

PLAN®

SAMPLE
TEST QUESTIONS
MATCHED TO
PLAN
COLLEGE READINESS
STANDARDS

Contents

This booklet provides a match between the College Readiness Standards and each test question from all four content areas of the Abbreviated Test Booklet for PLAN:

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ACT®

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 practice and use.

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Introduction

This booklet—called Sample Test Questions Matched to PLAN® College Readiness Standards—has been provided to show you how all of the questions in the PLAN Abbreviated Test Booklet are matched to ACT’s College Readiness Standards.

The College Readiness Standards that you see on the left-hand side of each page of this booklet are numbered so that you can find them on the College Readiness Standards table provided. The test questions that appear on the right-hand side of the page can be found, with complete passages for English, Reading, and Science, in the PLAN Abbreviated Test Booklet.

The College Readiness Standards communicate educational expectations. Each Standard describes what students who score in the designated range are *likely* to be able to do with what they know. The College Readiness Standards Information Services provide information for each testing program: EXPLORE®, PLAN, and the ACT. Each basic Information Services report package includes:

- Five reports—one each for English, Mathematics, Reading, and Science, plus a summary profile
- Four content-specific guides, designed for teachers
- An administrator’s guide that includes test descriptions, score interpretation information, a curriculum review activity, and information about college readiness

Customized reports are also available and include separate reporting categories such as gender or ethnicity.

The College Readiness Standards Information Services report packages help answer questions like:

- How can instruction be modified to improve test results?
- What additional steps can be taken to increase learning?
- What are the gaps in your curriculum, if any?

To learn more about the College Readiness Standards Information Services, or to order a report packet, contact:

ACT Educational Services Division—11MS
500 ACT Drive
P.O. Box 168
Iowa City, IA 52243-0168
Phone: 319/337-1040 or e-mail: epas@act.org

PLAN English

Match Between College Readiness Standards and Test Questions

PLAN English College Readiness Standards	PLAN Sample Test Question
<p>Sentence Structure and Formation, 16–19</p> <p>301. Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>	<p><i>According to my grandparents, who were brought up in China, I was terribly old to be learning such a basic skill. “<u>Children</u> in China never eat with forks,” my grandfather said.</i></p> <p>1.*A. NO CHANGE B. skill, “Children C. skill “Children D. skill “children</p>
<p>Topic Development in Terms of Purpose and Focus, 24–27</p> <p>502. Delete material primarily because it disturbs the flow and development of the paragraph</p>	<p><i>“Chinese children learn to eat with chopsticks from the beginning.” 2</i></p> <p>2. The writer is considering adding here the following sentence:</p> <p style="padding-left: 40px;">When he told me this, I was in the second grade.</p> <p style="padding-left: 40px;">Would this be a relevant addition to make?</p> <p>F. Yes, because the sentence makes it clear that the narrator was older than most Chinese children are when they start using chopsticks. G. Yes, because the sentence gives information that is necessary to understanding the paragraph that follows it. *H. No, because the sentence gives information that is similar to what has already been given earlier in the paragraph. J. No, because the sentence should open the next paragraph, not conclude this paragraph.</p>
<p>Organization, Unity, and Coherence, 20–23</p> <p>401. Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first</i>, <i>afterward</i>, <i>in response</i>)</p>	<p><i>In my experience, though, the bamboo sticks were nothing like my fingers.</i></p> <p>3. Three of these choices are acceptable here. Which one is NOT acceptable?</p> <p>A. NO CHANGE B. Yet in my experience, C. However, in my experience, *D. In my experience, therefore,</p>
<p>Word Choice in Terms of Style, Tone, Clarity, and Economy, 24–27</p> <p>503. Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>	<p><i>With a certain amount of clumsiness, I would manage to wedge a piece of food between the long, stiff chopsticks.</i></p> <p>4. Which choice would best emphasize the sense that the writer made a serious attempt to learn how to manipulate the chopsticks?</p> <p>F. NO CHANGE *G. Through arduous concentration, H. An impatient person, J. Being considerate,</p>
<p>Conventions of Usage, 24–27</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><i>Then, as I <u>rose</u> the food to my mouth, the chopsticks would suddenly slip or shift . . .</i></p> <p>5. A. NO CHANGE B. arose C. raise *D. raised</p>

PLAN English College Readiness Standards	PLAN Sample Test Question
<p>Sentence Structure and Formation, 20–23</p> <p>401. Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p>	<p>... <i>beyond <u>control</u> and that my dinner would land on the table with an embarrassing plop.</i></p> <p>6. F. NO CHANGE G. control in which my dinner landed *H. control, and my dinner would land J. control, and landing my dinner</p>
<p>Sentence Structure and Formation, 28–32</p> <p>602. Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p>	<p><i>As I began to try my new skill in Chinese restaurants, I discovered through necessity the different techniques required to manage the many types of chopsticks <u>available</u>. Each type <u>presenting</u> another challenge.</i></p> <p>7. A. NO CHANGE B. available, each type presented *C. available. Each type presented D. available. Each type having presented</p>
<p>Conventions of Punctuation, 28–32</p> <p>602. Deal with multiple punctuation problems (e.g., compound sentences containing unnecessary commas and phrases that may or may not be parenthetical)</p>	<p><i>Bone <u>chopsticks thick, and square, and heavy</u>, were considered appropriate for formal occasions . . .</i></p> <p>8. F. NO CHANGE G. chopsticks thick and square and heavy *H. chopsticks, thick and square and heavy, J. chopsticks, thick square and heavy,</p>
<p>Word Choice in Terms of Style, Tone, Clarity, and Economy, 28–32</p> <p>602. Correct vague and wordy or clumsy and confusing writing containing sophisticated language</p>	<p>... <i>but <u>definitely were</u> especially difficult for my childish hands.</i></p> <p>9. A. NO CHANGE B. it was a fact that they were C. it was *D. were</p>
<p>Sentence Structure and Formation, 20–23</p> <p>401. Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p>	<p><i>When <u>complaining</u> to my grandmother, she said that the most difficult chopsticks of all had . . .</i></p> <p>10. F. NO CHANGE *G. When I complained H. I complained J. Complaining</p>
<p>Conventions of Punctuation, 24–27</p> <p>503. Use apostrophes to indicate simple possessive nouns</p>	<p>... <i>appeared a thousand <u>years ago in the emperors</u> court.</i></p> <p>11. A. NO CHANGE B. year's ago in the emperor's *C. years ago in the emperor's D. years' ago in the emperors'</p>
<p>Conventions of Usage, 16–19</p> <p>301. Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p>	<p><i>Managing the slippery, marble-sized eggs with the gleaming, pointed chopsticks required a sensitivity <u>at</u> that of most normal people.</i></p> <p>12. F. NO CHANGE G. toward H. in *J. beyond</p>



PLAN English College Readiness Standards	PLAN Sample Test Question
<p>Topic Development in Terms of Purpose and Focus, 24–27</p> <p>501. Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p>	<p>13. Suppose the writer had chosen to write a brief essay about a particular experience from childhood that changed the way she viewed her grandparents. Would this essay successfully fulfill the writer’s goal?</p> <ul style="list-style-type: none">A. Yes, because the writer realized that her grandparents wanted her to experience Chinese culture.B. Yes, because the writer suddenly saw that her grandparents were more strict than her parents.C. No, because the essay indicates that the writer was unable to learn what her grandparents were trying to teach her.*D. No, because the essay gives no indication that the relationship between the writer and her grandparents changed in any way.

PLAN Mathematics

Match Between College Readiness Standards and Test Questions

PLAN Mathematics College Readiness Standards	PLAN Sample Test Question
Basic Operations & Applications, 16–19 302. Solve some routine two-step arithmetic problems	1. Ten boxes of books were delivered to the school library. There were 50 books in each box, except for the last box, which contained only 40 books. How many books did the library receive in this delivery? A. 50 B. 450 *C. 490 D. 500 E. 540
Probability, Statistics, & Data Analysis, 13–15 201. Calculate the average of a list of positive whole numbers	2. In a 1-week period in St. Louis, Missouri, the high temperatures recorded each day were 72° , 67° , 77° , 66° , 78° , 65° , and 65° , respectively. What was the average of the daily high temperatures during that period, to the nearest whole degree? F. 60° G. 67° *H. 70° J. 71° K. 75°

**PLAN Mathematics
College Readiness Standards**

Probability, Statistics, & Data Analysis, 16–19

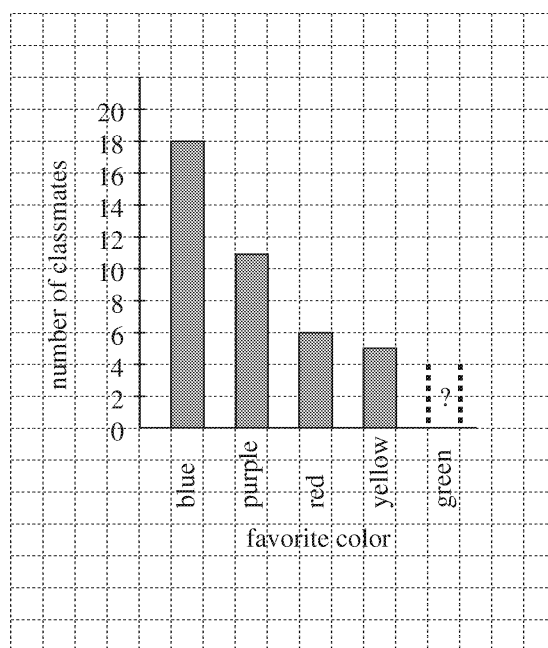
304. Perform computations on data from tables and graphs

**PLAN
Sample Test Question**

3. Robin asked 50 classmates to name their favorite color and gathered the following information.

Favorite color	blue	purple	red	yellow	green
Number of classmates	18	11	6	5	10

Robin decided to display the information in a bar graph on graph paper as shown below. If the bar labeled *blue* is 9 blocks tall, how many blocks tall should the bar labeled *green* be?



- A. $2\frac{1}{2}$
- B. $4\frac{1}{2}$
- *C. 5
- D. $5\frac{1}{2}$
- E. 10

Expressions, Equations, & Inequalities, 20–23

403. Solve routine first-degree equations

4. If $3x + 7 = 28 - 5x$, then $x = ?$

- *F. $\frac{21}{8}$
- G. $\frac{35}{8}$
- H. $\frac{23}{10}$
- J. $-\frac{35}{2}$
- K. $-\frac{35}{8}$



PLAN Mathematics College Readiness Standards	PLAN Sample Test Question
<p>Numbers: Concepts & Properties, 20–23</p> <p>401. Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>	<p>5. What is the next term in the following geometric sequence?</p> $6, -4, \frac{8}{3}, -\frac{16}{9}, \underline{?}$ <p>A. $-\frac{8}{3}$ B. $-\frac{32}{27}$ *C. $\frac{32}{27}$ D. $\frac{8}{3}$ E. $\frac{106}{9}$</p>
<p>Expressions, Equations, & Inequalities, 20–23</p> <p>402. Add and subtract simple algebraic expressions</p>	<p>6. What is the sum of the 2 polynomials in the addition problem below?</p> $\begin{array}{r} 2x^2 + 3x + 5 \\ + x^2 + 6x - 1 \\ \hline \end{array}$ <p>F. $2x^2 + 9x + 4$ G. $3x^2 + 9x - 5$ *H. $3x^2 + 9x + 4$ J. $3x^4 + 9x + 4$ K. $3x^4 + 9x^2 + 4$</p>

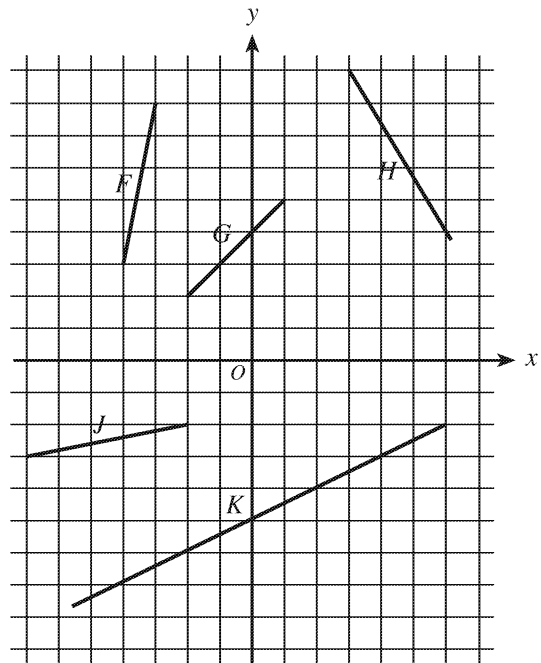
**PLAN Mathematics
College Readiness Standards**

**PLAN
Sample Test Question**

Graphical Representations, 20–23

403. Exhibit knowledge of slope

7. Which of the following line segments in the standard (x,y) coordinate plane has the greatest slope?



- *A. F
- B. G
- C. H
- D. J
- E. K

Numbers: Concepts & Properties, 24–27

502. Order fractions

8. Which of the following lists the fractions $\frac{4}{7}$, $\frac{5}{9}$, and $\frac{2}{3}$ in order from least to greatest?

- F. $\frac{2}{3} < \frac{4}{7} < \frac{5}{9}$
- G. $\frac{4}{7} < \frac{5}{9} < \frac{2}{3}$
- H. $\frac{4}{7} < \frac{2}{3} < \frac{5}{9}$
- J. $\frac{5}{9} < \frac{2}{3} < \frac{4}{7}$
- *K. $\frac{5}{9} < \frac{4}{7} < \frac{2}{3}$

Graphical Representations, 24–27

504. Find the midpoint of a line segment

9. The coordinates of the endpoints of \overline{RS} on the real number line are 4 and 20. Point M is the midpoint of \overline{RS} . What is the coordinate of M ?

- A. 8
- B. 10
- *C. 12
- D. 16
- E. 24

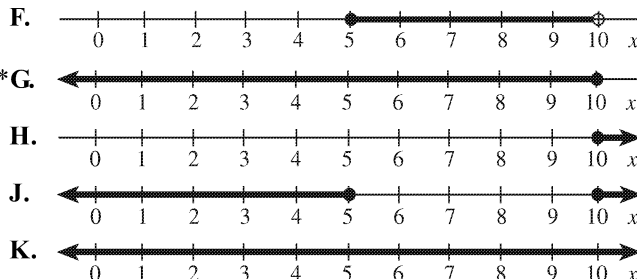
**PLAN Mathematics
College Readiness Standards**

**PLAN
Sample Test Question**

Graphical Representations, 24–27

501. Identify the graph of a linear inequality on the number line

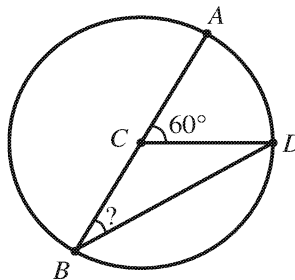
10. Which of the following graphs represents all, and only, the real numbers that satisfy $x - 8 \leq 2$?



Properties of Plane Figures, 24–27

503. Use properties of isosceles triangles

11. In the circle centered at C below, \overline{AB} is a diameter, and D lies on the circle. If the measure of $\angle ACD$ is 60° , what is the measure of $\angle ABD$?

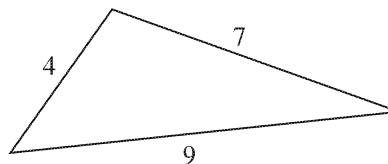


- A. 15°
- *B. 30°
- C. 40°
- D. 45°
- E. 60°

Properties of Plane Figures, 28–32

601. Apply properties of 30° - 60° - 90° , 45° - 45° - 90° , similar, and congruent triangles

12. The lengths of the sides in the triangle below are given in centimeters. If you want to construct a similar triangle with a perimeter of 30 centimeters, how many centimeters long should its *longest* side be?



- F. 20.0
- G. 19.0
- H. 16.5
- J. 14.5
- *K. 13.5

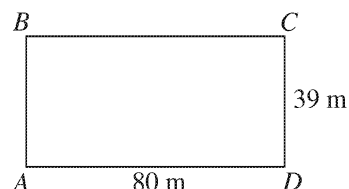
**PLAN Mathematics
College Readiness Standards**

**PLAN
Sample Test Question**

Properties of Plane Figures, 28–32

602. Use the Pythagorean theorem

13. The rectangular field shown below is 39 m wide and 80 m long. Frances and Bonita are at point D . Frances walks to point B by walking along the edge of the field through point C . Bonita gets to point B by walking diagonally across the field. About how many meters more does Frances walk than Bonita?



- A. 119
- B. 89
- C. 41
- D. 39
- *E. 30

Probability, Statistics, & Data Analysis, 28–32

604. Compute a probability when the event and/or sample space are not given or obvious

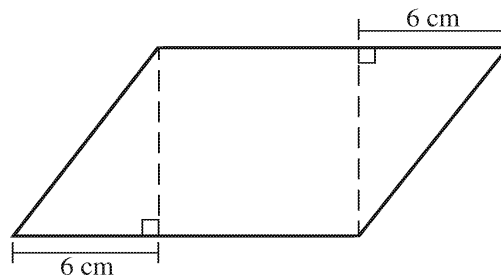
14. One of the numbers in the set $\{2, 3, 4\}$ is chosen at random and raised to the power of a different one of these numbers, also chosen at random. What is the probability that the resulting number will be even?

- F. $\frac{1}{6}$
- G. $\frac{1}{3}$
- H. $\frac{1}{2}$
- J. $\frac{5}{9}$
- *K. $\frac{2}{3}$

Measurement, 28–32

601. Use relationships involving area, perimeter, and volume of geometric figures to compute another measure

15. The figure below shows a parallelogram that is composed of a square and 2 right triangles. The *perimeter* of the square is 32 centimeters, and the lengths of the bases of the triangles are as indicated. What is the *area*, in square centimeters, of the parallelogram?



- *A. 112
- B. 64
- C. 56
- D. 48
- E. Cannot be determined from the given information

PLAN Reading

Match Between College Readiness Standards and Test Questions

PLAN Reading College Readiness Standards	PLAN Sample Test Question
Generalizations and Conclusions, 16–19 301. Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages Supporting Details, 16–19 301. Locate simple details at the sentence and paragraph level in uncomplicated passages	1. It may be reasonably inferred from the passage that Sally Ride received from the media: *A. more attention than her male counterparts. B. less attention than her male counterparts. C. the same attention as her male counterparts. D. no attention until twenty years later.
Sequential, Comparative, and Cause-Effect Relationships, 20–23 402. Identify clear relationships between people, ideas, and so on in uncomplicated passages Supporting Details, 20–23 401. Locate important details in uncomplicated passages	2. The passage states that while Sally Ride is taking a trip into history, her male counterparts are destined for: F. future economic success. G. future space trips. H. news headlines. *J. trivia shows.
Supporting Details, 16–19 302. Recognize a clear function of a part of an uncomplicated passage	3. It may be reasonably inferred that the information in the second paragraph (lines 6–10) is included by the author to illustrate how: A. enlightened the media has become. B. powerful the media has become. *C. society stereotypes women. D. Sally Ride delayed the shuttle launch.
Sequential, Comparative, and Cause-Effect Relationships, 20–23 402. Identify clear relationships between people, ideas, and so on in uncomplicated passages 403. Identify clear cause-effect relationships in uncomplicated passages Supporting Details, 20–23 401. Locate important details in uncomplicated passages	4. The passage indicates that Ride is luckier than many other First Women because: F. she got to travel in space. G. her future was not canceled out. H. the initiation rites were familiar. *J. people were on her side.
Sequential, Comparative, and Cause-Effect Relationships, 20–23 402. Identify clear relationships between people, ideas, and so on in uncomplicated passages Supporting Details, 20–23 401. Locate important details in uncomplicated passages	5. Throughout the passage, being a First Woman is compared to being: *A. in a sorority. B. on a ride into space. C. married to the President. D. in search of heroines.
Generalizations and Conclusions, 20–23 401. Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages Main Ideas and Author’s Approach, 20–23 402. Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages	6. The words used to describe Valentina Tereshkova in the first paragraph are presented by the author as examples of language that: F. describes the skills and abilities of women. G. respects the superiority of female attributes. H. claims equality for women in the workplace. *J. devalues the role of an accomplished person.



PLAN Reading College Readiness Standards	PLAN Sample Test Question
Meanings of Words, 28–32 601. Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts	7. As it is used in line 15, the phrase <i>to wit</i> most nearly means: A. stereotypically. B. nevertheless. *C. that is. D. therefore.
Main Ideas and Author’s Approach, 28–32 602. Summarize events and ideas in virtually any passage	8. Which of the following statements best summarizes the main point of the passage? F. Society has made marked progress in sex-role stereotyping. G. Male-dominated fields should make an effort to recruit more women. H. Women should attempt to expand professionally into more fields. *J. Women who pioneer in male-dominated fields carry an unusual burden.

PLAN Science

Match Between College Readiness Standards and Test Questions

PLAN Science College Readiness Standards	PLAN Sample Test Question
Scientific Investigation, 28–32 601. Determine the hypothesis for an experiment	1. To produce the data given in Figure 2, different amounts of water were used, most likely to show that the temperature change: A. for water depended on the rate of evaporation. *B. for water depended on the mass of water used. C. of 1 g of water depended on water’s rate of heat absorption. D. of 1 g of water depended on time.
Interpretation of Data, 20–23 401. Select data from a complex data presentation (e.g., a table or graph with more than three variables; a phase diagram)	2. According to Table 1, how much benzene was being heated? F. 6.9 g G. 10 g *H. 50 g J. 60 g
Interpretation of Data, 16–19 303. Find basic information in a brief body of text	3. For both sets of observations graphed in Figure 2, water absorbed heat at a rate of: A. 10 W. B. 50 W. *C. 60 W. D. 100 W.
Interpretation of Data, 24–27 502. Compare or combine data from a complex data presentation	4. According to the data in Table 1, which of the following lists ranks the 4 liquids in order of <i>decreasing</i> temperature change? F. Benzene, ethylene glycol, methanol, mercury G. Ethylene glycol, benzene, mercury, methanol H. Methanol, ethylene glycol, benzene, mercury *J. Mercury, benzene, ethylene glycol, methanol
Interpretation of Data, 28–32 603. Extrapolate from data points in a table or graph	5. According to the data in Figure 1, if 25 g of water were heated at a rate of 60 W for 10 sec, the temperature change of the water would be closest to which of the following values? A. 0.7°C B. 1.5°C C. 2.2°C *D. 5.7°C
Evaluation of Models, Inferences, and Experimental Results, 28–32 601. Select a complex hypothesis, prediction, or conclusion that is supported by a data presentation or model	6. Based on the data in Figure 2 for water at a given heating rate, the largest temperature change will be obtained when which of the following amounts of water is heated for how long? F. 100 g of water for 100 sec *G. 100 g of water for 1,000 sec H. 1,000 g of water for 100 sec J. 1,000 g of water for 1,000 sec
Scientific Investigation, 20–23 403. Identify a control in an experiment	7. Which of the plots served as the control in Experiment 2 ? A. Plot 7 B. Plot 8 C. Plot 9 *D. Plot 10

<p align="center">PLAN Science College Readiness Standards</p>	<p align="center">PLAN Sample Test Question</p>
<p>Scientific Investigation, 20–23 404. Identify similarities and differences between experiments</p>	<p>8. In which of the following ways were the procedures of Experiments 1 and 2 different?</p> <ul style="list-style-type: none"> F. Herbicide concentrations G. Size of the plots H. Plant species tested *J. Timing of herbicide application
<p>Evaluation of Models, Inferences, and Experimental Results, 20–23 401. Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>	<p>9. Based on the results of Experiment 1, one can conclude that Herbicide A has no effect on which of the following crop species after pre-emergence application?</p> <ul style="list-style-type: none"> A. Cucumber B. Oats *C. Tomato D. Wheat
<p>Scientific Investigation, 20–23 402. Understand a simple experimental design</p>	<p>10. The study plots used in the experiments were as identical as possible in order to ensure that the:</p> <ul style="list-style-type: none"> *F. environmental conditions in each of the plots was about the same. G. herbicides could be applied at the appropriate time during the growing season. H. crop and weed species would respond to the herbicides. J. number of plants which emerged could be counted.