

STANDARD 2: PHYSICAL SCIENCE**Grades 3-4**

PHYSICAL SCIENCE – The student will increase their understanding of the properties of objects and materials that they encounter on a daily basis. The student will compare, describe, and sort and classify these materials by observable properties.

Benchmark 3: The student will recognize and demonstrate what makes sounds.

Grades 3-4 Indicators	Instructional Examples
<p>The student...</p> <ol style="list-style-type: none">1. ▲ identifies that the source of sound is vibrations.2. discriminates between sounds made by different objects.3. discriminates between various pitches.	<p>The student...</p> <ol style="list-style-type: none">1. explores various vibrating objects (tuning forks, rulers, tongue depressors, musical instruments, etc.) that produce sound.2. listens and compares the sounds made by musical instruments and other objects, such as cans, gourds, plastic spoons, pennies, and plastic disks; sorts and classifies a group of objects according to the sounds they make when they are dropped.3. identifies high and low pitches.
<p>Teacher Notes:</p> <p>The concept of sound is very abstract. To make the connection between vibrations and sounds more concrete, have students listen to, touch, and watch the object (tuning fork, audio speaker, ruler on the edge of the table, etc.) being used to produce the sound/vibration. Then attempt to connect the controlled experimental sounds with other observed sounds such as jets rattling windows, intercom speakers, class bells, and that all sounds are ultimately the result of vibrations. However, by investigating a variety of sounds made by common objects, students can form a connection between sounds the objects make and the materials from which the objects are made. Plastic objects make a different sound than do wooden objects, etc.</p> <p>The relationship between high and low pitches can be explored by causing a tightly and loosely stretched rubber band to vibrate.</p> <p>▲ = Grade 4 Assessed Indicator</p>	



STANDARD 2A: CHEMISTRY

Grades 8-12

CHEMISTRY – The student will develop an understanding of the structure of atoms, *compounds*, chemical reactions, and the interactions of energy and matter.

Benchmark 2: The students will understand the states and properties of matter.

Grades 8-12 Indicators	Additional Specificity
<p>The student ...</p> <p>1. ▲ understands chemists use kinetic and potential energy to explain the physical and chemical properties of matter on earth that may exist in any of these three states: solids, liquids, and gases.</p> <p>2. ▲ understands the periodic table lists elements according to increasing atomic number. This table organizes physical and chemical trends by groups, periods, and sub-categories.</p>	<p>1a. Elements and molecules may exist as gases, liquids or solids. Ionic compounds most commonly exist as solids.</p> <p>b. Intermolecular attraction (attraction between molecules) determines the state of the molecule. Examples of intermolecular attraction include hydrogen bonding, permanent dipole interaction, and induced dipole interaction. Gases have the weakest and solids have the greatest intermolecular attraction. The hydrogen bond is an intermolecular attraction responsible for the properties of water and many biological molecules.</p> <p>2a. Elements in the same group have the same number of valence electrons and can be used to predict similar physical and chemical properties. Elements are grouped by similar ground state valence electron configurations.</p> <p>b. As periods increase, the principle energy levels of the outermost (valence) electrons increase. Electrons changing from one energy level to another may result in the emission or absorption of various forms of electromagnetic radiation, including the range of colors that form visible light. When there is color, there are electrons changing energy levels.</p> <p>c. Sub-categories are regions such as metals, non-metals, and transition elements. Nonmetals have different physical and chemical properties than metals. For example, nonmetals have lower melting points, lower density, and are poorer conductors of</p>





KANSAS SCIENCE ASSESSMENT Fact Sheet 2007-2008



General Information

- Science will be assessed annually beginning 2007-2008.
- Grades 4, 7, and high school are tested each year.
- Results will be used to calculate QPA, but NOT AYP.
- High school students will be tested at the end of opportunity to learn (to be determined locally) prior to completion of the 11th grade year.
Two parts for High School: *Physical* and *Life Science*.
- All 11th graders must take both parts of high school exam in 2007-2008 school year to set cut-scores.
- Districts have the option to test 9th and 10th graders, as well. These scores will not be factored in with cut-scores.
- There will be no retesting in science.
- Link to August 2007 science standards:
<http://www.ksde.org/Default.aspx?tabid=144>
- Link to test item specifications and flipcharts:
<http://www.ksde.org/Default.aspx?tabid=163>

Opportunity to Learn (OTL)

- Opportunity to learn without second opportunity to assess will be available in science for high school.
- Starting with the Spring 2008 testing window, districts may take advantage of OTL for freshmen and sophomores.
- All students must complete both halves of the science assessment by end of 11th grade year.

Test Format

- Two or more general education forms. One KAMM form.
- All multiple-choice questions.
- Two items per indicator.
 - Fourth grade test—44 total items
 - Seventh grade test—60 total items.
 - High School: 2 Halves
 - Physical Science test—30 total items
 - Life Science test—30 total items
- Proposed testing sessions
 - Fourth grade—two 45-minute sessions
 - Seventh grade—two 45-minute sessions
 - High School—one 60-minute session per test part
- KCA (online) & paper/pencil available for all grade levels.
- Accommodations will be allowed for students who qualify. See accommodations manual for details. www.kansped.org

Testing Window

- March 17 – May 9, 2008. Answer sheets for paper/pencil tests must be submitted by May 16, 2008.

Scores Reported

- Due to setting cut scores, reports will be delayed until fall of 2008.
- For high school OTL testing, final scores on either part will be banked until both halves have been completed.
- Student performance levels at high school will only be reported upon completion of both test halves.
- Student raw score and individual reports at the standard level.
- Results at standard level by building and district.

Formative Assessment

- Science flipcharts have released items for each tested indicator. <http://www.ksde.org/Default.aspx?tabid=163>
- Estimated date for formatives from CETE via the KCA Test Builder is December of 2007.

Performance Levels

- Five levels: Exemplary, Exceeds Standards, Meets Standards, Approaches Standards, Academic Warning
- Cut scores will be determined in the summer of 2008.

Kansas Assessment with Multiple Measures (KAMM)

- The KAMM will be administered annually to identified 4th, 7th, and HS students beginning in Spring of 2007-2008 school year. All high school students must take both halves of the assessment prior to completion of 11th grade year.
- The sum of KAMM and Alternate students classified as "Meets Standards" or higher at the district/building level must not exceed 3%.

Alternate Assessments

- Beginning Spring of 2008, the science alternate assessment will be administered at grades 4, 7, & once at high school. All high school students must take the assessment prior to completion of 11th grade year.
- Only 1% of district students may be classified as "Meets Standards" or higher using an alternate assessment.

ELL Testing

- Newcomers to the U.S. will not have to take the science assessment if enrolled after March 18, 2007.
- Assessment may be read to ELL students by a trained reader.
- Electronic translators and bilingual dictionaries allowed (more time may be necessary).
- Extended time and small-group settings are allowed.

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Science

Kansas Middle School Science Flipchart

▲ S.7. 1.1.1

The student identifies questions that can be answered through scientific investigations.

Official Test Specifications

- Multiple Choice
- Short Passages
- Mid Level Process Questions

Instructional Examples

- Develop a scenario and have students identify the question being investigated.
- Which of the following cannot be answered through a scientific investigation?
- Explore properties and phenomena of various materials and generate testable questions to investigate.

Item Specification

- a. Distinguish between testable and untestable questions. Testable questions address phenomena that are measurable, repeatable, and able to be proven or disproved using scientific methods. Untestable questions involve matters of opinion, preference, values, religious or philosophical beliefs.
- b. Given a scenario with an unresolved problem, state a question that could be the basis of a scientific investigation to resolve the problem.
- c. Given an experimental procedure, identify the question being tested.
- d. Items SHOULD NOT test experimental design (see S.7.1.1.2) but should address testable or untestable questions.

State Assessment Sample Item

A student designed an investigation to answer a question. The steps the student followed during the investigation are listed below.

- Step 1. Measure the mass of ten of the same type of plant seeds.
- Step 2. Plant each seed in a pot of soil and place each pot in a sunny window.
- Step 3. Give each plant the same amount of water each week.
- Step 4. Measure the mass of each plant at the end of each week for the next two months.

Which question was this investigation **most likely** designed to answer?

- | | |
|--|--|
| A) Which type of seeds grow the fastest? | B) How long does it take a plant to flower? |
| C) X What is the average rate of plant growth? | D) Do plants grow better in sunlight or shade? |

QuestionId: 32528, Standard 1 "Science As Inquiry", Benchmark 1 "1", Indicator "1", Sub Indicator "1"

1. Inquiry						
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Science

Science Module 4 Questions

1. True or False?

The science assessment is a timed test.

False

2. True or False?

Fourth grade and seventh grade teachers are solely responsible for preparing for the science assessment.

False

3. True or False?

Flipcharts can be used to help understand how an indicator could be assessed.

True

