a tie.
3. Conduct the contest as per the above rules. Record the points each team earns as they earn it on the chalkboard or flipchart.
4. The contest questions and answers are included in the appendix on the following page.

Closure Discussion

1. What did you learn about structures?
2. What was your favourite activity from our lessons on structures and why?



Appendix: Contest Questions (Answers in Parentheses)

1. Name the three types of forces we learned about? (Tension, Compression, Torsion)
2. What is the definition of a “dome”? (a vaulted structure that generally has a circle for a base and a roof shaped like half a ball (or a sphere))
3. What type of structures are a bird's nest, an ant hill and a wasp's nest? (Structures in nature)
4. Name three famous towers. (Any three famous towers are acceptable. Examples include the CN Tower, the Eiffel Tower, the Space Needle, Harbour Centre, the Leaning Tower of Pisa)
5. Name three types of fasteners that we used while building structures. (Plasticene, tape, glue, string, brass fasteners)
6. What are the two types of joints that we learned about? (Rigid & flexible)
7. What is the definition of a tower? (A building that is taller than it is wide)
8. What is the definition of torsion? (when a load makes one part of a structure slide past another part (e.g., twisting))
9. What is the definition of compression? (when a load presses together (or “squishes”) a structure)
10. What shape is often used to make structures stronger? (Triangle)
11. Before you build a structure, you draw a plan. What is the name of the person whose draws those plans for a living (i.e., what is their job called)? (architect)
12. What is the definition of a “structure”? (any supporting framework that is built to hold a load or enclose a space)
13. What type of bridge is the Lion's Gate Bridge? (Suspension Bridge)
14. What is the definition of compression? (when a load stretches a structure)
15. What is the name of the part of the bridge that you walk or drive over? (bridge deck)
16. If you step on a pop can, what is the name of the force that crushes the pop can? (compression)
17. What is the definition of a joint? (a place where two pieces meet).
18. Name three bridges in Vancouver. (Any three Vancouver bridges are acceptable. Examples include: Lion's Gate, Second Narrows (a.k.a. Iron Workers Memorial), Burrard St, Granville St., Cambie St., Oak St., Knight St., Capilano Suspension, Lynn Canyon Suspension, Alex Fraser, Port Mann, Golden Ears).

Tie Breaker Questions:

19. What is the difference between a “simple suspension bridge” and a “suspension bridge”? (Simple suspension bridge uses a ropes/cables to support the bridge deck, while a regular suspension bridge has ropes/cables attached to a tower and the bridge deck is “hung” from those cables.
20. Why was the simple suspension bridge that we tested last week so much stronger than the beam bridge? (Weight → tension in ropes/cables)