

explore®

Standards *for* Transition™

Test Question Analysis

ACTIVITY BOOKLET

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This booklet contains information to help you complete the workshop activity for each EXPLORE® content area (English, Mathematics, Reading, and Science Reasoning).

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ACT endorses the *Code of Fair Testing Practices in Education*, a statement of guidelines for those who develop, administer, and use educational tests and data. The *Code* sets forth criteria for fairness in four areas: developing and selecting appropriate tests, interpreting test scores, striving for fairness, and informing test takers. ACT is committed to ensuring that each of its testing programs upholds the *Code's* standards for appropriate test development practices and use.

A copy of the full *Code* may be obtained free of charge from ACT Customer Services, P.O. Box 1008, Iowa City, IA 52243-1008, 319/337-1429.

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NOTE: One blank page (p. 15) has been deleted from the PDF version of this booklet.

Description of the Workshop Activity (All Contents)

Each activity in this booklet helps you become more familiar with ACT's Standards for Transition™—sets of statements that communicate educational expectations for junior high/middle school and high school students. Standards for Transition have been written for all four academic areas measured in EXPLORE®: English, Mathematics, Reading, and Science Reasoning. The Standards for each academic area are organized by *score range* (13–15, 16–19, 20–23, and 24–25) and by *strand* (distinct yet overlapping areas of knowledge and skill).

Please follow the steps outlined below to explore the relationship between the EXPLORE test questions and the EXPLORE Standards for Transition. If you have questions, ask your workshop coordinator.

- Step A: Find and briefly review the EXPLORE Standards for Transition table for your respective content area—English (pp. 2–3), Mathematics (pp. 6–7), Reading (pp. 10–11), Science Reasoning (p. 14). Please note that the Standards for Transition are organized both by score range (along the left-hand side) and by strand (across the top).
- Step B: Read the explanatory text and/or the guiding questions located on the page(s) after your Standards for Transition table.
- Step C: Read the sample test questions (and [except in Mathematics] their corresponding passage); then determine which strand(s) and Standards link to each test question. Space has been provided below each test question to write notes about what is measured in each test question. Write the Standards for Transition number (e.g., 301, 502) and the strand abbreviation (e.g., in English, TOD, OUC) in the second column of the worksheet. Please note that the score range for each test question appears, in parentheses, in column one.
- Step D: Discuss your findings with the other participants in the workshop.

EXPLORE English Test Standards for Transition by Strand and Score Range

	Topic Development in Terms of Purpose and Focus (TOD)	Organization, Unity, and Coherence (OUC)	Word Choice in Terms of Style, Tone, Clarity, and Economy (WCH)
13–15		201. Recognize blatantly illogical conjunctive adverbs	201. Revise sentences to correct awkward and confusing arrangements of sentence elements 202. Revise ambiguous pronouns that create obvious sense problems (e.g., meaning or logic)
16–19	301. Identify the basic purpose or role of a specified phrase or sentence 302. Delete obviously irrelevant material from an essay	301. Select the most logical place to add a sentence in a paragraph	301. Delete obviously synonymous and wordy material in a sentence 302. Revise expressions that violate the essay's tone
20–23	401. Identify the main theme or topic of a straightforward piece of writing 402. Determine relevancy when presented with a variety of sentence-level details	401. Use a conjunctive adverb or phrase to express a straightforward logical relationship, such as chronology 402. Decide the most logical place to add a sentence in an essay 403. Add a sentence that introduces a simple paragraph	401. Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”) 402. Use the word or phrase most consistent with the style and tone of a fairly straightforward essay 403. Determine the clearest and most logical conjunction to link clauses
24–25	501. Identify the focus of a simple essay, applying that knowledge to each paragraph's function and determining if an essay has met a specified goal 502. Delete material primarily because it disturbs the flow and development of the paragraph 503. Add a sentence to introduce or summarize the essay and to accomplish a fairly straightforward and limited purpose	501. Use conjunctive adverbs or phrases to create subtle logical connections between sentences, such as cause-effect 502. Rearrange the sentences in a fairly uncomplicated paragraph 503. Provide a transition between paragraphs when the essay is fairly straightforward	501. Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence 502. Identify and correct pronouns that have vague referents 503. Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay

Sentence Structure and Formation (SST)	Conventions of Usage (COU)	Conventions of Punctuation (COP)
<p>201. Use conjunctions or punctuation to join simple clauses</p> <p>202. Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p>	<p>201. Solve such basic usage problems as whether to use a comparative or a superlative adjective and which word to use in such pairs as <i>past</i> or <i>passed</i></p>	<p>201. Delete commas that create basic sense problems (e.g., between two parts of a compound noun, between verb and direct object)</p>
<p>301. Use punctuation or conjunctions to coordinate uncomplicated sentences and to avoid awkward-sounding fused sentences or sentence fragments</p> <p>302. Correct glaringly inappropriate shifts in verb tense or voice</p>	<p>301. Solve such basic grammatical problems as whether to use an adverb or an adjective form; how to form comparative and superlative adjectives; how to ensure straightforward subject-verb and pronoun-antecedent agreement; and when to use the contraction <i>it's</i></p>	<p>301. Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>302. Delete commas that disturb the sentence flow (e.g., between modifier and modified element)</p>
<p>401. Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing relative pronouns, dangling or misplaced modifiers)</p>	<p>401. Identify the past and past participle forms of irregular but commonly used verbs and identify idiomatically appropriate prepositions in terms of their context</p> <p>402. Ensure that a verb agrees with its subject when there is some text between the two</p>	<p>401. Use commas to set off basic parenthetical phrases</p> <p>402. Delete unnecessary commas when an incorrect reading of the sentence suggests a pause that should be punctuated (e.g., between verb and direct object clause)</p>
<p>501. Revise to avoid faulty placement of phrases and coordination and subordination of clauses in sentences with subtle structural problems</p> <p>502. Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p>	<p>501. Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p>502. Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p>	<p>501. Use punctuation to set off complex parenthetical phrases or adverbial phrases</p> <p>502. Recognize and delete unnecessary commas based on a careful reading of the entire sentence (e.g., between compound sentence elements joined by a conjunction)</p> <p>503. Use apostrophes to indicate simple possessive nouns</p> <p>504. Recognize inappropriate uses of colons and semicolons</p>

English Essay
from the Abbreviated EXPLORE Test

PASSAGE I

The Boise Nature Center

[1] In Boise, Idaho, a waterfall spills into a rocky pool, then forms a clear mountain stream. [2] The stream becomes a river and twisted across a semi-arid plateau. [3] From there the river wanders through farmland and then vanishes underground. [4] Amazingly, all of this river’s activity takes place within the shadow of tall office buildings a few feet from a city park. [5] The river, you see, is the centerpiece of Boise’s Nature Center. [6] When at last it surfaces, it falls from a rock cliff into wetlands. 2

The Center reproduces four environmental systems found in Idaho; the heart of each is the river. Although it travels only 550 feet, ducks, geese, mink, squirrels, and quail call home. Keeping them company are fish: salmon, sturgeon, bass, and trout. And the fish, more than anything else, draw visitors to the Center.

For a fish-eye view of the world, peer through an underwater window. Fat rainbow trout patrol between territory, chasing smaller fish from prime feeding areas.

In the tangles of a sunken log, a three-foot-long sturgeon floats, motionless. At the bottom, naturally vacuuming cleaner—the sucker—feeds on algae and waste.

Step to another window and suddenly you’re alongside the spawning grounds. Safe within “redds” (shallow gravel nests), tiny eggs bob in the current. Look more closer for a dark dot in the orange egg. If you come back in two weeks, the dot will be an eye, the egg will have a tail, and a witness for the first stages of a trout’s life.

Built entirely with volunteer labor and paid for by donations, the Boise Nature Center is unique. Plenty of cities have aquariums. Others have zoos. Still others have wildlife refuges. Only Boise has blended them all together in a fascinating and educational mix.

Question 10 asks about the preceding passage as a whole.

Guiding Questions for the English Workshop Activity

1. What is the main error the student is asked to correct in the test question?
2. Which strand addresses errors of that kind?
3. Which standard within that strand (and score range) do you think best describes the test question?
4. Think of one classroom activity that you've used successfully that either requires students to use the skill you've identified or that helps students learn the skill you've identified. Please informally describe that activity to your fellow teachers.

Worksheet

Sample Test Question (Score Range)	Strand(s) Standards for Transition
<p>2. For the sake of unity and coherence, Sentence 6 should be placed:</p> <p>F. where it is now. G. before Sentence 2. H. before Sentence 3. *J. before Sentence 4.</p> <p>Main Error:</p> <p style="text-align: right;">(24–25)</p>	
<p>7. A. NO CHANGE *B. closely C. most closer D. in closing</p> <p>Main Error:</p> <p style="text-align: right;">(13–15)</p>	
<p>10. The writer has been asked to write an essay that would be part of a brochure on enjoyable things to do and see in Boise, Idaho. Would this essay successfully fulfill that assignment?</p> <p>F. Yes; the essay focuses on mammals, which are apparently of the greatest interest for visitors at the Boise Nature Center. G. Yes; the essay employs a lot of vivid descriptions of animals and fish that visitors to Idaho can see in zoos in cities across the U.S. *H. Yes; the essay provides a concise and informative description of one of Boise's attractive facilities. J. No; the essay does not tell readers how much it costs to go to the Center or how crowded the Center typically is.</p> <p>Main Error:</p> <p style="text-align: right;">(24–25)</p>	

EXPLORE Mathematics Test Standards for Transition by Strand and Score Range

	Basic Operations & Applications (BOA)	Probability, Statistics, & Data Analysis (PSD)	Numbers: Concepts & Properties (NCP)	Algebraic Expressions (AEX)
13–15	<p>201. Perform one-operation computation with whole numbers and decimals</p> <p>202. Solve problems in one or two steps using whole numbers</p> <p>203. Perform common conversions (e.g., inches to feet or hours to minutes)</p> <p>204. Find equivalent values of coins</p>	<p>201. Perform a single computation using information from a table or chart</p>		<p>201. Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$)</p>
16–19	<p>301. Solve routine one-step arithmetic problems such as single-step percent and calculate a simple average of whole numbers</p> <p>302. Solve some routine two-step arithmetic problems</p>	<p>301. Read tables and graphs</p> <p>302. Perform computations on data from tables and graphs</p> <p>303. Use the relationship between the probability of an event and the probability of its complement</p>	<p>301. Recognize one-digit factors of a number</p> <p>302. Identify a digit's place value</p>	<p>302. Substitute whole numbers for unknown quantities to evaluate expressions</p>
20–23	<p>401. Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, computing an average with negative integers, and computing with a given average</p>	<p>401. Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>402. Determine the probability of a simple event</p>	<p>401. Exhibit knowledge of elementary number concepts including the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>	<p>401. Manipulate basic algebraic expressions (e.g., substitute integers for unknown quantities, add and subtract simple algebraic expressions, and perform straightforward word-to-symbol translations)</p>
24–25	<p>501. Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>	<p>501. Manipulate data from tables and graphs</p> <p>503. Compute straightforward probabilities for common situations</p>	<p>501. Work problems involving ordering fractions, numerical factors, least common multiple, and square roots</p> <p>503. Square numbers</p>	<p>503. Write expressions with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p>

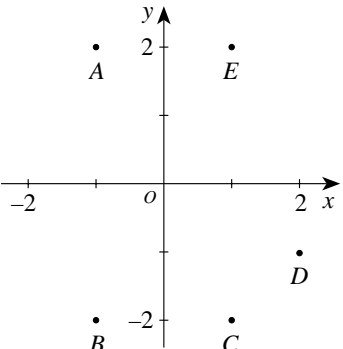
Equations & Inequalities (EQI)	Graphical Representations (GRE)	Properties of Plane Figures (PPF)	Measurement (MEA)
201. Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals	201. Identify the location of a point with a positive coordinate on the number line		201. Estimate or calculate the length of a line segment based on other lengths given on a geometric figure
301. Solve one-step equations having integer or decimal answers	301. Locate points on the number line and in the first quadrant		301. Compute the perimeter of polygons when all side lengths are given 302. Compute the area of rectangles when whole number dimensions are given
401. Solve routine first-degree equations	402. Locate points in the coordinate plane 403. Exhibit knowledge of vertical and horizontal lines and of their point of intersection	401. Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90° , 180° , and 360°)	401. Compute the area and perimeter of triangles and rectangles when the problems are simple 402. Use geometric formulas when all necessary information is given
501. Solve real-world problems using first-degree equations 503. Identify solutions to simple quadratic equations 504. Write equations and inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)		503. Use several angle properties to find an unknown angle measure	501. Compute areas and circumferences of circles after identifying necessary information 502. Compute areas of rectangles and triangles when one or more additional simple steps are required

Guiding Questions for the Mathematics Workshop Activity

1. What topic (e.g., algebra, geometry, statistics) is the test question about?
2. Which strand focuses on the topic you chose?
3. What knowledge and skills does a student need to successfully respond to the test question?
4. Which standard within that strand (and score range) best describes the knowledge or skills you listed?
5. Think of one classroom activity that you've used successfully that requires students to use the skill you've identified or helps students learn the skill you've identified. Please informally describe that activity to your fellow teachers.

Worksheet

Sample Test Question (Score Range)	Strand(s) Standards for Transition																		
<p>1. What is the remainder when 189,540 is divided by 27 ?</p> <p>*A. 0 B. 7 C. 13 D. 250 E. 7,020</p> <p>Knowledge and Skills:</p> <p style="text-align: right;">(13–15)</p>																			
<p>2. What is the least expensive shower head on the chart below that will NOT deliver more than 3 gallons of water per minute (gpm)?</p> <p>Information from <i>Consumer Reports</i>, "How to Save Water." ©1990 by Consumers Union of U.S., Inc.</p> <table border="1" data-bbox="154 1270 771 1459"> <thead> <tr> <th>Brand and Model</th> <th>Price</th> <th>Maximum gpm</th> </tr> </thead> <tbody> <tr> <td>F. Sears 20173</td> <td>\$23</td> <td>3.4</td> </tr> <tr> <td>G. Teledyne 5 SM-3U</td> <td>\$43</td> <td>2.6</td> </tr> <tr> <td>*H. Alsons 462PB</td> <td>\$11</td> <td>2.6</td> </tr> <tr> <td>J. Alsons 45C</td> <td>\$58</td> <td>2.7</td> </tr> <tr> <td>K. Moen 3981</td> <td>\$95</td> <td>2.4</td> </tr> </tbody> </table> <p>Knowledge and Skills:</p> <p style="text-align: right;">(16–19)</p>	Brand and Model	Price	Maximum gpm	F. Sears 20173	\$23	3.4	G. Teledyne 5 SM-3U	\$43	2.6	*H. Alsons 462PB	\$11	2.6	J. Alsons 45C	\$58	2.7	K. Moen 3981	\$95	2.4	
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K. Moen 3981	\$95	2.4																	

Sample Test Question <p style="text-align: right;">(Score Range)</p>	Strand(s) Standards for Transition
<p>7. Kane bought a bag of taffy at the candy store. He got 10 vanilla for his mom, 15 chocolate for his dad, 6 licorice for his sister, and 22 peppermint for himself. On the way home, Kane's sister grabbed a piece out of the sack without looking. What are the chances that she pulled out a licorice piece?</p> <p>A. $\frac{1}{6}$ B. $\frac{6}{6}$ C. $\frac{6}{47}$ *D. $\frac{6}{53}$ E. $\frac{47}{53}$</p> <p>Knowledge and Skills:</p> <p style="text-align: right;">(20–23)</p>	
<p>10. One of the points, labeled A through E, shown in the standard (x,y) coordinate plane below has coordinates (-1,2). Which point is it?</p> <p>*F. A G. B H. C J. D K. E</p>  <p>Knowledge and Skills:</p> <p style="text-align: right;">(20–23)</p>	
<p>15. Paco wants to redecorate his room. On one wall he wants to put up new wallpaper. The wall is a 13-by-11-foot rectangle and has a door which takes up a 7-by-3-foot rectangular area. After the area of the door is subtracted, how many square feet of wall remain to be covered?</p> <p>A. 28 B. 48 *C. 122 D. 143 E. 288</p> <p>Knowledge and Skills:</p> <p style="text-align: right;">(24–25)</p>	

EXPLORE Reading Test Standards for Transition by Strand and Score Range

	Main Ideas (MID)	Significant Details (SDE)	Sequence of Events (SOE)	Comparative Relationships (CRE)
13–15	201. Draw simple conclusions about people and events in uncomplicated literary narratives	201. Locate specific facts (e.g., names, dates, events) clearly stated in a passage	201. Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages	
16–19	301. Draw simple conclusions about the main points and people in uncomplicated passages	301. Locate simple details at the sentence and paragraph level in uncomplicated passages		301. Identify relationships between principal characters in uncomplicated literary narratives
20–23	401. Draw simple conclusions using details that support the main points of more challenging passages	401. Locate important details in uncomplicated passages	401. Order simple sequences of events in uncomplicated literary narratives	401. Identify comparative relationships between ideas and people in uncomplicated passages
24–25	501. Identify a clear main idea in any paragraph or paragraphs in uncomplicated passages 502. Infer the main idea of some paragraphs in more challenging passages 503. Summarize basic events and ideas in more challenging passages	501. Locate and interpret minor or subtly stated details in uncomplicated passages 502. Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages	501. Order sequences of events in uncomplicated passages	501. Have a sound grasp of relationships between people and ideas in uncomplicated passages 502. Identify clearly established relationships between characters and ideas in more challenging literary narratives

Descriptions of the EXPLORE Reading Passages

Uncomplicated Literary Narratives refers to excerpts from essays, short stories, and novels that tend to use simple language and structure, have a clear purpose and a familiar style, present straightforward interactions between characters, and employ only a limited number of literary devices such as metaphor, simile, or hyperbole.

More Challenging Literary Narratives refers to excerpts from essays, short stories, and novels that tend to make moderate use of figurative language, have a more intricate structure and messages conveyed with some subtlety, and may feature somewhat complex interactions between characters.

Cause-Effect Relationships (CER)	Meanings of Words (MOW)	Generalizations (GEN)	Author's Voice and Method (AVM)
201. Recognize cause-effect relationships explicitly described within a single sentence in a passage	201. Understand the implication of a familiar word and of simple descriptive language	201. Make simple generalizations about the main character in uncomplicated literary narratives	201. Recognize a clear intent by an author or narrator in uncomplicated literary narratives
301. Recognize clearly stated cause-effect relationships within a single paragraph in uncomplicated literary narratives	301. Use context clues to understand basic figurative language	301. Make simple generalizations about the main points and characters in uncomplicated literary narratives	301. Recognize clear relationships between a part of a passage and the whole passage or another part in uncomplicated passages
401. Identify clearly stated cause-effect relationships in uncomplicated passages	401. Use context clues to define some words and interpret some figurative language in uncomplicated passages	401. Make more specific generalizations about people and ideas in uncomplicated passages	401. Make generalizations about the author's or narrator's attitude toward his or her subject in uncomplicated passages 402. Understand the overall approach taken by an author or narrator, including point of view, in uncomplicated informational passages
501. Identify subtly stated cause-effect relationships in uncomplicated passages 502. Identify clearly stated cause-effect relationships in more challenging passages	501. Use context clues to determine the appropriate meaning of multiple-meaning words or phrases in uncomplicated passages	501. Make subtle generalizations about characters in uncomplicated literary narratives 502. Make generalizations about people and situations in more challenging passages	501. Understand the overall approach taken by an author or narrator, including point of view, in uncomplicated literary narratives

Uncomplicated Informational Passages refers to materials that tend to contain a limited amount of data, address basic concepts using familiar language and conventional organizational patterns, have a clear purpose, and are written to be accessible.

More Challenging Informational Passages refers to materials that tend to present concepts that are not always stated explicitly and that are accompanied or illustrated by more—and more detailed—supporting data, include some difficult context-dependent words, and are written in a somewhat more demanding and less accessible style.

EXPLORE Reading Test Standards for Transition

The EXPLORE Reading Test includes three types of passages: Prose Fiction, Humanities (classified as literary narratives), and Social Science (classified as informational). Passages also differ in level of difficulty: uncomplicated or more challenging. When determining the difficulty of the passage below, please think in terms of a “typical (average) eighth-grade student.”

Most of the Standards for Transition mention a specific type of passage and level of difficulty. When a Standard mentions level of difficulty only, students should be able to display the skill while reading both literary narratives and informational passages.

Skills in the “Author’s Voice and Method” strand include distinguishing the author’s or narrator’s intent, attitude, or point of view, and recognizing how a paragraph functions in terms of the entire passage.

Reading Passage from the Abbreviated EXPLORE Test

Passage I

SOCIAL SCIENCE: This passage is adapted from the article “Land of the Candy Bar” by Ray Broekel (©1986 by Forbes Inc.).

The candy bar as we know it was born in America. So too, many centuries earlier, was chocolate itself. Mexican natives cultivated the cocoa bean for more than
5 twenty-five hundred years before Hernán Cortés took it to Spain with him in 1528. Spanish royalty drank a cold, sweetened beverage made from the beans, but they liked it so much they kept it a secret from the rest of Europe for the remainder of the century. Not until the 1840s did
10 a British firm make the first chocolate bar. The *candy* bar, agglomerating a variety of flavors and textures—almost always including chocolate—in one piece, was a purely American invention, and (as of this writing) it’s still not one hundred years old.

15 Milton Snavely Hershey, the father of the modern candy bar, had already built a successful business in caramels when he first saw German chocolate-making machines at the 1893 Chicago world’s fair. He ordered some for his factory in Lancaster, Pennsylvania, and
20 began turning out chocolate bars the next year. By the turn of the century he was through with caramels. He made not just plain chocolate and milk-chocolate bars but also innovative items like almond bars, kisses, and chocolate cigars. By 1911 his company had sales of five million dollars a year; by 1921 it was making four times
25 that.

Such dazzling success begat swift competition, and soon a multitude of companies was making bars of chocolate combined with caramel, marshmallow, peanuts,
30 crisped rice, and anything else that might sell.

Throughout the first two decades of the century, a bewildering variety of candy bars appeared on shelves across the country, most of them fleetingly. There have probably been more than one hundred thousand different
35 candy bars sold in the United States, including some thirty thousand that existed only in the years just after World War I. Nearly every confectioner in the land turned out a candy bar, choosing a name that might reflect a news or sports event, a popular hero, a food, a
40 place, or even a popular saying of the age.

The industry began on the East Coast but quickly fanned out across the country. Since the basic ingredients were dairy products, Chicago became the natural hub for
45 candy bars, and Milwaukee and Minneapolis were major producers.

The Depression brought lean times to the candy-bar business, and not until the late 1930s did the industry begin to recover. When war struck again, the makers of
50 candy bars once more were pressed into service supplying the troops. Hershey made “field ration D,” a refined chocolate that didn’t melt at high temperatures, and it was packed in kits for soldiers, sailors, and Marines. On the home front, as the supply of chocolate
55 dwindled, manufacturers struggled to concoct new bars from ingredients such as peanuts and marshmallows and gave them patriotic names like Torpedo.

If World War I made candy bars a major industry, World War II made them a worldwide symbol of
60 America. The GI handing out candy bars to children came to stand for liberation everywhere. Hershey bars became an international wartime currency.

Guiding Questions for the Reading Workshop Activity

1. How would you classify this passage: literary narrative or informational passage?
2. Using the passage descriptions at the bottom of the Reading Standards for Transition table, what do you think is the difficulty level of the passage: uncomplicated or more challenging?
3. What skills does a student need to successfully respond to each test question?
4. Which strand focuses on the skills you listed?
5. Which standard within that strand (and score range) best describes the skills you listed?
6. Think of one classroom activity that you've used successfully that either requires students to use the skill you've identified or that helps students learn the skill you've identified. Please informally describe that activity to your fellow teachers.

Worksheet

Sample Test Question (Score Range)	Strand(s) Standards for Transition
<p>1. The passage mentions all of the following as candy-bar ingredients EXCEPT:</p> <ul style="list-style-type: none"> A. crisped rice. B. caramel. *C. raisins. D. almonds. <p>Skills:</p> <p style="text-align: right;">(13–15)</p>	
<p>3. Why, according to the passage, did Chicago become the hub for candy-bar production?</p> <ul style="list-style-type: none"> A. It was located at the midpoint between Minneapolis and Lancaster, Pennsylvania. B. It was the transportation center of the U.S. C. The majority of the population was found in this part of the country. *D. Many dairy products came from the region around Chicago. <p>Skills:</p> <p style="text-align: right;">(16–19)</p>	
<p>8. The passage indicates that the first chocolate bar was made by the:</p> <ul style="list-style-type: none"> F. Mexicans. G. Spanish. *H. British. J. Americans. <p>Skills:</p> <p style="text-align: right;">(24–25)</p>	

EXPLORE Science Reasoning Test Standards for Transition by Strand and Score Range

	Interpretation of Data (IOD)	Scientific Investigation (SIN)	Evaluation of Experiments, Models, and Assertions (EMA)
13–15	<p>201. Select a single piece of textual (nonnumerical) information from a table</p> <p>202. Select the highest/lowest value from a specified column or row in a table</p> <p>203. Select a single data point from a simple table, graph, or diagram</p>		
16–19	<p>301. Select data from a simple table, graph, or diagram (e.g., a table or graph with 2 or 3 variables; a food web)</p> <p>302. Identify basic features from a table or graph (e.g., headings, units of measurement, axis labels)</p> <p>303. Understand basic scientific terminology</p> <p>304. Find basic information in a brief body of text</p> <p>305. Identify a direct relationship between variables in a simple table, graph, or diagram</p>		
20–23	<p>401. Compare data from a simple table, graph, or diagram</p> <p>402. Determine whether a relationship exists between 2 variables</p> <p>403. Identify an inverse relationship between variables in a simple table, graph, or diagram</p> <p>404. Translate information (data or text) into graphic form</p> <p>405. Select data from a complex table, graph, or diagram (e.g., a table or graph with more than 3 variables; a topographic map)</p>	<p>401. Understand simple lab procedures</p> <p>402. Identify the control in an experiment</p>	
24–25	<p>501. Compare data from a complex table, graph, or diagram</p> <p>502. Interpolate between data points in a table or graph</p> <p>503. Identify or use a simple mathematical relationship that exists between data</p> <p>504. Identify a direct or inverse relationship between variables in a complex table, graph, or diagram</p> <p>505. Compare or combine data from two simple data sets</p> <p>506. Combine new, simple information (data or text) with given information (data or text)</p>	<p>501. Understand moderately complex lab procedures</p> <p>502. Understand simple experimental designs</p>	<p>501. Select a simple hypothesis, prediction, or conclusion that is supported by one or more data sets or viewpoints</p> <p>502. Identify strengths and weaknesses in one or more viewpoints</p> <p>503. Identify similarities and differences in two or more viewpoints</p> <p>504. Identify key issues or assumptions in an argument or viewpoint</p> <p>505. Determine whether new information supports or weakens a viewpoint or hypothesis</p>

EXPLORE Science Reasoning Test Standards for Transition

The Interpretation of Data strand describes the skills used to read and analyze information presented in tables, graphs, diagrams, or text. These skills include selecting data points from graphs, comparing 2 or more data points or sets of data, interpolation of data, and extrapolation of data.

The Scientific Investigation strand focuses on the skills needed to understand and analyze an experiment. These skills include determining the control in an experiment, determining the hypothesis that an experiment is designed to test, and

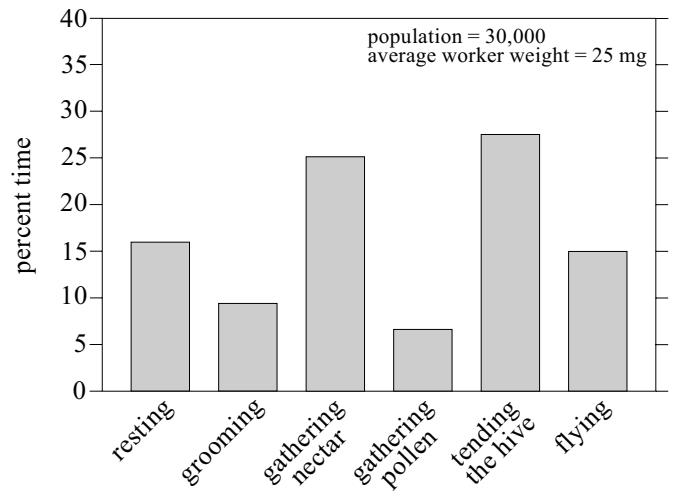
determining the purpose behind an experimental design or procedure.

The Evaluation of Experiments, Models, and Assertions strand contains the skills needed to understand and analyze diverse scientific viewpoints. These skills include determining the hypothesis or conclusion that is supported by a given set of data, experiment, or viewpoint; finding the areas of agreement and disagreement in different viewpoints; and identifying the strengths, weaknesses, key issues, and assumptions in various viewpoints.

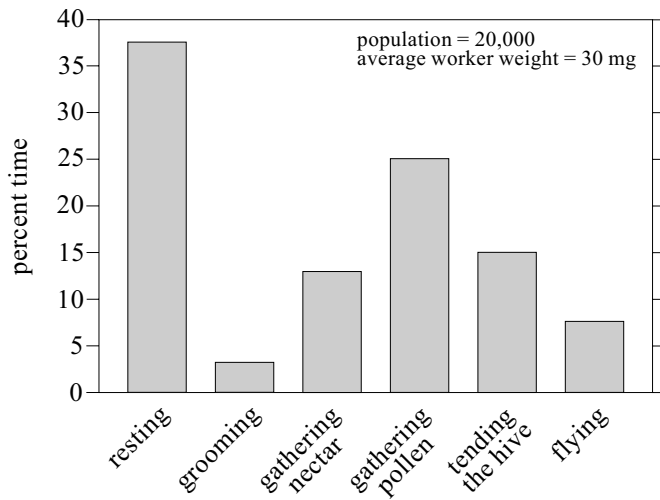
Data Representation Passage from the Abbreviated EXPLORE Test

Passage I

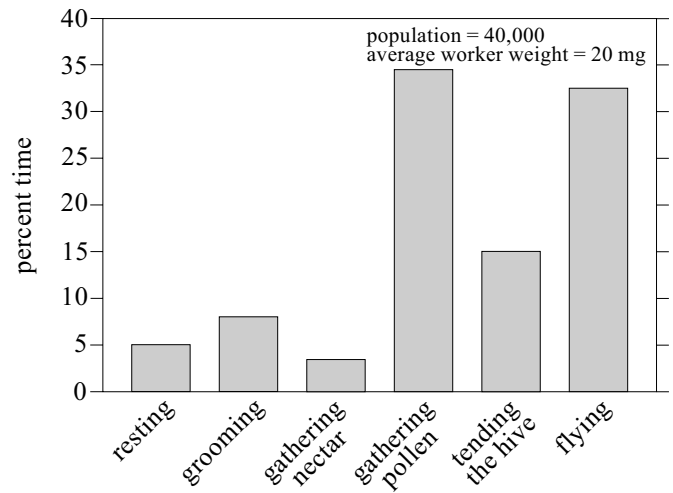
Observations of three different beehives were made over a two-week period in the spring. The hives were located in different areas containing blooming flowers. The activities of the worker bees were observed for each hive at the same time of day for each day during the study period. The population and average weight of the worker bees in each hive were also determined. The data obtained from this study are displayed in the following figures, identified as Hive 1, Hive 2, and Hive 3.



Hive 2



Hive 1



Hive 3

Guiding Questions for the Science Reasoning Workshop Activity

1. What science process skills must students use to answer each test question correctly?
2. Which strand focuses on the skills you chose?
3. Which standard within that strand (and score range) best describes the skills you listed?
4. Think of one classroom activity that you've used successfully that either requires students to use the skill you've identified or that helps students learn the skill you've identified. Please informally describe that activity to your fellow teachers.

Worksheet

Sample Test Question (Score Range)	Strand(s) Standards for Transition
<p>2. According to the data presented for Hive 3, the percentage of time spent by the worker bees tending the hive was approximately:</p> <p>F. 10%. *G. 15%. H. 20%. J. 35%.</p> <p>Science Process Skills:</p> <p style="text-align: right;">(12–15)</p>	
<p>4. According to the figures, what is the relationship between the weight of the individual worker bees and the amount of time spent flying?</p> <p>*F. The lighter the bee, the more time spent flying. G. The heavier the bee, the more time spent flying. H. Lighter bees are faster, so less time is spent flying. J. Heavier bees are faster, so less time is spent flying.</p> <p>Science Process Skills:</p> <p style="text-align: right;">(16–19)</p>	

Research Summaries Passage from the Abbreviated EXPLORE Test

Passage II

Several factors affect the *rate* (how fast the chemicals react) at which a chemical reaction proceeds. Reaction rate is affected by the *concentrations* (relative amounts per unit volume) of the chemicals being reacted and the temperature at which the reaction takes place. The addition of a *catalyst* (substance that affects the rate of a reaction without itself being used up) can also increase the reaction rate.

When Solutions A and B (two colorless liquids) are mixed, a reaction takes place. When the reaction is completed, the mixture turns dark blue.

Experiment 1

Students mixed 20 ml each of Solutions A and B at 22.2°C, and stirred the mixture as the reaction proceeded. The students recorded the time that it took for the mixture to turn dark blue. This was repeated 4 more times. The average time for the 5 trials was 29 seconds (sec).

The students then mixed 20 ml of Solution A, 10 ml of Solution B, and 10 ml of distilled water, all at 22.2°C. The average reaction time for 5 trials was 71 sec.

The students then mixed 10 ml of Solution A, 10 ml of distilled water, and 20 ml of Solution B, all at 22.2°C. The average reaction time for 5 trials was 72 sec.

Experiment 2

The students mixed 20 ml each of Solutions A and B at 3 different temperatures. Each time, they stirred until the reaction was complete. The average reaction times for 5 trials are shown in the table.

Temperature (°C)	Time until reaction was completed (sec)
12.2	58
22.2	29
32.2	15

Experiment 3

The students added 5 drops of copper sulfate, a catalyst, to 20 ml of Solution A. When this was mixed at 22.2°C with 20 ml of Solution B, the average reaction time for 5 trials was 19 sec.

Guiding Questions for the Science Reasoning Workshop Activity

1. What science process skills must students use to answer each test question correctly?
2. Which strand focuses on the skills you chose?
3. Which standard within that strand (and score range) best describes the skills you listed?
4. Think of one classroom activity that you've used successfully that either requires students to use the skill you've identified or that helps students learn the skill you've identified. Please informally describe that activity to your fellow teachers.

Worksheet

Sample Test Question (Score Range)	Strand(s) Standards for Transition
<p>6. Based on the results of Experiment 2, what is the relationship, if any, between the temperature of the mixture and the reaction time?</p> <p>*F. As the temperature increases, the reaction time decreases only. G. As the temperature increases, the reaction time stays the same. H. As the temperature decreases, the reaction time increases, then decreases. J. There is no relationship between the temperature and the reaction time.</p> <p>Science Process Skills:</p> <p style="text-align: right;">(20–23)</p>	
<p>9. Based on the results of Experiment 2, one would predict that if the reaction was repeated at 2.2°C, the reaction time would be approximately:</p> <p>A. 8 sec. B. 30 sec. C. 60 sec. *D. 116 sec.</p> <p>Science Process Skills:</p> <p style="text-align: right;">(24–25)</p>	
<p>10. Which of the following conditions was directly changed by the students in Experiment 1 ?</p> <p>F. Total volume of the mixture *G. Concentration of each solution in the mixture H. Temperature of the mixture J. Reaction rate</p> <p>Science Process Skills:</p> <p style="text-align: right;">(20–23)</p>	