

Practice Item Guide
Virginia Standards of Learning
Grade 8 Science

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Pearson

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OVERVIEW

The practice items available in the Virginia Standards of Learning (SOL) grade 8 science practice set provide examples of the new content and increased rigor represented by the 2010 *Science Standards of Learning*. Additionally, these items illustrate the technology-enhanced item (TEI) types. These practice items do not cover all grade 8 science SOL and should not be used in place of review of the SOL test content.

This practice guide may be used by teachers or other adults to guide students through the practice items for grade 8 science. While the use of this guide with the practice items is not required, it is strongly encouraged, as it will help ensure that students are familiar with the types of items they may encounter while taking the grade 8 science test. The directions in the guide will also lead students through practice with the online tools, familiarize students with how to navigate through the test, and help students understand how to use the Section Review screen within TestNav™. Appendix B summarizes how student responses for TEI are indicated on the Section Review screen.

Prior to guiding students through the practice items, carefully read this practice item guide and review the practice items to become familiar with them. All directions that must be read aloud to the students are in **bold Arial font** so that they stand out from the rest of the text. All other text is for your information and should not be read to students.

The following Change Log indicates any updates to this document.

Change Log		
Version	Date	Description
V.1	03/01/2012	Original document posted.
V.2	04/09/2012	The diagram in question 3 was updated. The correct answer for this item was also updated within the script of the guide and in the appendix.
V.3	10/31/2012	Various changes throughout guide regarding how TEI appear on the Section Review screen. Updated directions and screen shots for exiting TestNav. Added Appendix B.
V.4	03/15/2013	Overview amended; 9 new items added.
V.5	04/16/2013	Amended answer in Appendix A for question #14.
V.6	12/06/2013	10 new practice items added.

SYSTEM REQUIREMENTS FOR TESTNAV

The minimum hardware requirements for all workstations used to access TestNav are available at <http://www.pearsononlinetesting.com/TestNav/7/index.html>

TECHNOLOGY-ENHANCED ITEM (TEI) TYPES

There are four types of technology-enhanced items:

- drag and drop,
- hot spot (which includes number line and coordinate plane items),
- bar graph or histogram, and
- fill-in-the-blank.

A brief description of each technology-enhanced item (TEI) type is provided below. The SOL practice items for grade 8 science will introduce three of the TEI types: drag and drop, hot spot, and fill-in-the-blank.

Drag and Drop

Drag and drop items contain draggers and bays.

- Draggers are the answer options that are moved to bays in response to the question.
- Bays are areas of an item where draggers will remain once moved there.

Drag and drop items require a student to respond by moving one or more draggers from one place on the screen into a bay(s) elsewhere on the screen.

The student will click on the dragger and keep the button down while moving the dragger to the desired location. Once the button is released, the dragger will be in the new location. Students can still move the dragger once it has been dropped into a bay.

Drag and drop items may be used in reading, writing, mathematics, and science assessments.

Hot Spot

Hot spot items contain hot spot zones which represent student answer options.

- Hot spot zones are answer options which may be part of a graphic, art, numbers, or text that are selected in response to a question.
- Unlike a traditional multiple-choice item where only one answer option is correct, hot spot items may require the student to select one or more hot spot zones (answer options) in order to answer the item correctly.
- Number line and coordinate plane items require students to respond by clicking on a number line or coordinate plane to plot one or more points. In these items, the points themselves are the hot spot zones. Only points plotted with the pointer tool are scorable responses. Points plotted with the dot tool are not scorable responses.

The student selects a hot spot by clicking on it. In some hot spot items, there will be an indication on the screen, such as the zone being outlined in blue, which confirms that the pointer is over a hot spot. After the hot spot is clicked, there will always be an indication that the zone has been selected as an answer, such as the hot spot being outlined in burnt orange, the hot spot being shaded, an asterisk being placed on the hot spot, the phrase or statement on the hot spot being marked with a strikethrough line, or a red point being plotted on the number line or coordinate plane.

Hot spot items may be used in reading, writing, mathematics, and science assessments.

Bar Graph or Histogram

Bar graph or histogram items require students to graph data by indicating the height (if the bars are vertical) or length (if the bars are horizontal) of one or more bars or intervals. The bar height or length is graphed by clicking on a location within the graph or by dragging the bar to the desired location.

Bar graph and histogram items may be used in mathematics and science assessments.

Fill-in-the-Blank

Fill-in-the-blank items require students to input characters from the keyboard (numbers, letters, or symbols) to answer the question. For this item type, the student responds to a question by typing into a blank box provided in the item.

- Some response boxes may limit the characters that can be entered. For instance, if the response is expected to be numeric, the student will not be able to enter letters.
- Students should carefully follow directions in fill-in-the-blank items, such as providing an answer in simplest form, rounding a number as indicated, or using significant digits.
- Currently, no fill-in-the-blank item requires students to spell a word correctly; however, alphabetic characters or symbols may be used in an answer.

Fill-in-the-blank items are currently used in mathematics and science assessments.

OPENING THE VIRGINIA SOL SCIENCE PRACTICE ITEMS

1. Go to the Virginia Department of Education Web site:
http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml
2. Under the heading “Science Practice Items” click on the grade 8 link. Since this is a web based application, the link will take you directly to the grade 8 science practice items.

MATERIALS NEEDED FOR COMPLETING VIRGINIA SOL PRACTICE ITEMS

Scratch paper and pencil

ONLINE TOOLS AVAILABLE ON THE VIRGINIA SOL SCIENCE PRACTICE ITEMS

The following tools can be accessed by clicking the appropriate icon on the toolbar at the top of the screen. These tools can be used to assist the test taker in finding the answer, but only the pointer can be used to respond to the question.

Tool Icon	Description
	Pointer – Use the pointer to answer questions.
	Eraser – Use the eraser to remove lines or highlights.
	Highlighter – Use the highlighter tool to highlight text or graphics.
	Eliminator – Use the eliminator tool on multiple-choice questions to mark choices you do not wish to consider.
	Pencil – Use the pencil tool to make marks on the test questions.
	Ruler – Use the ruler tool to measure something on screen.
	Straightedge – Use the straightedge tool to draw straight lines and underline text.
	Calculator – Use the calculator to perform calculations.
	Exhibit – Use the exhibit icon to view information about the Commonwealth of Virginia copyright. The exhibit icon only appears on the first screen of the practice items.
	Help – Use the help tool to display information about a specific tool on the top toolbar.

SPECIFIC DIRECTIONS FOR THE SOL GRADE 8 SCIENCE PRACTICE ITEMS

Introduction

After the practice items are launched, the first practice item will be displayed. Read the following instructions to the students.

SAY Today you will be working on some grade 8 science practice items for the SOL test. There are 29 questions that will show you some of the types of test items that will be administered as part of the grade 8 science assessment. Some questions are multiple-choice and others are technology-enhanced items. Technology-enhanced items may require you to show your answer in another way, such as typing your answer in a box, clicking and dragging your answer to a specific location, or clicking on an answer to choose it.

Listen carefully as I read the directions. I will guide you through each item one at a time. Please remember these questions are for practice. They will not be scored, and I will tell you the answer for each question.

Are there any questions before we start?

Pause to answer questions.

SAY *Next* and *Previous* buttons appear at the bottom of the screen for each question. Clicking *Next* takes you to the next question. Clicking *Previous* takes you back to the previous question. Notice that the question numbers are also located at the bottom of the screen. For example, the screen with the first question reads “Question 1 of 29.”



SAY At any time, you may click on the *Flag for Review* button () located at the bottom left of the screen. This should be used for any questions that you want to review at a later time. We will practice using this button when we are working on the practice items.

Now let's look at the top of your screen.

Pause. The picture below is the toolbar students will see at the top of the screen.



SAY The tools you may use are in the toolbar at the top of the screen. We will practice with some of the tools as we work through the practice questions. If you forget what a tool does, you can click on the *Help* symbol () to read about the tool.

The Help tool has information about the tools. If you would like your students to explore the Help tool, you can have them do this at the end of the practice items, after they have been exposed to the tools while working on these items.

Note that the exhibit window contains information only about the Commonwealth of Virginia copyright. The exhibit icon only appears on the first screen of the practice items.

SAY Remember that the tools at the top of the screen are there to help you answer a question. The only tool that can be used to mark an answer to a question is the pointer tool ().

Underneath the toolbar is a gray directions banner. The directions banner is included in every technology-enhanced item, and it tells you how to answer the question. Always read the directions banner before selecting the answer.

Make sure students see the directions banner at the top of the screen.

SAY The directions say, “Click on each element you want to select. You must select all correct elements.”

Underneath the directions, the problem says, “Which four of these elements make up the largest portion of living matter?”

In order to get the item correct, you must click on the four correct element boxes on the screen.

On the actual SOL test, you may see questions that require you to pick one or more answers. Some questions, like this one, tell you the number of correct answers to select. But some questions will not give you the number of answer to select. You will have to decide how many correct answers there are.

Please make sure students understand this concept, as a traditional multiple-choice question only requires one answer. Some questions will tell the students how many correct answers there are, but some items may instruct the students to “select all answers” and not give a specific number.

Directions: Click on each element you want to select. You must select all correct elements.

Which four of these elements make up the largest portion of living matter?

Elements

Aluminum	Boron	Carbon	Copper	Hydrogen
Iron	Potassium	Nitrogen	Sodium	Oxygen

Question 1 of 29
Section 1

SAY Now, determine the answers and click on the four correct boxes with your pointer tool. If you change your mind after clicking on an answer choice, you can click it again to remove the selection.

Pause while students select their answers. Assist students as necessary.

SAY Which elements did you select?

Pause for replies.

SAY You should have selected *Carbon, Hydrogen, Nitrogen, and Oxygen*. You must have selected all of these elements and only these elements for your answer to be correct.

When we finish looking at the practice items, we will look at a Section Review screen. The Section Review screen shows which questions you have answered and which questions you have not answered. Since this question indicated that four elements must be selected, it will show as “Answered” on the Section Review screen only if four answers are selected. If you selected less than four elements, this question would show as “Unanswered” on the Section Review screen.

Do you have any questions about how to answer the question?

Pause to answer questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to question 2.

The screenshot shows a TestNav interface for a science question. At the top, there is a toolbar with various icons and a 'Help' button. The user's name 'john doe' and the page title 'Grade 8 Science Practice Items (2010 Scie...)' are visible in the top right corner. Below the toolbar, a gray banner contains the directions: "Directions: Click and drag the selected tool to the correct box." The main question area asks, "Which are the appropriate tools for measuring air temperature, air pressure, and humidity?" There are three empty rectangular boxes labeled "Air Temperature Tool", "Air Pressure Tool", and "Humidity Tool". To the right of these boxes is a dark gray box containing a list of tools: "Anemometer", "Thermometer", "Rain Gauge", "Compass", "Hygrometer", and "Barometer". At the bottom of the interface, there is a navigation bar with a "Flag for Review" button, "Question 2 of 29" and "Section 1" indicators, a "Section Review" button, and "Previous" and "Next" navigation buttons.

SAY The directions banner at the top of your screen says, “Click and drag the selected tool to the correct box.”

With this item, you will select your answers by clicking and dragging the correct tool labels from the dark gray box to the blank boxes on the screen.

Answer options for drag and drop items will typically be within a dark gray box.

SAY Now I will read the question to you. It says, “Which are the appropriate tools for measuring air temperature, air pressure, and humidity?”

In order to get the item correct, you must click on the tools and drag them to the correct boxes on the screen. If you do not drag three tools into the boxes, the question will not be completely answered.

Pause.

SAY Now, answer the question.

Pause while students work to answer the question.

SAY Let’s go over the answers.

Air temperature tool: *Thermometer*

Air pressure tool: *Barometer*

Humidity tool: *Hygrometer*

In order for this question to show as “Answered” on the Section Review screen, each box must contain a tool name. Do you have any questions on how to answer this item?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Before we go to the next question, let’s take a moment to practice using the highlighter tool and eraser tool. You can use the highlighter tool on the toolbar to highlight words. To use this tool, click the icon that looks like a picture of a yellow highlighter



(). Clicking the highlighter tool will change your pointer to an arrow with a highlighter next to it.

Practice using the highlighter by highlighting the phrase, “appropriate tools for measuring.” Then click again on the highlighter tool on the toolbar to put the tool away.

Pause while students highlight the text and put the tool away. Assist students as necessary.

SAY Now, let’s practice using the eraser tool to erase the highlighter mark we just made.



Click the icon with the pink eraser (). Now click on the highlighter mark to make it disappear.

Practice highlighting and erasing. When you are finished practicing, make sure both tools are put away.

Pause while students practice.

SAY Are there any questions on how to use the highlighter and eraser tools?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 3. (Pause.)

For this question, you must also click and drag the labels to the correct boxes on the screen.

John doe
Grade 8 Science Practice Items (2010 Scie... [Exit](#)

Directions: Click and drag the selected season to the correct box.

Identify the seasons for the northern hemisphere of Earth as Earth revolves around the sun in this diagram.

The Revolution of Earth Around the Sun

(not to scale)

Seasons

Winter	Autumn
Summer	Spring

Flag for Review Question 3 of 29 Section 1 Section Review Previous Next

SAY The directions in the gray banner say, “Click and drag the selected season to the correct box.”

Now read the question.

Pause while students read the question.

SAY Answer the question by clicking and dragging the season labels to the correct boxes on the screen.

Pause while students answer the question.

SAY In which boxes did you place the seasons?

Pause for replies.

SAY The correct responses are:

- Box 1: *Spring***
- Box 2: *Summer***
- Box 3: *Autumn***
- Box 4: *Winter***

SAY In order for this item to show as “Answered” on the Section Review screen, all four boxes must contain a season name. Do you have any questions about how to drag the labels to the correct boxes on the screen?

Answer any questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to the next question. Question 4 requires you to select your answers by clicking on the correct answer options found in the dark gray box. You can select more than one answer.

The screenshot shows a TestNav interface for a question. At the top, there is a toolbar with icons for a mouse, eraser, highlighter, delete, pencil, and calculator, along with a 'Help' button. The user's name 'John doe' and the text 'Grade 8 Science Practice Items (2010 Scie...)' are visible in the top right corner, along with an 'Exit' button. Below the toolbar is a gray banner with the directions: "Directions: Click on each box you want to select. You must select all correct parts." The main content area contains the question: "Identify parts of a typical animal cell." Below the question is a box titled "Parts of an Animal Cell" containing six selectable options arranged in a 3x2 grid: Cell Wall, Cytoplasm, Cell Membrane, Mitochondrion, Chloroplast, and Nucleus. At the bottom of the interface, there is a navigation bar with a 'Flag for Review' button, the text 'Question 4 of 29 Section 1', a 'Section Review' button, and 'Previous' and 'Next' buttons.

SAY The directions in the gray banner say, “Click on each box you want to select. You must select all correct parts.” Now read question 4 to yourself, but do not answer the question.

Pause while students read the question.

SAY Before you answer this question, let's practice using the pencil tool with this item.

Click on the pencil icon () located on the top toolbar. You may use this tool to make marks on the test questions. One of the ways you can use the pencil tool is to narrow down your answer choices. You may want to use the pencil tool to eliminate

choices on technology-enhanced items like this one. The eliminator tool () the tool on the upper left side of the screen that is shown as a red "X," can only be used to eliminate answer choices on multiple-choice questions.

Make sure students see the eliminator tool on the toolbar and understand that it can be used on multiple-choice items but not on technology-enhanced items.

SAY Let's practice making marks on this item to eliminate some choices.

Use your pencil tool to put an "X" over words you do NOT wish to select. Then click on the pencil tool icon again to put the tool away.

Pause while students mark an "X" on the words and put away the tool.

SAY To get this question correct, you must select all of the parts of an animal cell that correctly answer the question. Notice that the number of correct answers is not indicated in the question or the directions, so you will have to decide how many correct answers there are.

If you change your mind after clicking on an answer, you can remove the selection by clicking it again.

Now use the pointer tool to select all of the correct words.

Pause while students work to answer the question.

SAY Which animal cell parts did you select?

Pause for replies.

SAY You should have selected *Cell Membrane, Cytoplasm, Mitochondrion, and Nucleus*. You must have selected all of these cell parts and only these cell parts for your answer to be correct.

Since the number of correct answers was not indicated in the question, this item will show as "Answered" on the Section Review screen once one answer is selected. This is so no hint or clue is given as to how many correct answers there are.

Do you have any questions on how to answer the question or how to use the pencil tool?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as "Answered" on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Before we go on to the next question, click on the *Flag for Review* button on the bottom left of the screen. If this were an actual SOL test, you would click this button if you wanted to come back and review the question again.

Pause while students click on this icon.

SAY When we reach the end of the practice questions, I will show you how the questions that you flagged for review will look on the Section Review screen. They will have a picture of a flag next to them.

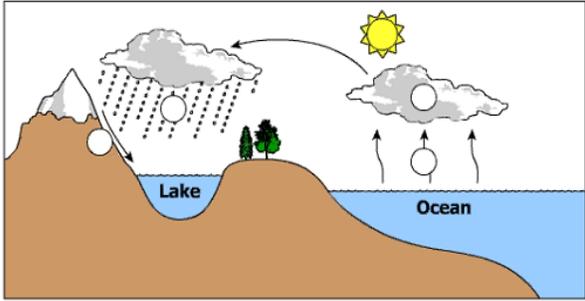
Pause.

SAY Click *Next* at the bottom of the screen to go to question 5. This item requires you to drag the numbers from the “Processes in the Water Cycle” box to the blank circles in the picture.

Directions: Click and drag each numbered circle to an empty circle in the diagram. All empty circles must be filled with a number.

Each numbered circle represents a process in the water cycle. Identify the numbered processes of the water cycle in this diagram.

The Water Cycle



Processes in the Water Cycle

- 1 Precipitation
- 2 Evaporation
- 3 Condensation
- 4 Surface Runoff

Flag for Review Question 5 of 29 Section Review Previous Next

SAY Read the directions and the question to yourself.

Pause while students read the directions and question.

SAY Now, drag the numbers to the correct locations in the diagram.

Pause while students answer the question.

SAY Where did you place the numbers?

Pause for replies.

SAY The correct answer is:

- 1 – Precipitation – should be placed just below the cloud on the left in the diagram.
- 2 – Evaporation – should be placed in the arrows pointing up from the ocean to the cloud on the right in the diagram.
- 3 – Condensation – should be placed in the cloud on the right in the diagram.
- 4 – Surface Runoff – should be placed next to the arrow on the side of the mountain.

In order for this item to show as “Answered” on the Section Review screen, each of the four circles in the diagram must contain a number. Do you have any questions on how to answer this question?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to question 6. This item requires you to type a number into the empty box on the screen.

The screenshot shows a digital assessment interface. At the top, there is a toolbar with icons for navigation and a user profile for 'john doe'. Below the toolbar, the directions state: "Directions: Type your answer in the answer box." The main content area contains the question: "How many first-order consumers are in this food web?" followed by an empty input box. Below the question is a food web diagram titled "Food Web". The diagram shows energy flow from producers (Shrubs and Grasses) to various consumers. Arrows point from Shrubs to Mule Deer and Black-Tipped Jackrabbit, and from Grasses to Black-Tipped Jackrabbit, Ringtail, and Kangaroo Rat. Further up the food chain, arrows point from Black-Tipped Jackrabbit to Mountain Lion and Coyote, from Ringtail to Coyote, and from Kangaroo Rat to Coyote and Fox. At the top, arrows point from Mountain Lion, Bobcat, Coyote, and Fox to a central point, indicating they are all predators in this web.

At the bottom of the interface, there is a navigation bar with the following elements: "Flag for Review", "Question 6 of 29 Section 1", "Section Review", "Previous", and "Next".

SAY Read the directions and question to yourself.

Pause while students read the directions and question.

SAY Now, answer the question by entering your answer into the box.

Pause.

SAY How did you answer this question?

Pause for replies.

SAY The correct answer is 3.

For questions that are fill-in-the-blank, once any character is entered into the response box and remains in the response box, the question will show as “Answered” on the Section Review screen. If you enter an answer but then completely remove that answer from the fill-in-the-blank box, the item will show as “Unanswered” on the Section Review screen. Do you have any questions about how to type your answer in the box?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Try entering other characters into the box, such as letters or symbols.

Pause while students try to enter other characters. In this item, they will not be able to enter any character other than a number.

If a fractional answer is required in a technology-enhanced item, the forward slash (/) symbol is to be used for the fraction bar. If a decimal answer is required, a period (.) is to be used.

SAY Notice that the box for this question will only accept numbers. If a letter, number, or symbol does not appear in the answer box after you’ve tried it, then you cannot use that symbol in your answer.

You can use the backspace key on the keyboard to clear your answer, or you may use the delete key. To use the delete key, place the pointer in front of the character you wish to delete and then press the delete key, or highlight the character you wish to delete and press the delete key. Try clearing your answer and retyping it in the box.

Pause while students clear their answer and reenter it into the box.

SAY Do you have any questions about how to type your answer in the box or how to change your answer?

Answer any questions.

SAY Click *Next* at the bottom of the screen to go to question 7. This question also requires you to type a response into the empty box on the screen.

john doe
Grade 8 Science Practice Items (2010 Scie... X Exit

Directions: Type your answer in the box. Use "." for the decimal point.

What is the mass of this object? Round the answer to the nearest tenth.

g

Flag for Review Question 7 of 29 Section 1 Section Review Previous Next

SAY The directions say, "Type your answer in the box. Use "." for the decimal point."

Read the question to yourself and determine the answer. Type it into the box using the keyboard.

Pause while students read and answer the question.

SAY What number did you enter as your answer?

Pause for replies.

SAY The correct response is 173.5. Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 8.

To answer this question correctly, you will need to drag the correct numbers from the gray box to the correct boxes on the screen. Read the directions and question to yourself and then answer the question.

Pause while students read and answer the question.

Directions: Click and drag each selected number to the correct box.

What is 3,600,000 kilometers in proper scientific notation?

Scientific Notation

x km

Numbers

360	10 ⁵
3.6	10 ⁶
36	10 ⁸

Flag for Review Question 8 of 29 Section 1 Section Review Previous Next

SAY How did you answer the question?

Pause for replies.

SAY The correct response is 3.6×10^6 . You should have placed the number 3.6 in the box on the left and the number 10^6 in the box on the right.

In order for this item to show as “Answered” on the Section Review screen, both boxes must contain a number. Do you have any questions about how to answer this question?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to question 9.

This question requires you to select all of the correct answers by clicking the highlighted element boxes on the screen. Read the directions and question to yourself. Then answer the question.

Pause while students answer the question.

John doe
Grade 8 Science Practice Items (2010 Scie... X Exit

Directions: Click on each element you want to select. You must select all correct elements.

Which of the highlighted elements are nonmetals?

Partial Periodic Table of the Elements

1 H 1.0																	2 He 4.0
3 Li 6.9	4 Be 9.0											5 B 10.8	6 C 12.0	7 N 14.0	8 O 16.0	9 F 19.0	10 Ne 20.2
11 Na 23.0	12 Mg 24.3	3	4	5	6	7	8	9	10	11	12	13 Al 27.0	14 Si 28.1	15 P 31.0	16 S 32.1	17 Cl 35.5	18 Ar 39.9
19 K 39.1	20 Ca 40.1	21 Sc 45.0	22 Ti 48.0	23 V 50.9	24 Cr 52.0	25 Mn 54.9	26 Fe 55.8	27 Co 58.9	28 Ni 58.7	29 Cu 63.5	30 Zn 65.4	31 Ga 69.7	32 Ge 72.6	33 As 74.9	34 Se 79.0	35 Br 79.9	36 Kr 83.8
37 Rb 85.5	38 Sr 87.6	39 Y 88.9	40 Zr 91.2	41 Nb 92.9	42 Mo 95.9	43 Tc 98.0	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
55 Cs 132.9	56 Ba 137.3	57 La 138.9	58 Hf 178.5	59 Ta 181.0	60 W 183.9	61 Re 186.2	62 Os 190.2	63 Ir 192.2	64 Pt 195.1	65 Au 197.0	66 Hg 200.6	67 Tl 204.4	68 Pb 207.2	69 Bi 209.0	70 Po 209.0	71 At 210.0	72 Rn 222.0
87 Fr 223.0	88 Ra 226.0	89 Ac 227.0	90 Rf 261	91 Db 262	92 Sg 263	93 Bh 262	94 Hs 265	95 Mt 266	96 Ds 269								

Flag for Review Question 9 of 29 Section 1 Section Review Previous Next

SAY Which of the highlighted elements did you choose as your answer?

Pause for replies.

SAY You should have selected *He*, *Ar*, *Xe*, and *C*. You must have selected all of these elements and only these elements for your answer to be correct.

Since the number of correct answers was not indicated in the item, this item will show as “Answered” on the Section Review screen after one element has been selected. This is so no hint or clue is given as to how many of the highlighted elements are nonmetals.

Do you have any questions about how to select your answers from the table on the screen?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to question 10.

The screenshot displays a digital practice item interface. At the top, a toolbar contains icons for a pointer, eraser, highlighter, and a calculator, along with a 'Help' button. The user's name 'John Doe' and the text 'Grade 8 Science Practice Items (2010 Scie...)' are visible in the top right corner. The main content area features a question: 'A student applies a force to a stone block as shown. Which diagram best represents the reaction force provided by the block to the student?'. To the left of the question is a diagram of a stone block with a horizontal arrow pointing to it from the left, labeled '10 N'. Below the question are four multiple-choice options, each in a box with a radio button to its left: Option A shows a 5 N arrow pointing right; Option B shows a 5 N arrow pointing left; Option C shows a 10 N arrow pointing right; and Option D shows a 10 N arrow pointing left. At the bottom of the interface, there is a status bar with a 'Flag for Review' button, 'Question 10 of 29 Section 1', a 'Section Review' button, and 'Previous' and 'Next' navigation buttons.

SAY This question is in a multiple-choice format. You will select your answer by using your pointer tool to click on the radio button that corresponds to your answer choice.

You may use the eliminator tool (), the tool on the upper left side of the screen that is shown as a red “X,” to narrow down the answer choices on multiple-choice questions. Click on this tool and practice eliminating the answer choices you do not wish to select. Then click on the pointer tool to put the eliminator away, and use the pointer tool to select your answer.

Pause while students practice using the eliminator tool and select their answer. There is a pop-up window that will alert a student who is attempting to select an answer that was eliminated or attempting to eliminate an answer that was selected.

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option D.

Do you have any questions about how to answer this question correctly or how to use the eliminator tool?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 11.

Read the question, but do not answer it yet.

Pause while the students read the question.

$P = \frac{W}{t}$ $W = F \times d$

A forklift exerts a force of 12,000 N to lift a box 4 meters in 3 seconds. What is the power produced by the forklift?

A 9,000 J/s

B 16,000 J/s

C 36,000 J/s

D 144,000 J/s

Question 11 of 29
Section 1

Section Review Previous Next

SAY Before you answer the question, let's practice with the calculator tool. To use the

calculator, click on the calculator icon () located in the toolbar at the top of the screen. To enter numbers, you may use the pointer tool to click on the calculator keys or you may type the numbers using the number keys on the keyboard. Use the pointer tool to enter the number 15 on the calculator now. (Pause.) You should see the number "15." in the display at the top of the calculator. To clear the entry, use your pointer tool to press the red button labeled "ON/C" located at the bottom of the calculator on the left. (Pause.) Your display should show zero followed by a decimal if you have cleared the entry correctly.

Now let's use the keyboard to enter the number 15 on the calculator. Try this now, then clear the display. (Pause.) Are there any questions about how to enter numbers on your calculator?

Answer all questions.

SAY You will use the operation signs located on the red keys on the right side of the calculator to solve problems. You should see red keys labeled with the symbols you would select in order to add, subtract, multiply, or divide. Are there any questions about the location of the operation keys?

Answer all questions.

SAY Now let's use the calculator to solve a problem. Find the solution to this problem: 294 divided by 14.

Pause while students use the calculator tool to find the answer.

SAY What is the solution to 294 divided by 14?

Pause for replies.

SAY Yes, the quotient is 21. Are there any questions about how to use the calculator tool?

Answer all questions. The online calculator available for use in the toolbar is a four-function calculator. While completing the actual grade 8 science assessment, students will have the option of using a hand-held state approved four-function or scientific calculator in addition to the online calculator. Students should be familiar with the calculator they will use prior to testing. Please refer to information regarding approved calculators on the Virginia Department of Education Web site at http://www.doe.virginia.gov/testing/test_administration/index.shtml#ancillary.

SAY To put the calculator tool away, click on the calculator icon or pointer tool icon in the toolbar, or click on the "x" located on the upper right corner of the calculator; then read question 11 again and answer the question. You may use the calculator tool if it helps you find the answer.

Pause while students answer the question.

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option B, 16,000 J/s.

Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 12, then read and answer the question.

Pause while the students read and answer the question.

A newly discovered single-celled organism was found living in 113°C water near an ocean vent. The organism is autotrophic and requires sulfur, hydrogen, and carbon dioxide. Scientists most likely classified this organism as a type of Archaea because many organisms within Archaea —

- A can survive in extreme environments
- B are able to reproduce by binary fission
- C produce sugars by photosynthesis
- D contain chitin in their cell walls

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option A, *can survive in extreme environments*. Do you have any questions?

Answer all questions.

SAY Before we go to the next question, let's take a moment to practice with the straightedge tool. You can use the straightedge tool to make a straight line or to underline text. To use this tool, click the icon that looks like a slanted line (). Clicking the straightedge tool will change your pointer to an arrow with a blue slanted line next to it.

Practice using the straightedge tool to underline the phrases “113°C water” and “autotrophic and requires sulfur, hydrogen, and carbon dioxide.” Then click on the pointer tool to put the straightedge tool away.

Pause while students underline the text and put the tool away.

SAY Do you have any questions about how to use the straightedge tool?

Answer any questions.

SAY Click *Next* at the bottom of the screen to go to question 13. Read and answer the question.

Pause while the students read and answer the question.

The screenshot shows a digital assessment interface. At the top, there is a dark blue header bar with various icons (arrow, eraser, highlighter, X, pencil, calculator, Help) on the left and the text "John doe" and "Grade 8 Science Practice Items (2010 Scie...)" on the right, with an "X Exit" button. The main content area is white and contains the question: "Which process is the original source of genetic variation that allows for natural selection?". Below the question are four radio button options: A Pollination, B Binary fission, C Mutation, and D Replication. At the bottom, there is a dark blue footer bar with a "Flag for Review" button, the text "Question 13 of 29" and "Section 1", a "Section Review" button, and "Previous" and "Next" navigation buttons.

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option C, *Mutation*.

Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 14.

Read and answer the question.

Pause while the students read and answer the question.

___CO + ___NO → ___N₂ + ___CO₂

Which set of coefficients will balance this equation?

A 1, 4, 2, 1

B 1, 2, 1, 1

C 2, 2, 1, 2

D 4, 3, 2, 4

Question 14 of 29
Section 1

Section Review

Previous Next

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option C, 2, 2, 1, 2.

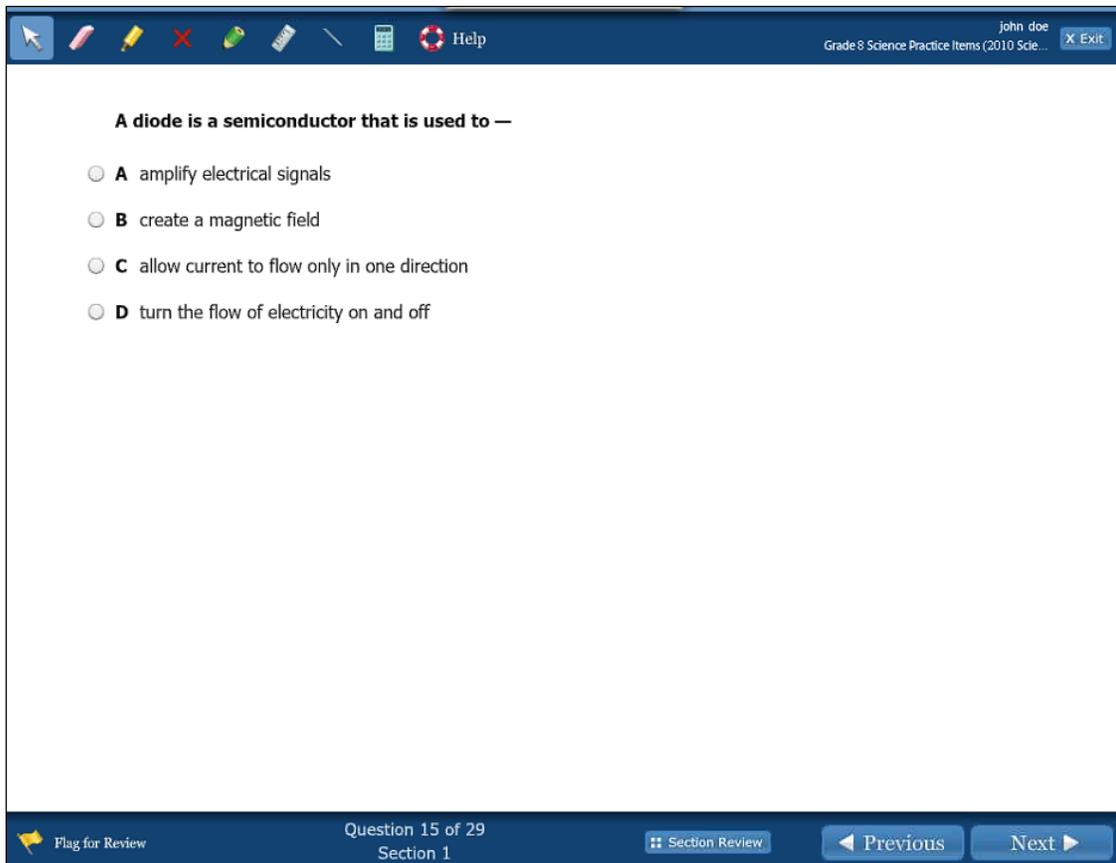
Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 15.

Read and answer the question.

Pause while the students read and answer the question.



SAY Which answer did you choose?

Pause for replies.

SAY The correct answer is option C, *allow current to flow only in one direction*.

Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 16.

Read and answer the question.

Pause while the students read and answer the question.

The allele in rabbits for short hair (H) is dominant to long hair (h). What are the probable offspring phenotypes from a cross between parents that are both Hh?

- A 25% HH; 50% Hh; 25% hh
- B 50% HH; 50% hh
- C 50% short hair; 50% long hair
- D 75% short hair; 25% long hair

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option D, *75% short hair; 25% long hair*.

Do you have any questions?

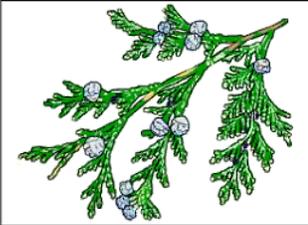
Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 17.

Read and answer the question.

Pause while the students read and answer the question.

A Plant



This plant is classified as a conifer because it —

- A grows low to the ground
- B has spores with flagella
- C produces seeds inside of cones
- D has leaves modified into flowers

Question 17 of 29
Section 1

SAY Which answer did you choose?

Pause for replies.

SAY The correct answer is option C, *produces seeds inside of cones*.

Do you have any questions?

Answer all questions.

SAY Before you navigate to the next question, let's practice using the ruler tool. Click on the ruler icon () located on the top toolbar, and the ruler choices will appear. There are two types of rulers available: a ruler you can use to measure in centimeters and a ruler you can use to measure in inches. For our practice, please use the centimeters ruler. After you click the centimeters ruler icon, a metric ruler will display on your screen.

Pause while students click on the ruler icon.

SAY You can move the ruler in two different ways. To rotate or turn the ruler, click on the blue arrows located at the either end of the ruler and drag it in the direction you'd like it to go. To slide the ruler to another location on the screen, you will click on the ruler itself and drag it to the place you'd like it to be. Practice moving the ruler now.

Pause while students move the ruler.

SAY Let’s use the ruler to measure the height of the rectangle surrounding the plant in question 17. Using your mouse to move and rotate the ruler, align the beginning of the ruler with the left or right side of the rectangle and determine the height of the box in centimeters.

Pause while students measure the height of the rectangle.

SAY What is the height of the box?

Pause for replies.

SAY The box is about 6.5 centimeters tall. To put the ruler away, simply click on the ruler icon on the toolbar again or click on the pointer tool.

Pause while students put away the ruler.

SAY Does everyone understand how to use the ruler?

Pause. Assist students as necessary.

SAY Click *Next* at the bottom of the screen to go to question 18.

Read and answer the question.

Pause while the students read and answer the question.

John doe
Grade 8 Science Practice Items (2010 Scie... X Exit

Incoming Solar Radiation

Which two processes do the arrows labeled 1 and 2 best represent in this diagram?

A 1: absorption and 2: convection

B 1: absorption and 2: reflection

C 1: conduction and 2: reflection

D 1: conduction and 2: convection

Flag for Review Question 18 of 29 Section 1 Section Review Previous Next

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option B, 1: *absorption* and 2: *reflection*.

Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to the next question.

Read and answer the question.

Pause while the students read and answer the question.

A Mixture of Light Waves

The separation of the light waves shown results from which difference between the light waves as they pass through the prism?

- A Mass
- B Temperature
- C Velocity
- D Amplitude

Question 19 of 29
Section 1

Flag for Review Section Review Previous Next

SAY How did you answer the question?

Pause for replies.

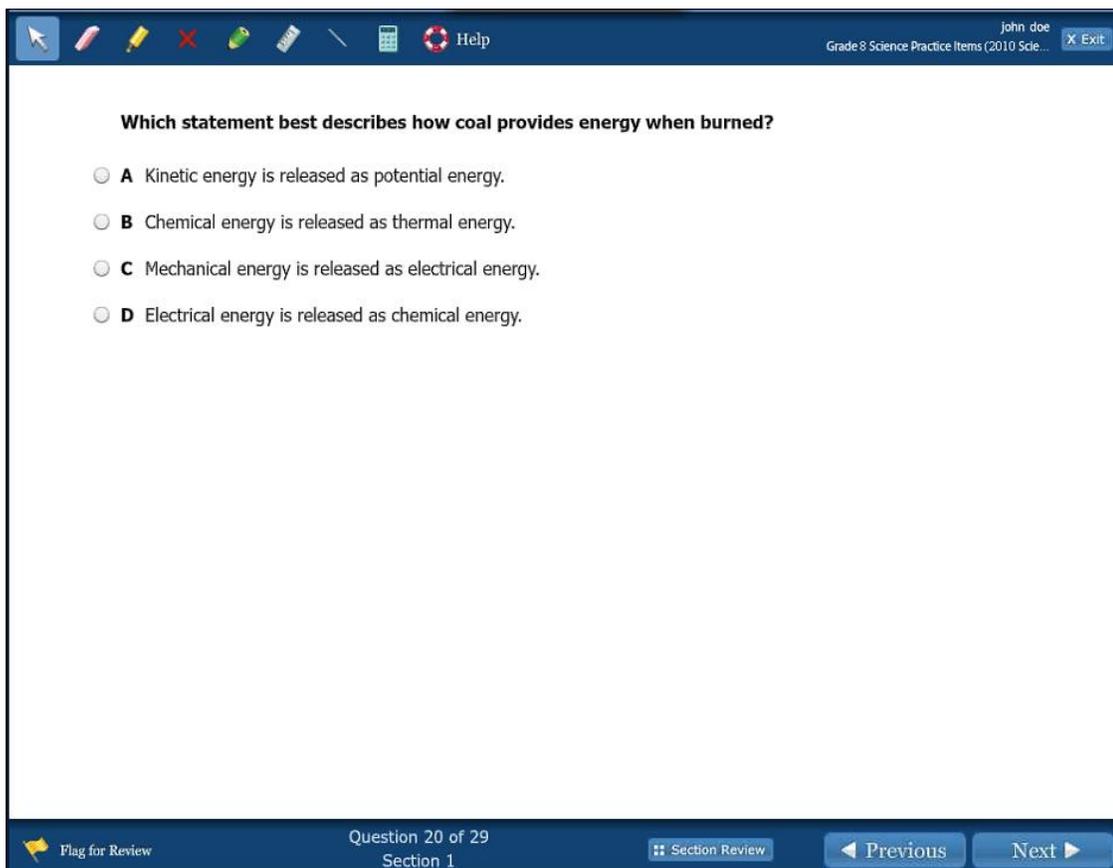
SAY The correct answer is option C, *Velocity*. Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 20.

Read and answer the question.

Pause while the students read and answer the question.



SAY How did you answer the question?

Pause for replies.

SAY The correct answer option is B, *Chemical energy is released as thermal energy*. Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 21.

Read and answer the question.

Pause while the students read and answer the question.

John doe
Grade 8 Science Practice Items (2010 Scie... X Exit

Sodium Chloride	
1.	White to colorless crystals
2.	Reacts with silver nitrate to form a solid
3.	Density = 2.47 g/cm^3
4.	Dissolves in water

A scientist studying sodium chloride (NaCl) makes a list of its properties. Which observations are physical properties?

A Observations 1, 3, and 4 only

B Observations 2, 3, and 4 only

C Observations 1 and 2 only

D Observations 2 and 4 only

Flag for Review Question 21 of 29 Section 1 Section Review Previous Next

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is **A, Observations 1, 3, and 4 only.**

Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 22.

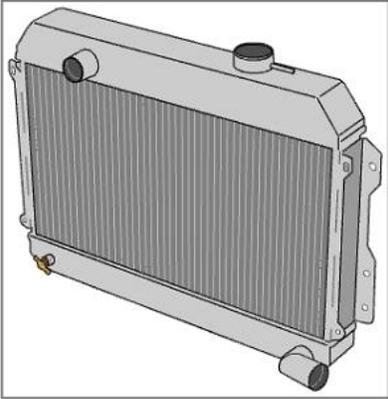
Read and answer the question.

Pause while the students read and answer the question.

Grade 8 Science Practice Items (2010 Scie... John doe X Exit

Help

Car Radiator



A car radiator has many flat, heated metal fins that are used to cool the engine. The most likely function of the fin structure shown is to —

- A** improve the rate of thermal energy transfer to air
- B** allow thermal energy to transfer both ways between air and metal
- C** multiply the amount of thermal energy in the metal
- D** increase the amount of thermal energy absorbed from air

Flag for Review Question 22 of 29 Section 1 Section Review Previous Next

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option **A**, *improve the rate of thermal energy transfer to air*.

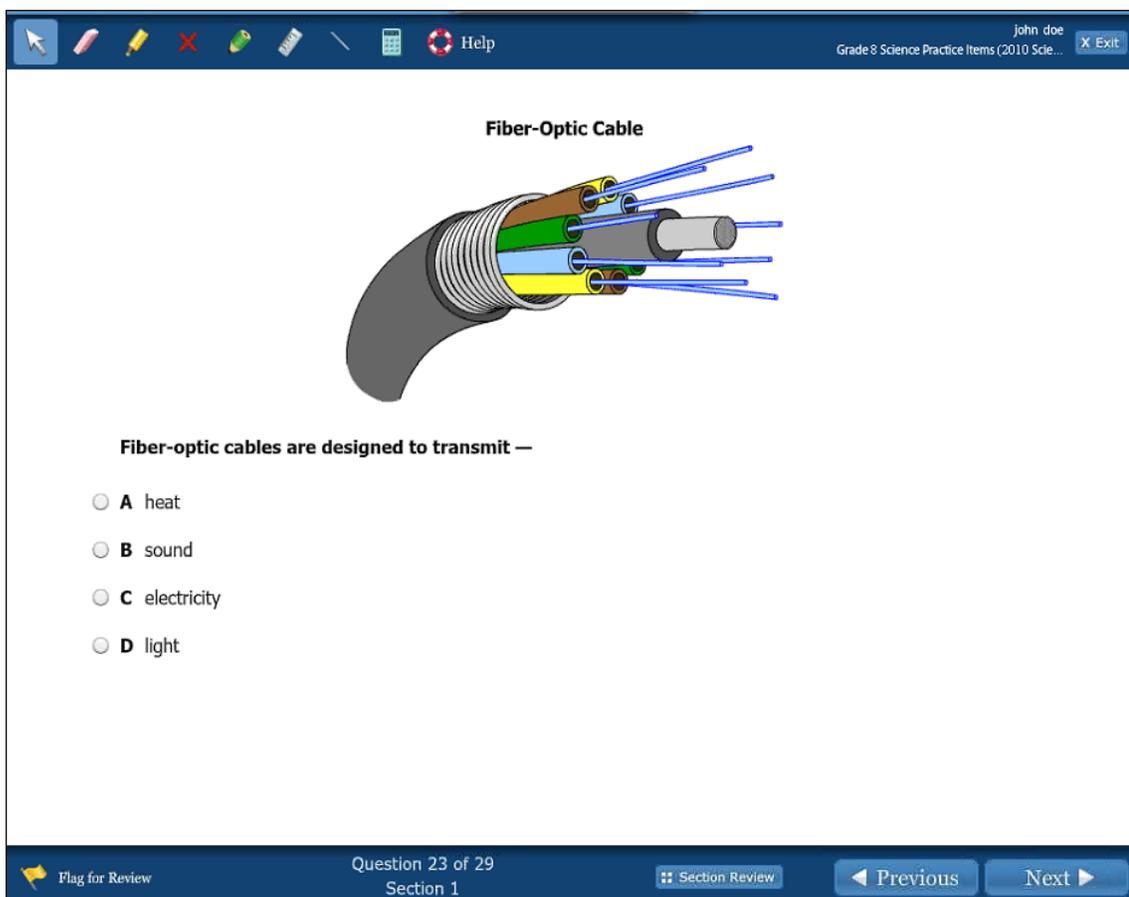
Do you have any questions?

Answer all questions.

SAY Click **Next** at the bottom of the screen to go to question 23.

Read and answer the question.

Pause while students read and answer the question.



The screenshot shows a software interface for a science practice item. At the top, there is a toolbar with icons for a mouse, eraser, highlighter, delete, pencil, calculator, and help. The user's name 'John doe' and the title 'Grade 8 Science Practice Items (2010 Scie...)' are visible in the top right. The main content area features a diagram titled 'Fiber-Optic Cable' showing a cross-section of a cable with multiple internal fibers, each emitting a blue light beam. Below the diagram is a question: 'Fiber-optic cables are designed to transmit —'. There are four radio button options: A heat, B sound, C electricity, and D light. At the bottom of the interface, there is a navigation bar with a 'Flag for Review' button, 'Question 23 of 29 Section 1', a 'Section Review' button, and 'Previous' and 'Next' buttons.

SAY How did you answer the question?

Pause for replies.

SAY The correct answer is option D, *light*.

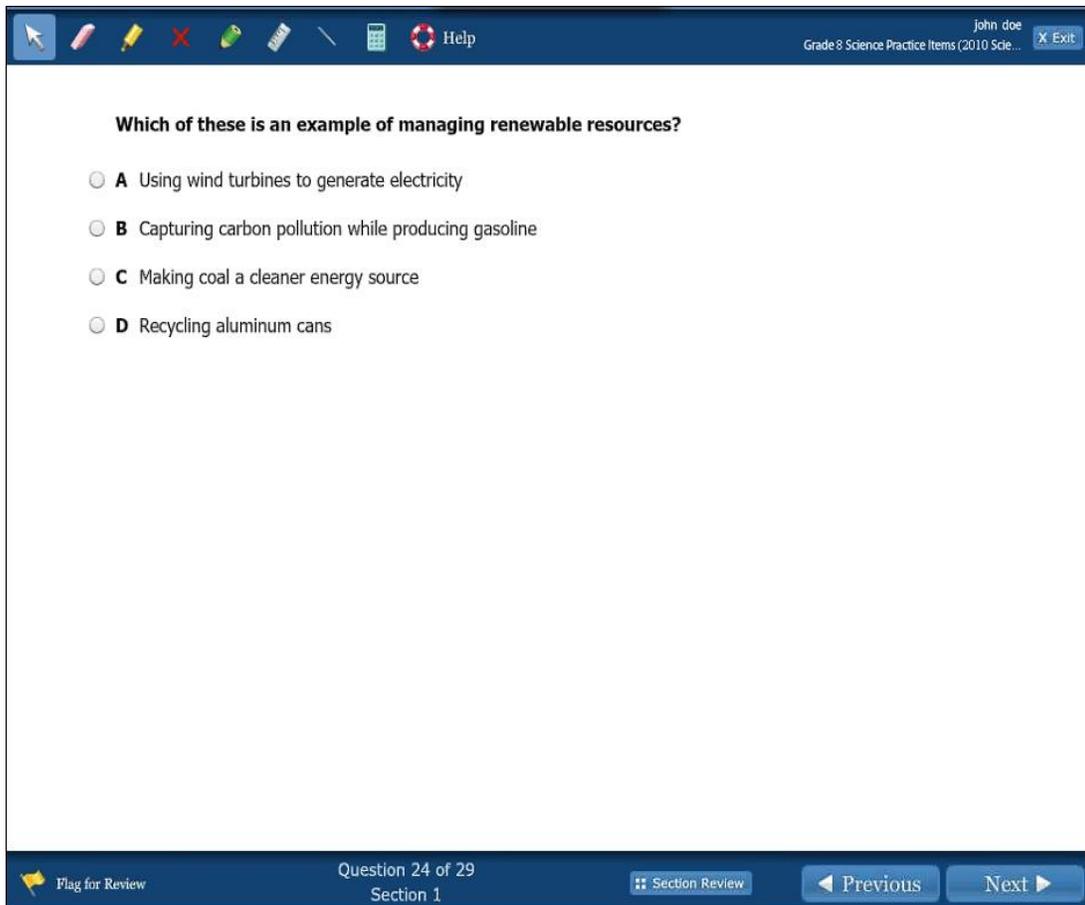
Do you have any questions?

Answer all questions.

SAY Click *Next* at the bottom of the screen to go to question 24.

Read and answer the question.

Pause while students read and answer the question.



SAY Which answer did you choose?

Pause for replies.

SAY To answer this question correctly you should have chosen **A, Using wind turbines to generate electricity.**

Do you have any questions?

Answer all questions.

SAY Click **Next** at the bottom of the screen to go to question 25.

John doe
Grade 8 Science Practice Items (2010 Scie... X Exit

Directions: Click on a location above each bar to show the bar height.

Make a graph of these data.

Atomic Number of Element	Approximate Atomic Mass of the Same Element (g/mol)
3	7
4	9
5	11
6	12
7	14
8	16

Graph of Atomic Number vs. Approximate Atomic Mass

Flag for Review Question 25 of 29 Section 1 Section Review Previous Next

SAY Notice the gray directions banner underneath the toolbar. The directions say, “Click on a location above each bar to show the bar height.” Below the directions banner, the problem says, “Make a graph of these data.”

To answer the question, click on a location above each bar to graph the data in the table. Now answer the question.

Pause while students answer the question.

SAY How did you answer the question?

Pause for replies.

SAY From left to right, the bar heights should be 7, 9, 11, 12, 14, and 16.

Since you are being asked to graph data in a table, this item will show as “Answered” on the Section Review screen after one bar has been raised on the graph. This is so no hint or clue is given as to how to graph the data in the table. Do you have any questions?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to question 26.

SAY Read the directions and the question.

Pause while students read the directions and question.

SAY To answer this question, you must drag an answer choice into each box to create the most powerful magnet possible from the components that are on the screen. Now answer the question.

Pause while students answer the question.

SAY How did you answer the question?

Pause for replies.

SAY The box above *Bar* should contain the *Iron* bar. The box above *Wire Coil* should contain the *longest coil* (the top picture in the middle column). The box above *Batteries* should contain the *picture with four batteries*.

In order for this item to show as “Answered” on the Section Review screen, each of the boxes must contain a component. Do you have any questions on how to answer this

question?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to question 27.

Directions: Click and drag the answers to the correct boxes. Each number may be used more than one time.

Balance the chemical equation using the lowest possible coefficients.

$$\square \text{Fe}_2\text{O}_3 + \square \text{C} \rightarrow \square \text{Fe} + \square \text{CO}_2$$

2 3 4 5 6 7 8 9

Flag for Review Question 27 of 29 Section 1 Section Review Previous Next

SAY Read the directions and question.

Pause while students read and answer the question.

SAY Notice in this problem, the answer options may be used more than one time. You must also place a number in each box in order to completely answer the question. Now drag your answers to the boxes. If you change your mind, drag the number back to the dark gray box and select another number to place in the box.

Pause while students answer the question.

SAY How did you answer the question?

Pause for replies.

SAY From left to right, the correct coefficients are 2, 3, 4, and 3.

SAY In order for this item to show as “Answered” on the Section Review screen, each of the boxes in the equation must contain a number. Do you have any questions on how to answer this question?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to question 28

The screenshot shows a digital testing interface. At the top, there is a toolbar with icons for a mouse, eraser, highlighter, delete, calculator, and help. The user's name 'John doe' and the page title 'Grade 8 Science Practice Items (2010 Scie...)' are visible in the top right. The main instruction reads: 'Directions: Click and drag the labels to the correct boxes.' Below this, the question asks to 'Complete the diagram using the correct labels.' The diagram is titled 'Transverse Wave' and shows a red sine wave on a horizontal axis. There are four empty rectangular boxes: one above the first crest, one above the second crest, one below the first trough, and one below the second trough. To the right of the diagram is a 'Labels' panel with four buttons: 'Amplitude', 'Crest', 'Trough', and 'Wavelength'. The bottom of the interface has a dark blue bar with 'Flag for Review', 'Question 28 of 29 Section 1', 'Section Review', 'Previous', and 'Next' buttons.

SAY Read the directions and question.

Pause while students read and answer the question.

SAY You must place a label in each empty box within the diagram in order to completely answer the question. Now drag your answers to the boxes. If you change your mind, drag the label back to the dark gray box and select another label to place in the box.

Pause while students answer the question.

SAY To answer this question correctly, you should have placed the label *Crest*

in the top left box, the label *Amplitude* in the top right box, the label *Trough* in the bottom left box and the label *Wavelength* in the bottom right box.

SAY In order for this item to show as “Answered” on the Section Review screen, each of the boxes within the diagram must contain a label. Do you have any questions on how to answer this question?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to question 29.

Directions: Click on all the correct answers.

Click on the organisms that belong in phylum Arthropoda.

 Horseshoe Crab	 Snail	 Spider	 Snake	 Millipede
--	---	--	--	---

Flag for Review Question 29 of 29 Section Review Previous Next

SAY Read the directions and question.

Pause while students read and answer the question.

SAY For this question you are being asked to click on the organisms that belong in phylum Arthropoda. For this item you are not told how many correct answers there are, so you must evaluate each answer choice and determine whether you want to select it. Now answer the question.

Pause while students answer the question.

SAY Which organisms did you choose?

Pause for student responses.

SAY You should have chosen *Horseshoe Crab*, *Spider*, and *Millipede*. In order to be correct, you must have selected those three answers and only those answers.

Since this item did not indicate how many correct answers there are, this item will show as “Answered” on the Section review screen once one answer has been selected. This is so no hint or clue is given as to how many correct answers there are.

Do you have any questions?

Answer all questions.

Please note that additional information regarding the requirements for an item to appear as “Answered” on the Section Review screen within TestNav is located in Appendix B for reference.

SAY Click *Next* at the bottom of the screen to go to the Section Review screen.

Section 1 Review

Choose an item below or click *CONTINUE* to go to the Test Overview.

All Items	1 Flagged for Review	29 Answered	0 Unanswered
Question 1		✓ Answered	
Question 2		✓ Answered	
Question 3		✓ Answered	
Question 4	🚩 Flagged for Review	✓ Answered	
Question 5		✓ Answered	
Question 6		✓ Answered	
Question 7		✓ Answered	
Question 8		✓ Answered	
Question 9		✓ Answered	
Question 10		✓ Answered	
Question 11		✓ Answered	
Question 12		✓ Answered	

CONTINUE
TO TEST OVERVIEW

john doe | Grade 8 Science Practice Items (2010 Science SOL)

SAY The Section Review screen shows which questions have been answered, which questions have not been answered and which questions you have flagged for review. To return to a question, click on the question number.

Practice returning to a question by clicking on question 4, the question we flagged for review. You should see a picture of a flag in the “Flagged for Review” column next to

the question. (Pause.) You can then return to this screen by clicking on the “Section Review” button at the bottom of the screen on question 4.

Pause while students practice navigating between question 4 and this screen.

SAY You can also use the Section Review screen to sort the question. The top row of the Section Review screen tells you how many questions you have flagged for review, answered, or left unanswered. If you want to view only the questions you flagged for review, simply click on the column header that says “Flagged for Review.” If you want to view only questions you have answered, click the “Answered” header. If you want to view only questions you left unanswered, click on the header that says “Unanswered.” Move your pointer over each column heading and notice how that section of the heading changes.

Pause while students practice sorting the columns.

SAY If the Section Review screen indicates that a question is unanswered, you have not answered that question completely. If this happens, it is a good idea to return to the question and read the directions and the question again before making any changes to your answer.

Are there any questions?

Students should check any questions that show as “Unanswered” on the Section Review screen. When the student returns to the question he or she may see that there is an answer, but it may be incomplete. It is important to note, however, that some questions will show as answered once a student responds with a single answer. This is necessary at times to avoid hinting or cluing an answer. For example, hot spot items that require students to “Select all” fall into this category. Please see Appendix B for detailed information.

SAY To get back to the Section Review screen that lists all questions and the status of each, click the top left-hand column header, titled “_ of 29 All Items.” (Pause.)

The number in the blank will vary, depending on the column the student filters on last.

SAY We are going to review two more screens. Click on the “Continue to Test Overview” button on the lower left corner on the screen. (Pause.)

Grade 8 Science Practice Items (2010 Science SOL)

Choose a section below or click *SUBMIT* to submit and exit the test.

SECTIONS	STATUS	QUESTIONS
Section 1	Opened	1-29

SUBMIT
AND EXIT TEST

john doe

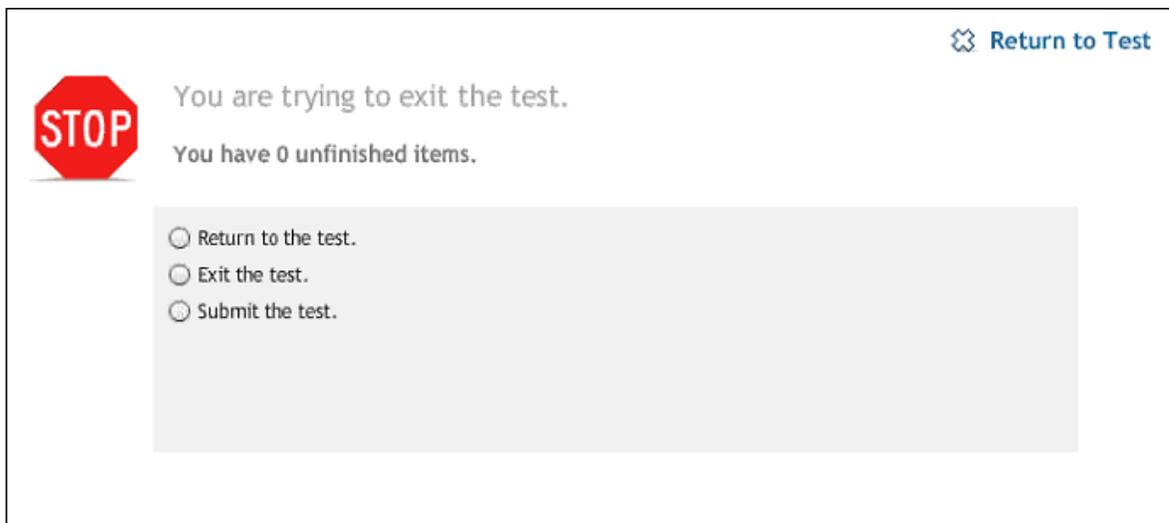
SAY From the Test Overview screen, you can return to the test or move to the final screen. Clicking on Section 1 will take you to the last practice item you were working on or went back to review. Since we have finished with the practice items, we will not return to any question within the section. Clicking on the “Submit and Exit Test” button at the bottom of the screen will move you to the final screen.

Are there any questions?

Pause to answer all questions.

SAY Now click on “Submit and Exit Test.” (Pause.)

You will see a stop sign with three choices. It is important to review these three choices. (Pause.)



SAY Notice this screen indicates the number of unfinished items you have on the test.

The first choice states, *“Return to the test.”* This option allows you to go back to the practice questions. You would click this option if you wanted to return to any of the questions. Selecting this would first take you to the screen we just reviewed and then you would click on Section 1 to return to the practice items.

The second choice states, *“Exit the test.”* This option should **NOT** be chosen. This option may be used during actual SOL testing but should **NOT** be used for this practice set. If you click on this option, you will lose all of your work. It will not be saved.

Pause and make sure students understand not to choose option 2. During actual SOL testing, students may be directed to choose this option if they are being moved to a different location to complete their tests or if they need to leave the testing environment (while monitored) for a short time.

SAY The third choice states, *“Submit the test.”* This option allows you to submit your answers.

Once you have finished using these practice items, proceed with exiting the application.

SAY Since we have finished with the practice items, please click on the third option, *“Submit the test.”* Next, click on the green button that says *“Final submit.”* When you click this button during actual SOL testing, your test will be submitted for scoring and you will not be able to return to the test.

This completes our review of the grade 8 science SOL practice items.

Thank you for reviewing the Grade 8 Science SOL Practice Items
with your students.

APPENDIX A

Answers to Grade 8 Science Practice Items

Question 1

Carbon, Hydrogen, Nitrogen, Oxygen

Question 2

Air temperature tool: Thermometer; Air pressure tool: Barometer; Humidity tool: Hygrometer

Question 3

Box 1: Spring; Box 2: Summer; Box 3: Autumn; Box 4: Winter

Question 4

Cell Membrane, Cytoplasm, Mitochondrion, and Nucleus

Question 5

1 – Precipitation – should be placed just below the cloud on the left.

2 – Evaporation – should be placed in the arrows pointing up from the ocean to the cloud on the right.

3 – Condensation – should be placed inside the cloud on the right.

4 – Surface Runoff – should be placed next to the arrow on the side of the mountain.

Question 6

The correct answer is 3.

Question 7

The correct answer is 173.5.

Question 8

The correct answer is 3.6×10^6 .

Question 9

He, Ar, Xe, and C

Question 10

The correct answer is option D.

Question 11

The correct answer is option B, 16,000 J/s.

Question 12

The correct answer is option A, can survive in extreme environments.

Question 13

The correct answer is option C, Mutation.

Question 14

The correct answer is option C, 2, 2, 1, 2.

Question 15

The correct answer is option C, allow current to flow only in one direction.

APPENDIX A

Answers to Grade 8 Science Practice Items (Continued)

Question 16

The correct answer is option D, 75% short hair; 25% long hair.

Question 17

The correct answer is option C, produces seeds inside of cones.

Question 18

The correct answer is option B, 1: absorption and 2: reflection.

Question 19

The correct answer is option C, Velocity.

Question 20

The correct answer is option B, Chemical energy is released as thermal energy.

Question 21

The correct answer is option A, Observations 1, 3, and 4 only.

Question 22

The correct answer is option A, improve the rate of thermal energy transfer to air.

Question 23

The correct answer is option D, light.

Question 24

The correct answer is option A, Using wind turbines to generate electricity.

Question 25

The bar heights, from left to right, should be: 7, 9, 11, 12, 14, and 16.

Question 26

The box above *Bar* should contain the *Iron bar*. The box above *Wire Coil* should contain the *longest coil* (the top picture in the middle column). The box above *Batteries* should contain the *picture with four batteries*.

Question 27

The correct coefficients, from left to right, are 2, 3, 4, and 3.

Question 28

To answer this question correctly, you should have placed the label *Crest* in the top left box, the label *Amplitude* in the top right box, the label *Trough* in the bottom left box, and the label *Wavelength* in the bottom right box.

Question 29

Horseshoe Crab, Spider, and Millipede

APPENDIX B

An overview of how student responses to technology-enhanced items will appear on the Section Review screen is outlined below.

Fill-in-the-blank (FIB) Items

For all fill-in-the-blank items, when a student enters any character into the response box, the item will show as answered on the Section Review screen. If a student enters an answer, and then completely removes that answer from the fill-in-the-blank box, the item will show as unanswered on the Section Review screen.

Histogram or Bar Graphing Items

For all histogram or bar graphing items, when a student raises any bar, the item will show as answered on the Section Review screen. If the student moves all bars back down to the original heights, the item will show as unanswered on the Section Review screen.

Hot Spot Items

When the number of correct responses is indicated in the directions or in the item itself, the item will show as answered on the Section Review screen only when the student selects that number of hot spots. For example, if the student is directed to select three answers, then the Section Review screen will show unanswered if the student selects one or two answers and will only show as answered once the student has selected three answers. If the number of correct responses is not indicated in the directions or in the question itself, then the item will show as answered on the Section Review screen once the student selects one answer. For example, if the student is required to “Select all correct answers,” the item will show as answered once the student selects one answer option. In this case, it is assumed that the student thought there was only one correct answer. This practice avoids providing information as to how many correct answers there are in the “select all” hot spot items.

Number Line or Coordinate Plane Items

Many number line or coordinate plane items require the student to plot one or more points as the response. When the number of points necessary to answer the item is indicated in the directions or the item itself, the item will show as answered on the Section Review screen only when the specified number of points has been plotted. When the directions or the item do not specify the number of points to plot, the item will show as answered on the Section Review screen once the student plots one point. Only points that have been plotted with the pointer tool are scorable responses. Points plotted with the dot tool are not scorable responses. If a student answers a question with the dot tool, the question will show as unanswered on the Section Review screen.

APPENDIX B (Continued)

Drag and Drop Items

Drag and drop items contain answer receptacles called “bays” and “dragers” that the student moves into the bays to answer the question. There are many types of drag and drop items, and each item is evaluated individually so that the student is given the most detailed information possible on the Section Review screen, without providing hints as to the correct answer. For items with a specified number of bays, the item will show as answered on the Section Review screen once the student uses that number of dragers. For example, if there are three bays and it is intended for a dragger to be placed into each bay, then the Section Review screen will show the item as answered once three dragers have been input by the student. Or, in another example, if the directions or question indicate that all dragers need to be used to answer the item, then the item will show as answered on the Section Review only when all dragers have been used. If the number of dragers necessary to answer the question is not indicated, such as an item that requires the use of a dragger to complete a model or pictograph, then the Section Review screen will show the item as answered once the student places one dragger in a bay.