



NSTA Web Seminar:

The NSTA Learning Center: Free
Classroom Resources and PD Tools –
All in One Place

Tuesday, September 16, 2008



The National Science Teachers Association

The NSTA's Mission:

To promote excellence and
innovation in Science
Teaching and Learning for All

The Issues:

- Science
- Scale
- Sustainability



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The Learning Center is NSTA's e-professional development portal to help you address your classroom needs and busy schedule. You can gain access to more than 2,600 different resources that cater to your preference for learning. Over 700 hundred resources, such as journal articles, science objects and web seminars are available **for free**. A suite of practical tools such as My Library, My Transcript, and My Professional Development Plan and Portfolio tool help you organize, personalize, and document your growth over time.



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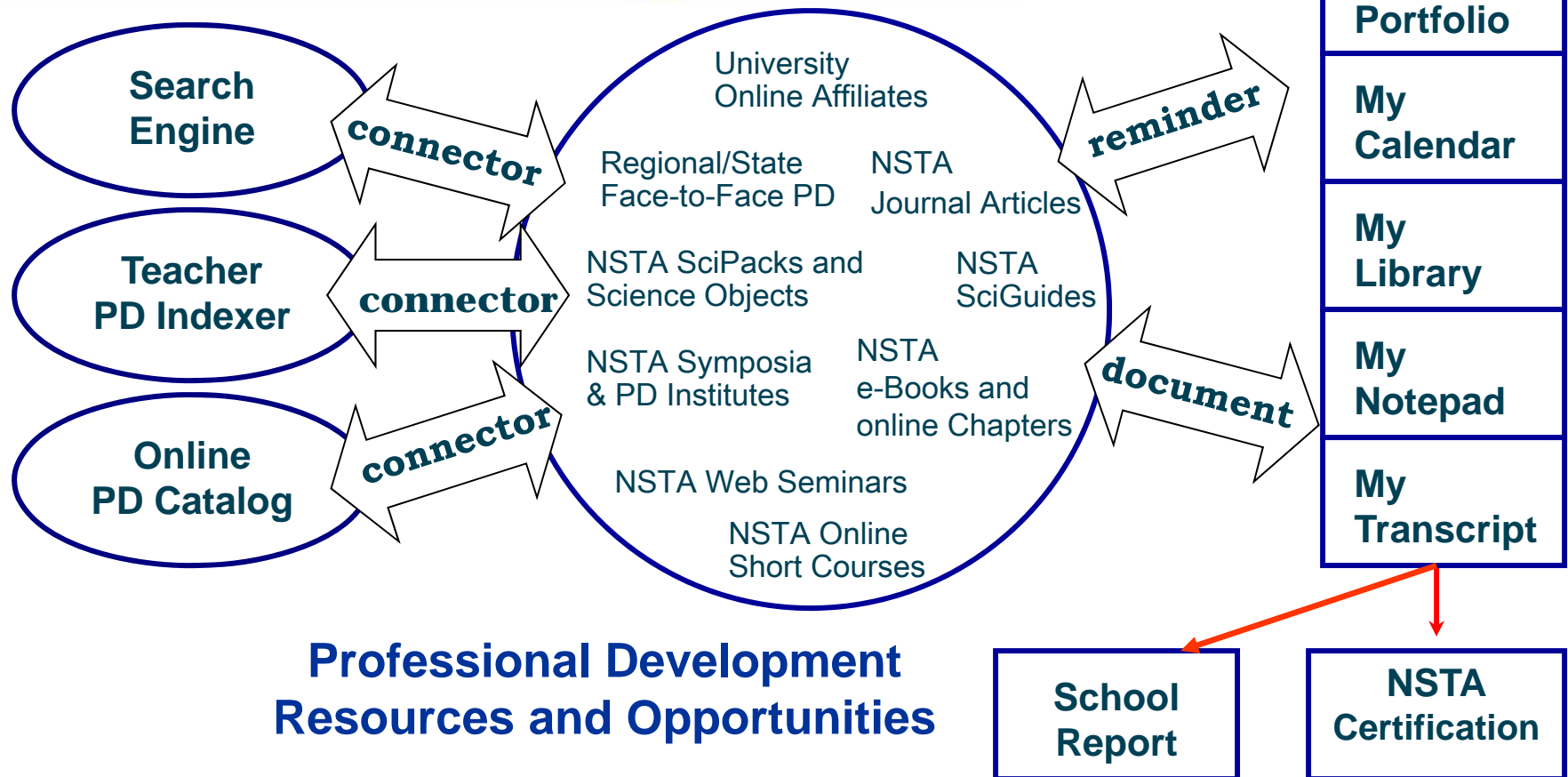
2 hr
Do-It-Yourself
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Scalable, Sustainable, and Customized Professional Development

The NSTA Learning Center





The NSTA Learning Center

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2 hr
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 141 results in Do-It-Yourself Learning

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 0 results in In Person Experiences


Results: 1 - 10 of 814

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[Universe: The Sun as a Star](#)

Science Object

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Average User Rating:



This Science Object is the second of five Science Objects in the Universe SciPack. It provides an understanding of how our Sun compares to other stars in the universe. Analyzing the light from other stars and comparing it with light from our Sun has... [\[view full summary\]](#)

Member Price: **Free**

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Grade Level: Elementary School, Middle School, High School



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52 results in Science Objects

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Earth and Space Science

Physical Science

Life Science

History and Nature of Science

Personal and Social Issues

Science and Technology

Science as Inquiry



Professional Development Plan

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[Plate Tectonics: Layered Earth](#)

2 hr
Do-It-Yourself
Science Object



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 - ☒ Chemical reactions
 - ☒ Electricity
 - ☒ Electromagnetic radiation
 - ☒ Energy
 - ☒ Forces and motion
 - ☒ Gas laws
 - ☒ Heat
 - ☒ Light
 - ☒ Nuclear reactions
 - ☒ Properties of materials
 - ☒ Sound

Subject: [All Subjects](#) [Physical Science](#)

Opportunities: [All Opportunities](#)



67 results in Do-It-Yourself Learning
462 results in Books & Articles



8 results in Live Online Seminars & Classes
2 results in In Person Experiences

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Welcome to Your Professional Development Web Space!

Through the resources on this site you can begin to build your professional development plan, track your activities and assess your progress. You can start at the "Explore Learning Opportunities" section or by writing your game plan with the PD Plan and Portfolio tool. Whatever you decide, that's the beauty of this space. So, let's get started!

Featured PD Resource



Science
OBJECTS



Oceans Effect on Weather and
Climate: Global Climate Patterns

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Keyword:

Author:

Type of Learning Resource:

- Grade Level:
- ☐ All Grade Levels
 - ☐ Elementary School
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 - ☐ High School
 - ☐ College
 - ☐ Informal Education

Science Discipline:

Price:

-
- All Prices
 - Free
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Let's Pause for Two Questions



Featured e-PD resources within the Learning Center



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Featured e-PD resources
within the Learning Center



- Two hour **free** online learning experience in a particular topic
- Interactive **simulations** of phenomena in an engaging way
- Questions to promote **interaction and learning** via inquiry strategy
- Based on **science literacy** goals in science education standards



Position and Motion

- Introduction
- Position
- Motion
- Changes in Motion
- Tying it All Together
 - Tying it All Together
 - Animation Analysis
 - Summary
- Evaluation
- Glossary
- Credits



Animation Analysis

The following animation shows a ball rolling along a track. Replay the motion a number of times and then answer the multiple-choice questions that follow. In answering those questions, feel free to replay the animation if necessary. Select the icon to launch the animation in a new window.



Figure 5.2. Ball on Complex Track Animation

For those unable to engage with the interactive component, select this link for a long text description:
[Text Description](#)

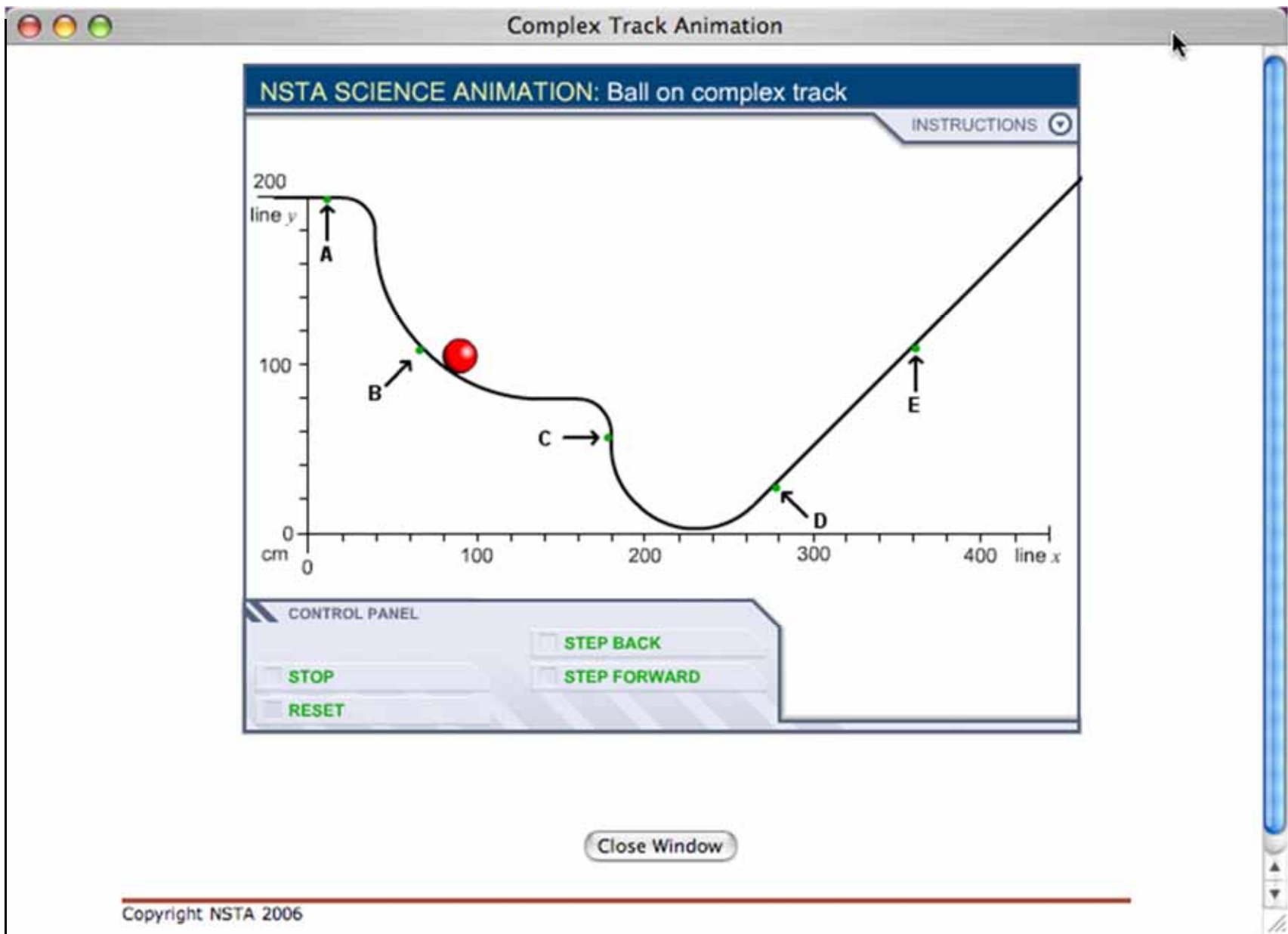
Practice

Okay, now that those mental wheels are turning, see if you can answer these questions. If you miss an answer or two or three, it might be worth your while to review the appropriate sections of this Science Object.




What is the approximate position of Point E in relationship to Point A?

- ☐ E is about 350 centimeters away from A, at an angle of about 80 degrees with respect to Line Y.



http://scipacks.nsta.org - Position and Motion - Microsoft Internet Explorer

NSTA
Science
OBJECTS


Force and Motion
Position and Motion

5 OF 8

HomeReset PagePreviousNext

Position and Motion

- Introduction
- Position
- Motion
- Changes in Motion
- Tying it All Together
 - Tying it All Together
 - Animation Analysis

The ball has zero acceleration at ...

☐ Point E, because the ball is at rest at that point.

☐ Point B, because the direction is constant there.

☐ Point D, because it's slowing down at that point. It is decelerating but not accelerating.

☒ Point A, because neither its speed nor its direction are changing there.

Check

http://scipacks.nsta.org - Answer Feedback - M...

Answer Feedback

Incorrect!

If the ball is at rest, that means the instantaneous velocity is zero. Acceleration, however, is measured by changes in velocity. An object at rest does not necessarily have zero change in velocity.

For more information:

- [For help revisit the One More Definition section.](#)
- [To see how this information relates to each position in the](#)

DoneInternet

points is the instantaneous speed of the ball the

D. The ball is moving fastest at those Points. and depends only on the magnitude of the velocity, and

it is changing its speed the fastest at that point.

the speed has to be largest at the beginning in order for re path.

the ball is slowing down at Point D, it can't have a ere.

Check

DoneInternet



Let's experience one of the Science Simulations

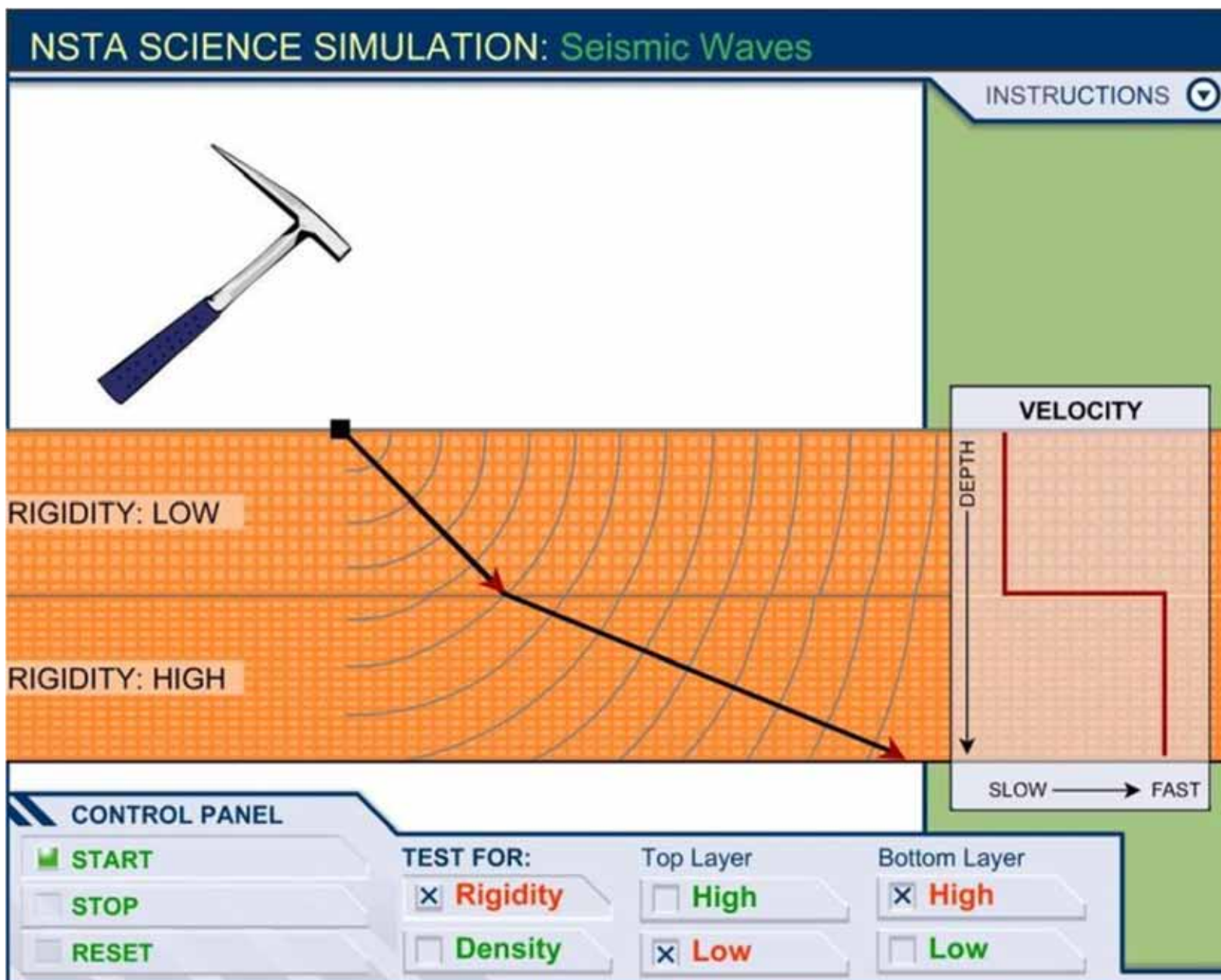


Sample Interactives and Multimedia from various Science Objects:

- Earth Science
 - Plate Tectonics
- Life Science
 - Coral Ecosystems
- Physical Science
 - Force and Motion



Breakout Rooms





Use **one word** to describe your experience
with the science simulations

Plate Tectonics	Make a Reef	Frictionless Air Track



Do you think science simulations like the one you experienced can help **teachers** learn science concepts?



A.YES

B.NO

C.Not sure



Do you think science simulations like the one you experienced can help **students** learn science concepts?



A.YES

B.NO

C.Not sure



http://scipacks.nsta.org - Newton's First Law - Microsoft Internet Explorer

NSA Science OBJECTS Force and Motion Newton's First Law 3 OF 7

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Newton's First Law


- Introduction
- Objects at Rest
- Objects in Motion
 - The 2nd Part
 - Challenge
 - Alternate Explanation
 - Animation**
 - What's the Point?
 - Making Sense of It
- Combining the Parts
- Evaluation
- Glossary
- Credits

Q What type of pattern did you observe?

- ☐ I didn't run the simulation, but I can imagine what will happen.
- ☐ The more the track changed in shape, the higher the ball rose in vertical height at the end of the track.
- ☐ The ball would rise to a different vertical height at the end of the track depending on the track chosen.
- ☐ The ball rose to approximately the same vertical height no matter what track was used in the simulation

Check

Tries Remaining: 3

 **Hands-On Activity**

You can do this simulation in real life. All you need is a section of Hot Wheels® track, a marble or ball bearing, a ruler, and a friend to help. Then select the link to go to the Activity:
[Hands-On Activity](#)

Press "Next" at the top of this window to go on to *What's the Point?*

Internet



Objects in Motion Hands-On Activity

Hands-On Activity

Grab a ruler or meterstick, a marble or a ball bearing, and about a meter-long section of Hot Wheels® track. If you don't have access to kids' toys, just use anything you can find that's flexible and will allow a marble to roll along it. What works well is a section of clear plastic tubing (try the hardware or plumbing supply store) and a ball bearing that's small enough to roll freely inside the tubing.

Find a friend or family member to help you with this next part. Hold the track in a U shape so the lowest part just touches a table top or a floor, as seen in Figure 3.10.


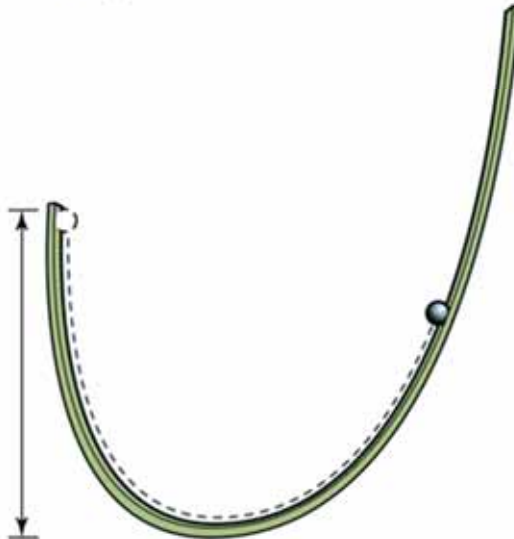


Figure 3.10

Now measure the vertical distance from the floor or table to one end of the track. For the directionally challenged, that vertical distance is shown in Figure 3.11.



If your memory isn't great, write this distance down. You'll need to keep this one side of the track at that same vertical distance as you do the next few things. With your accomplice helping you, hold the track in a U shape with the bottom of the U touching the table or floor; holding your end at the vertical distance you've measured, drop the marble at the top of that end of the track.



Featured e-PD resources
within the Learning Center



A total of 52, two hour, Science Objects are **freely available** now at The NSTA Learning Center

Topic Areas:

- Force and Motion
- The Universe
- The Solar System
- Gravity and Orbits
- Energy
- Coral Ecosystems
- Earth's Changing Surface
- Earth, Sun & Moon
- Plate Tectonics
- Rock Cycle
- Ocean's Effect on Weather and Climate
- Food Science Safety



Let's Pause for Two Questions



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- 10 Hour Online and On-Demand Learning Experience
- 3-5 Free Science Objects, **plus**
 - Individualized email support
 - Pedagogical Implications component
 - Opportunity for Certification by passing a Final Assessment



Personal Information



Welcome,
abyers@nsta.org

Last Visit:

- Date: 04/12/07
- Time: 10:01 AM

Science Object Status:

- Available: 112
- Visited: 24

Member Log Out

Albert Byers

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Links

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To access your SciPack, refer to the **Table of Contents**

1. Select your SciPack from the **Select** dropdown
2. Click **Find**
3. To expand the SciPack Table of Contents, click the plus sign next to the SciPack title
4. Click the name of the section you would like to view

When you have only one SciPack, start with **SciPack**

Table of Contents

Select: **Find**

SciPack

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 - [+] [Position and Motion](#)
 - [+] [Newton's First Law](#)
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Free Science Objects

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Completion	Last Accessed
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	Not Accessed
	12/07/07 4:13 PM
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I like the idea of taking a final assessment
in the SciPack to demonstrate my
understanding and proficiency of a
particular content area.

YES	NO	I need to learn more about it



Featured e-PD resources
within the Learning Center



Pedagogical Implications Component

- Distills research by grade-band
- Identifies known pre or misconceptions
- Presents the best practices and instructional strategies to consider when teaching the key ideas in SciPack



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Support Components for SciPacks

- Auto System Check Wizard
(detects and assists with necessary plug-ins)
- Orientation/Navigation Support
(how to navigation SciPack)
- Technical Support Help Desk
(issues accessing content)
- Subject Matter Expert Wizard
(intelligent coach via email)



Total List of Science Standards Topics



Life Science

- **Cell Structure and Function**
- Cell Division and Differentiation
- Cells and Chemical Reactions
- Regulation and Behavior of Organisms
- Heredity and Variation
- Biological Evolution
- Natural Selection
- Interdependence of Life
- Flow of Matter and Energy in Ecosystems
- **Resources and Human Impact**
- **Food Science Safety**
- **Coral Reef Ecosystems**
- Nutrition

• COMPLETED SCIPACKS

• COMING SOON

• IN THE QUEUE

Earth and Space Science

- **Earth, Sun and Moon**
- **Gravity and Orbits**
- **The Solar System**
- **The Universe**
- **Ocean's Effect on Weather and Climate**
- **Earth's Changing Surface**
- **Rock Cycle**
- **Plate Tectonics**
- **Earth's History**

Physical Science

- **Force and Motion**
- **Energy**
- **Magnetic and Electric Forces**
- Nature of Light
- Elements, Atoms and Molecules
- Atomic Structure
- Chemical Reactions



Evaluation of Online, On-Demand Science Professional Development Material Involving Two Different Implementation Models

Participant Feedback: Confidence in teaching subject matter:

- 7%: Very Confident *Before* completing F&M SciPack
- 60%: Very Confident *After* completing F&M SciPack
- 98%: Found SciPack content relevant
- 96%: Would recommend SciPack
- 98%: Found interactive simulations worthwhile

Pre/Post Assessment and Final Assessment Results

- Horizon Research Instrument:
Positive *significant gains in learning* between pre/post test
- Final Assessment: 92% passed the final assessment



Let's Pause for Two Questions



Featured e-PD resources within the Learning Center



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Featured e-PD resources within the Learning Center



Valuable classroom resources for science teachers interested in integrating the web into their teaching

Each SciGuide consists of:

- Approximately 100 standards-aligned web-accessible resources
- Customized lesson plans using selected web resources
- Teacher media vignettes describing and showcasing the lessons
- Samples of student work
- Interactives utilized in SciPack on same topic





Position and Motion

Think about driving a car. We know when the car is still, when it is traveling at a constant speed and when the speed is increasing or decreasing. We know when we are getting closer to the car in front that we have to reduce our speed. When that car in front is getting close very fast, we have to reduce our speed by a great amount very quickly. Can we explain this more accurately?



We rarely think about the motion of objects beyond noticing that they are still or in motion. But we have an intuitive sense of a wide range of motion and changes in motion. This SciGuide will develop a deeper understanding of motion and changes in motion and introduce descriptive language and equations for changes in motion.

Motion involves a change in position. It is important to be able to describe position accurately in relation to a reference point. When the object changes position, it is important to describe how it changes position and in what direction. This SciGuide will provide support in understanding different ways to describe position and different units used in science. How an object changes its position can be described by using speed or velocity. When the speed or velocity changes, those changes can be describe by the object's acceleration. Definitions for position, speed, velocity and acceleration developed by physicists can be extremely helpful in understanding motion. Definitions, scientific units, equations, graphs of change in position and change in velocity, and simulations are all provided in these on-line resources to facilitate and understanding of

Lesson Resources:

- ✦ **Rollercoasters!**
 - [Lesson Plan](#)
 - [Vignette \(Case Study\)](#)
 - [Audio Clip](#)
 - [Sample of Student Work](#)

Additional Resources:

- ✦ **Media**
 - [Angels and Distance \(flash sim\)](#)
 - [Three Speeds \(flash sim\)](#)
 - [Moving Objects \(flash sim\)](#)
 - [Motion Related to Speed \(flash sim\)](#)
 - [Ball Rolling Across Different Surfaces \(flash sim\)](#)
 - [Velocity and Speed \(flash sim\)](#)
 - [Applying Force to a Moving Object \(flash sim\)](#)
 - [Ball on a Complex Track \(flash sim\)](#)



Featured e-PD resources within the Learning Center



Third Party Evaluation

- 100% said SciGuides are a **valuable** supplemental online **resource** for educators
- Written content very **efficient** in providing introductions to topics and suggesting resources
- 100% said SciGuides and their content are laid out in a logical fashion that is **easy to navigate & consume** from educator's' point of view.
- 100% said SciGuides are **effective resources** that:
 - save educators time when searching for vetted URLs
 - assist in implementing the web by the accompanying lesson plans, media vignettes, and samples of student work



Sample of Student Work from Organisms SciGuide



Address http://webwatchers.nsta.org/files/Student_Work_Sample.doc Go

Experiment Diagrams

DAY 1	DAY 7	DAY 1

CONCLUSION:
(Explain what happened throughout your experiment)

My table planted a plant upside down. We used a box, pot, corn plants, soil, and tape. We wanted to know if the plants in a box would grow to the sunlight. The plants grew, but not to the sunlight. At first the plants were 45 mm and 175. Now they're a little taller. The colors changed to. It's starting to turn white instead of green. I think that they didn't grow very much taller because they were upside down. Now we did this was by getting a box, then cutting a hole in it. Second we put the plant upside down in one of the holes, and taped it down. Now when we measured it this

Unknown Zone

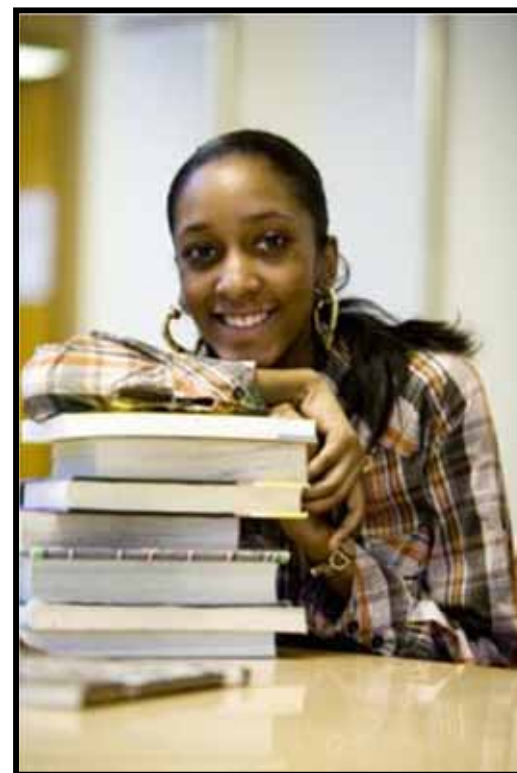
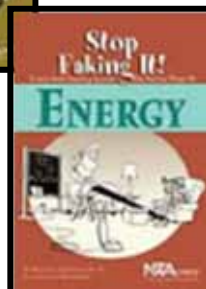
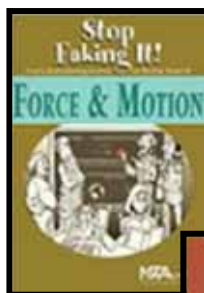


Let's Pause for Two Questions



Featured e-PD resources within the Learning Center

- Journal Articles (516)
- E-Book Chapters (136)





The **NSTA** Learning Center

e-PD System Tools

- My Learning Center 2.0
- My PD Indexer 2.0
- My Library and Notepad Tool 2.0
- My PD Plan and Portfolio Tool 1.0
- My Calendar Tool 1.0
- State Standards Alignment of Resources 1.0
- State/District Accountability Admin tools 1.0



The **NSTA** Learning Center

PD Indexer Tool

- Diagnose gaps in content understanding
- Recommend targeted PD resources for individual users



The **NSTA** Learning Center

My Library Tool

- Create personalized collections of resources
- Create personalized notes for individualized resources
- Share your collections via email with colleagues

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Earth Sun and Moon

[Share this collection](#)

Sort By:



Earth, Sun, and Moon: Earth's Seasons

Type: Science Object

Days Remaining: 341

Grade: Elementary School, Middle School

Summary: Overview:



This Science Object is the last of four Science Objects in the SciPack. It provides an understanding of why we have different seasons and why seasons vary from one location on Earth and another.



Earth, Sun, and Moon: Motion of the Moon

Type: Science Object

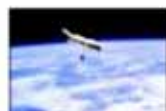
Days Remaining: 341

Grade: Elementary School, Middle School

Summary: Overview:



This Science Object is the third of four Science Objects in the SciPack. It provides an understanding of the moon's orbit around Earth and the phases of the moon as experienced from Earth's surface. The



Gravity and Orbits

Type: SciPack

Days Remaining: 192

Grade: Elementary School, Middle School

Summary: The Gravity and Orbits SciPack explores concepts related to Earth's universal gravitation and how gravity affects the universe around us. The focus is on Standards and Benchmarks related to universal gravitation including variables that influence the...



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- [Move to Another Collection](#)
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The NSTA Learning Center - Microsoft Internet Explorer

MY NOTES

Notes for: Earth, Sun, and Moon: Earth's Seasons

[Download to Text File](#)

This Science Object provides an excellent review of the reason for the seasons. Remember to revisit this the week prior to teaching about this topic next fall. The simulation in the third topic is very compelling, be sure to go to the SciGuide and use this sim with students in class.

Update Notes Last saved: 3/27/2008 9:03:21 AM



Al has 152 items in his “My Library” space.
I have...

0	1	2-4
At least 5	More than 5	This is a worthwhile tool that I need to try



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PD Plan and Portfolio Tool

- Create personalized multiyear plan outlining your goals, evidences, and justifications for growth
- Upload files to demonstrate completion of goals with reflections
- Generate automatic PDF report with embedded URL links and images

Welcome

Select Goal Categories

Define/Measure Goals

View Status

Generate Report

Support Evidence

Portfolio Manager

My Content Knowledge

(goal) - Earth Science Review

(evidence) - Earth's Changing Surface

Reflection

My Content Pedagogy

My Assessment/Evaluation Skills

My Technology Skills

My Leadership Skills

My Management Skills

Impact on Student Learning

Category: My Content Knowledge

Goal: Earth Science Review

Evidence: Earth's Changing Surface SciPack

My Tasks



Upload
File



Add
Note



Edit
Evidence



Delete
Evidence

Instructions

In this step, you can edit the information associated with the evidence you plan to use in your portfolio to communicate about your successful professional development experiences for the selected goal. You can upload files, created your own files (i.e. a note describing specific journals or books you have read), and edit the information about how a specific evidence file does, in fact, communicate your successful accomplishments.

About Upload File

About Add Note



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Accountability System for Districts and States

Web Seminar 11/12/08



**Let's Pause for Two
Questions**

Thank you!



Thanks to our presenter, Al Byers, and to our collaborators for sponsoring this program



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<http://www.elluminate.com>

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Welcome to Your Professional Development

The Learning Center is NSTA's e-professional development portal to help you address your classroom needs and busy schedule. You can gain access to more than 2,600 different resources that cater to your preference for learning. Over 700 hundred resources, such as journal articles, science objects and web seminars are available **for free**. A suite of practical tools such as My Library, My Transcript, and My Professional Development Plan and Portfolio tool help you organize, personalize, and document your growth over time.



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- Register now

Explore Learning Opportunities

[See all FREE Resources](#)

[Advanced Search](#)

By Subject	By Grade Level	By State Standards
<ul style="list-style-type: none"> Earth & Space Science Life Science Physical Science 	<ul style="list-style-type: none"> Elementary Middle School High School College 	<p>Many resources now permit you to select your grade, standard document, and state to view the standards that align to the resource you've selected.</p>



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Science OBJECTS

[Plate Tectonics: Layered Earth](#)

2 hr Do-It-Yourself Science Object



[Oceans Effect on Climate and Weather: Global](#)

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NSTA *ONLINE* *SHORT COURSES*



- Content expert and Moderator
- Live Web Sessions (5)
- Asynchronous discussions over 5 week period
- Course Materials
 - SciPack
 - SciGuide
 - Journal Articles
 - e-Book



Energy begins Sept. 30

8:00-9:30 p.m. Eastern

\$322.50 (Member) | \$367 (Nonmember)

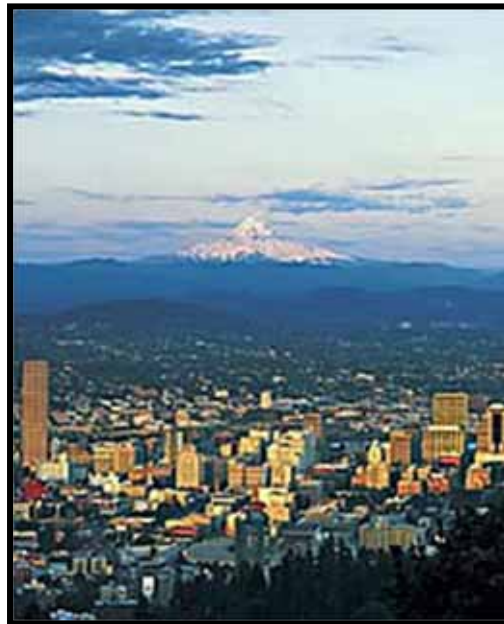


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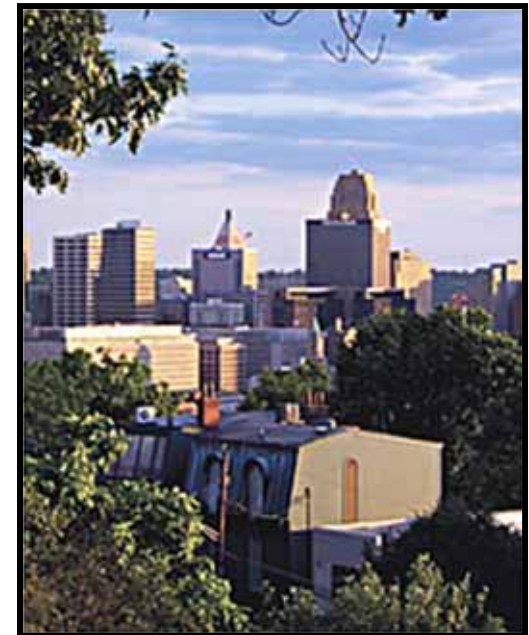
Charlotte

Oct. 30 Nov. 1



Portland

Nov. 20-22



Cincinnati

Dec. 4-6



- *NSDL: Celebrating Astronomy: A Star's Story*

September 25, 2008

- *NSTA: How to Maximize Your NSTA Conference Experience*

October 8, 2008

- *NSDL: Beyond Penguins and Polar Bears: Physical Science
from the Poles*

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