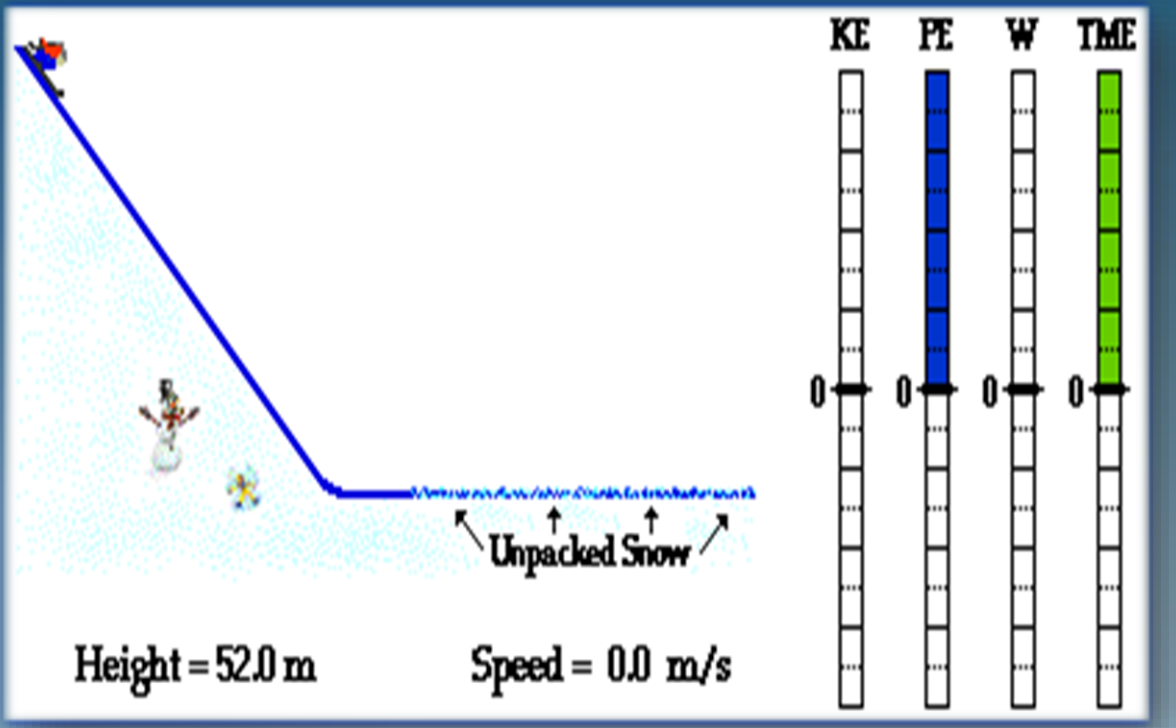
Kinetic and Potential Energy

1. Question & Research Task

Objects are constantly changing position. However, this change would be impossible without energy. The energy of motion and position must be described.



www.physicsclassroom.com

In this Slam Dunk, you will conduct brief, focused research to respond to the inquiry question:

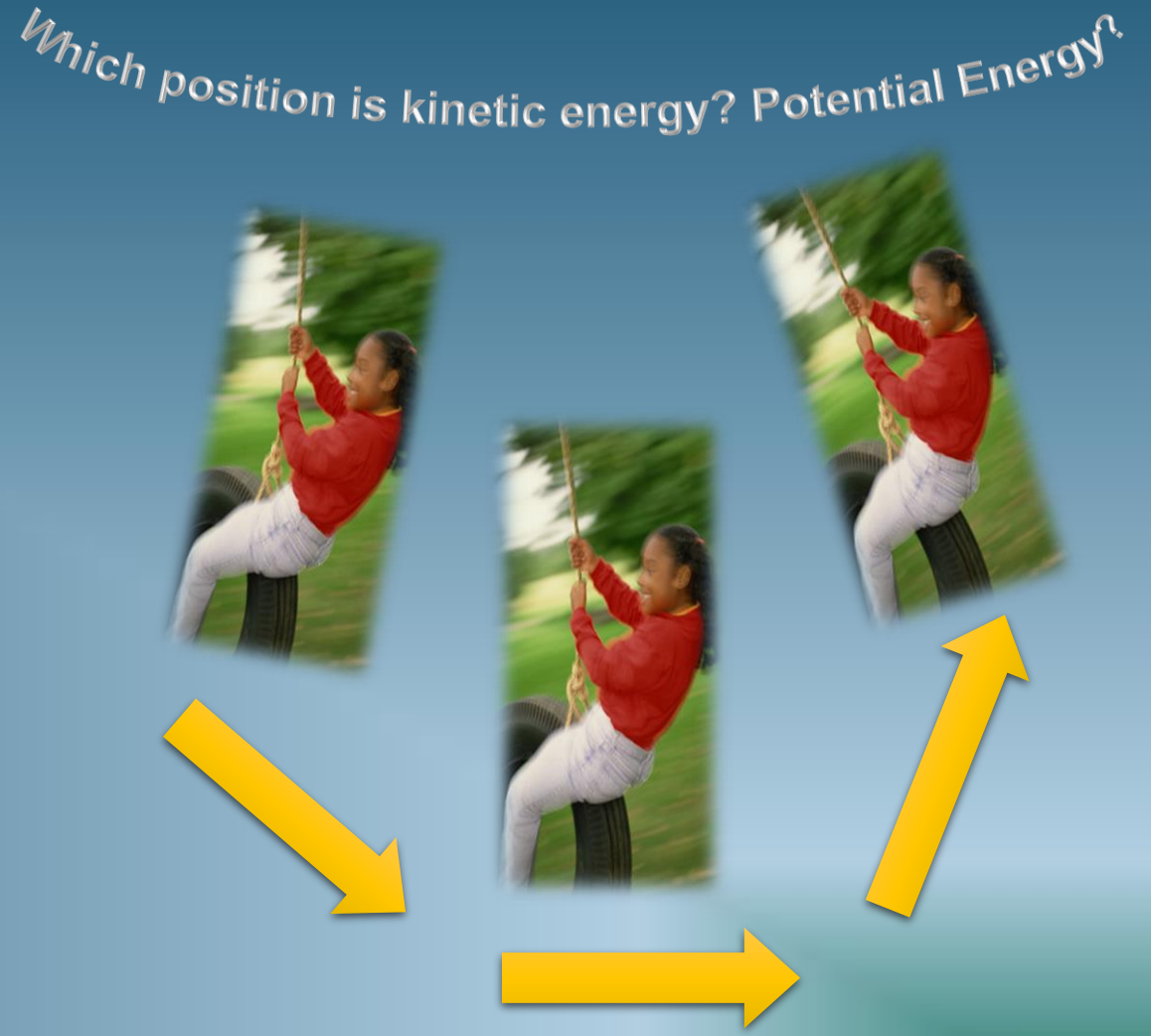
How do you describe the relationship between potential energy and kinetic energy in moving objects?

2. Information Sources

Choose several of the information sources linked here to complete the Student Activity on Slide 3.

You will review the following web resources in order to differentiate between kinetic and potential energy.

- Types of Energy
- Kinetic and Potential Energy
- Potential Energy
- Kinetic Energy
- Types of Kinetic Energy
- Difference Between Kinetic and Potential Energy
- Potential & Kinetic Energy in Space
- Homemade Roller Coaster



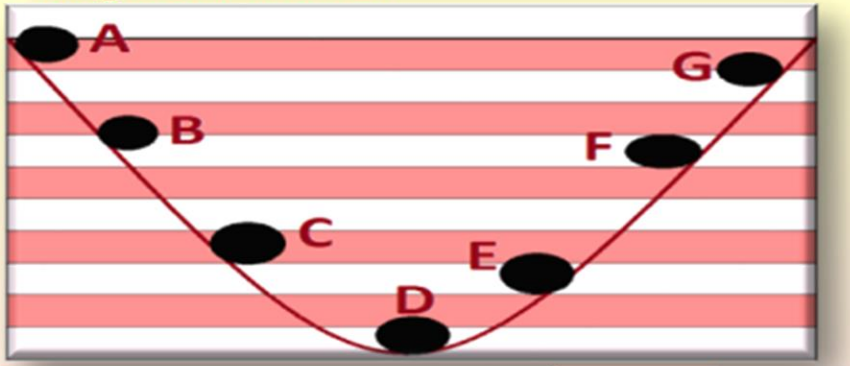
3. Student Activity

Complete the Potential and Kinetic Energy of Moving Object Activity assigned by your teacher in Schoology.

Potential and Kinetic Energy of Moving Object

A. **Analyze** the **graph** below.
B. **Read** each question.
C. **Use** the **drop-down menu** to **select** the **correct response.**

The graph shows a ball rolling from A to G.

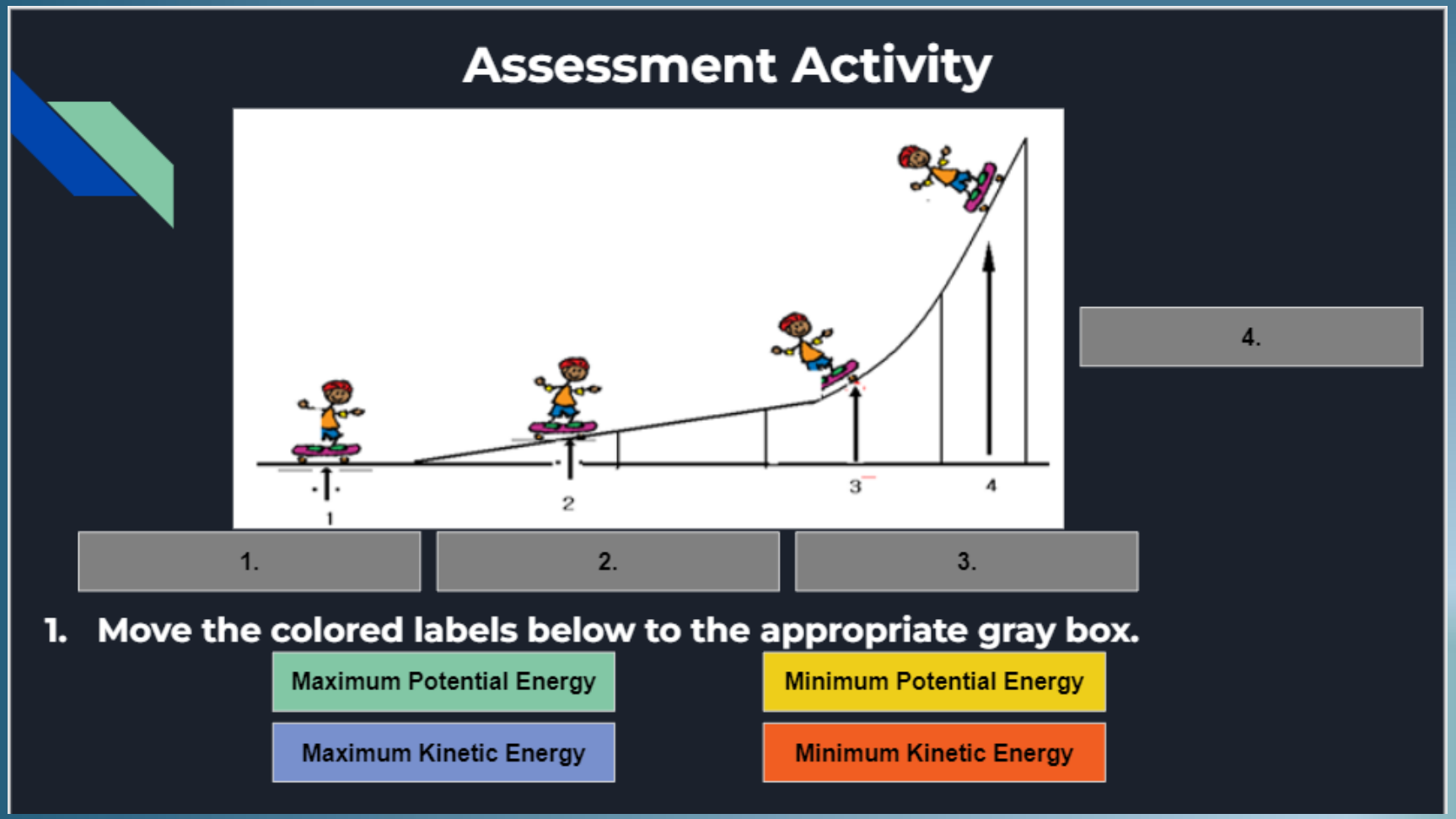


1. Which letter shows the ball when it has the maximum kinetic energy?		:-(
2. Which letter shows the ball when it has the maximum potential energy?		:-(
3. Which letter shows the ball when it has the least potential energy?		:-(
4. Which letter shows the ball when it has the least kinetic energy?		:-(
5. Which letter shows the ball when it has just a little more kinetic energy than A		:-(
6. Which sequence correctly shows an increase in potential energy?		

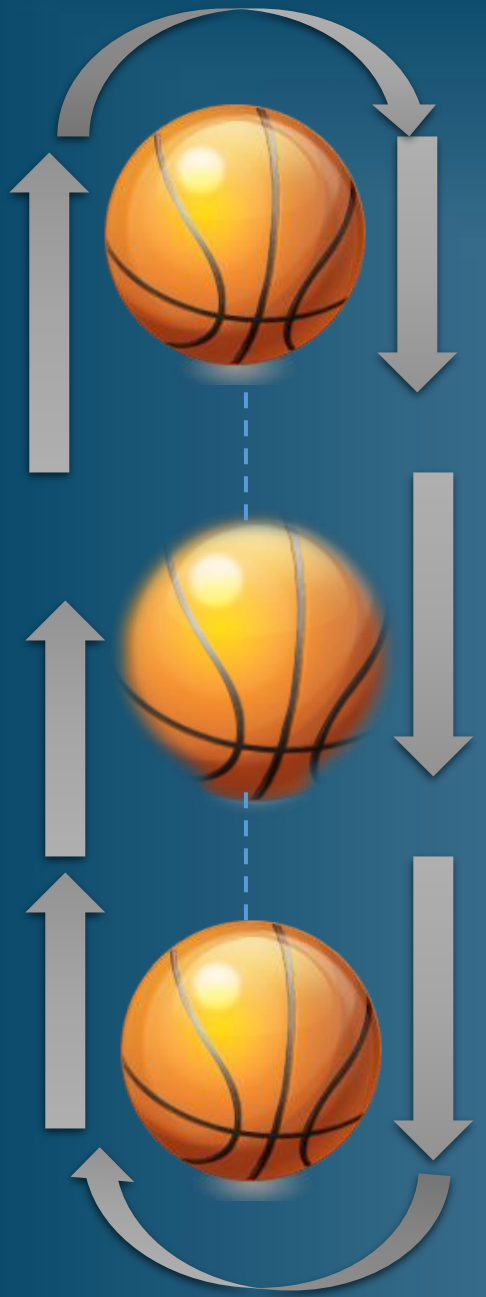
4. Assessment Activity

How do you describe the relationship between potential energy and kinetic energy in moving objects?

Access the interactive assessment assigned by your teacher through Schoology.



5. Enrichment Activities



How does bouncing a basketball demonstrate potential and kinetic energy transformations?

Real World Applications: Potential and Kinetic Energy

- The Physics of Basketball
- Energy in a Roller Coaster Ride
- Energy Skate Park Simulation

BrainPOP Videos on Potential and Kinetic Energy

- Potential Energy
- Kinetic Energy

6. Teacher Resources

SLIDE NAVIGATION

Learning Standards Alignment

Content Learning Standards *

MS-PS3-2. Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system Core State Standards for English Language Arts & Literacy

Reading: 1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

Writing: 7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

AASL Standards Framework for Learners Inquire: Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.

Think: Learners display curiosity and initiative by:

I.A.2 Recalling prior and background knowledge as context for new meaning.

Create: Learners engage with new knowledge by following a process that includes:

I.B.1 Using evidence to investigate questions. I.B.3 Generating products that illustrate learning.

Share: Learners adapt, communicate, and exchange learning products with others in a cycle that includes:

I.C.1 Interacting with content presented by others.

Grow: Learners participate in an ongoing inquiry-based process by:

I.D.2 Engaging in sustained inquiry.

P21 Framework: 21st Century Student Outcomes

3. Information, Media & Technology Skills: Information Literacy: Access information efficiently and effectively; Use information accurately and creatively for the issue or problem at hand.
ICT Literacy: Use technology as a tool to research, organize, evaluate and communicate information.

Grade 7 Science

Objective: Students will be conduct brief, focused research in order to **describe the relationship between potential energy and kinetic energy in moving objects?**

Time Frame: 2-3 Hours

Differentiation strategies for this lesson:

- Have students use learning supports provided in BCPS Digital Content found in the Apps Portal. Refer to Digital Content Snapshot/Support pages as needed.

Notes to the teacher:

- Collaborate with your school library media specialist to plan and implement this lesson.
- **The Student Activity Potential and Kinetic Energy of a Moving Object on Slide 3, and the Interactive Assessment on Slide 4 are Google Drive assignments that can be assigned to students using the Schoology Assignment App**
- Provide students with login information as needed to authenticate BCPS Digital Content. Login information is available on the **BCPS Digital Content** page found via the Apps Portal