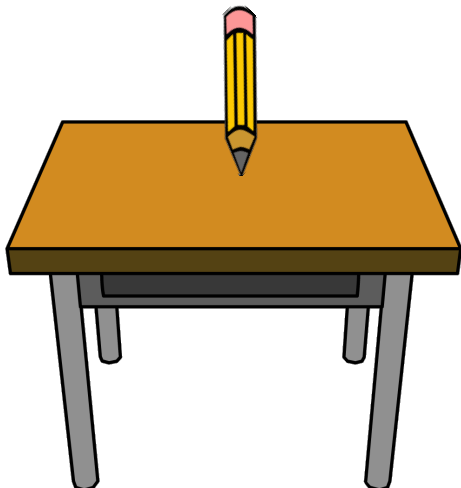


# Grade 7 Science

## Unit 4: Structures



Please stand your pencil upright on your desk.

Why is this a difficult task?

If you do get it standing, what does it take to knock it down?

**Stability**      The level of a structures ability to maintain shape and position.  
"The ability to stand up."

# Principles of Stability

Today you will be shown a series of questions to help you learn the **principles of stability**. You will have a few minutes to discuss each question with the students at your table, and then we will discuss it as a class. I will then do a short demonstration to help re-enforce the concept being taught. You will then be shown the next question, and repeat the process.

If you are focused, and stay on task, this process will teach you the material you need moving forward in this unit.



## Stability

1. To find one key to stability, examine the photographs in the figure below.
  - a. Which person is in a more stable position?
  - b. What difference in their positions creates the difference in stability?
  - c. Based on your observations, suggest a hypothesis to explain why an opened stepladder is more stable than the same stepladder with its legs folded together.





# Stability

2. To find a second key to stability, examine the photographs in the figure below.
- Which athlete is in a more stable position?
  - A large part of your body mass is in the area around your hips. What difference in the position of body mass puts one in a more stable position than the other?
  - Explain how the same principle makes balancing on stilts much harder than balancing on your feet.



# Stability

3. Football players are coached to keep their stance “wide and low”.
- Explain how this advice uses both keys to stability that you have discovered.
  - Why is it so hard to balance a pencil on its point? Use the concepts you have learned to explain your answer.

