What students are expected to do to demonstrate their understanding of science concepts and ability to explain them or make application of them.

5-PS1-1 Matter and Its Interactions

**Science & Engineering Practices**
1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Engaging in argument from evidence
4. Planning and carrying out investigations
5. Obtaining, evaluating, and communicating information
6. Using mathematics and computational thinking
7. Constructing explanations (for science) and designing solutions (for engineering)

**Disciplinary Core Ideas**

**Structure and Properties of Matter:**
- Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means.
- A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon; the effects of air on larger particles or objects.

**Performance Expectations**

5-PS1-1 Students who demonstrate understanding can:

- **Develop a model to describe that matter is made of particles too small to be seen.**

**Clarification Statement:**
Examples of evidence that could be utilized in building models include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.

**Assessment Boundary:**
Assessment does not include atomic-scale mechanism of evaporation and condensation or defining the unseen particles.

**Crosscutting Concepts: Scale, Proportion, and Quantity**
- Natural objects exist from the very small to the immensely large.

**Oklahoma Academic Standards Connections**

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<th>ELA/Literacy</th>
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Dimension 1: Science and Engineering Practices

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information
Dimension 2: Crosscutting Concepts

1. Patterns
2. Cause and effect: Mechanism and explanation
3. Scale, proportion and quantity
4. Systems and system models
5. Energy and matter: Flows, cycles, and conservation
6. Structure and function
7. Stability and change
Dimension 3: Disciplinary Core Ideas

*Physical Science*
PS1: Matter and Its Interactions
PS2: Motion and Stability: Forces and Interactions
PS3: Energy
PS4: Waves and Their Applications in Technologies for Information Transfer

*Life Science*
LS1: From Molecules to Organisms: Structures and Processes
LS2: Ecosystems: Interactions, Energy, and Dynamics
LS3: Heredity: Inheritance and Variation of Traits
LS4: Biological Unity and Diversity

*Earth and Space Sciences*
ESS1: Earth’s Place in the Universe
ESS2: Earth’s Systems
ESS3: Earth and Human Activity
Oklahoma Science Framework Project
Using the Science Framework Project Resources for Classroom Instruction
Behavior of Energy
7th Grade Physics Unit

Behavior of Energy Key Concepts
- Energy is conserved
- Energy can be transferred between objects and states

Commons Student Misconceptions
- Energy does not need to be conserved
- Energy is a relatively short lived product that is generated, active and then disappears or fades.

The phenomenon in the classroom
Experiencing a tennis ball rebound higher than the height it was dropped from when dropped with a basketball provides evidence that energy can be transferred from one object to another. This evidence helps students build an understanding about the behavior of energy.

Phenomenon
A tennis ball rebounds higher than the height from which it was dropped when dropped with a basketball.
Implementation Timeline

- Summer 2014 OAS-Science Adopted
- 2014-2015 Assessments aligned to PASS
- 2015-2016 Assessments aligned to PASS
- 2016-2017 Assessments aligned to the new OAS-Science
Questions