

Struggling to find a hands-on way to teach that the scientific method isn't always used during science?

Name: _____

WHAT SURFACE WILL MAKE THE TENNIS BALL BOUNCE THE HIGHEST?

Procedure:

1. Determine how you will drop the tennis ball each time. What height? What force? Make sure you keep it the same for each and every trial.
2. Drop the tennis ball on the first surface. Measure the height of the first bounce. How high did it bounce? Record it below. Repeat 5 times.
3. Drop the tennis ball on the second surface. Measure the height of the first bounce. How high did it bounce? Record it below. Repeat 5 times.

Materials:

- Meter or Yard Stick
- Tennis Balls
- 2 types of surfaces to bounce the ball on

	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Surface #1					
Surface #2					

Were your measurements the exact same for surface one? What could have caused them to be different? _____

Were your measurements the exact same for surface two? What could have caused them to be different? _____

Why is it important to do multiple trials? _____

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Height of the Bounce

	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5
Surface 1										
Surface 2										

Don't spend any more time planning, searching, or brainstorming. Everything you need is in this easy to use download!

Teacher Directions Page

- Learning Goals
- Materials Needed
- Specific
Directions for All
Parts of Lesson

Scientific Method is Not Always Used in Science

Learning Goal: Recognize and explain that authentic scientific investigation frequently does not parallel the steps of the scientific method.

Materials Needed: Index Card Tower Recording Sheet (1 per student), 20 index cards per group, Exit Slip (6 per page)

Teacher Directions:

1. Remind students of the steps of the Scientific Method. Brainstorm times when scientists would not follow these exact steps.
2. Complete the Index Card Tower investigation. Have students draw their designs before beginning. Give each group 20 index cards. Start a timer for the first build – I recommend 15–20 minutes. Pause and have students answer the first two questions on the reflection sheet. Have students take down their original towers. Give 10–15 minutes for the second tower build. After the time ends, have students answer the next questions.
3. Hold a class discussion on the reflection questions. Did students use the scientific method for this investigation? Why or why not? Will scientists always use the scientific method? Why or why not?
4. Have students complete the exit slip questions: “Why do scientists not always use the scientific method?”
5. Review exit slips and record students who’ve mastered this lesson and those who need additional practice.

Experiment

- Recording sheet walks through the experiment process with a focus on the scientific method NOT being used
- Index Card Tower
 - ✓ Lists Materials Needed
 - ✓ Specific Instructions
 - ✓ Perfect way to show that the scientific method steps are not always used



The image shows a recording sheet for an 'Index Card Tower' experiment. The sheet is white with black text and is placed on a background of colorful paper (blue, pink, and yellow). A pink pen is resting on the left side of the sheet. The sheet contains the following sections:

Name: _____

Index Card Tower

Challenge: Create the tallest index card tower that will stand on its own. It should measure at least one foot tall.

Materials:

- 20 index cards

Imagine: Brainstorm at least two solutions to the challenge.

Brainstorm #1	Brainstorm #2

Test #1: Did your design meet the goal? Why or why not? _____

Improve: What improvements can you make to your first design? _____

Test #2: Did your second design improve? How do you know? _____

Improve: What improvements would you make to your second design if there were more time? _____

Reflect: What were some of the elements of other towers that worked well? _____

Reflect: Did you use the steps of the scientific method with this? _____

Exit Slip Tracking			
Date	Exit Slip Topic	Students Who Have Shown Mastery	Students Who Need Additional Review/Practice
	<div style="border: 1px solid black; padding: 5px;"> Name: Why do scientists not always use the scientific method? <hr/><hr/><hr/><hr/><hr/><hr/><hr/> </div>		

BONUS: Includes a Mastery Checklist. You can easily keep track of students who need extra practice and students who are ready to move on to the next lesson in one easy place!