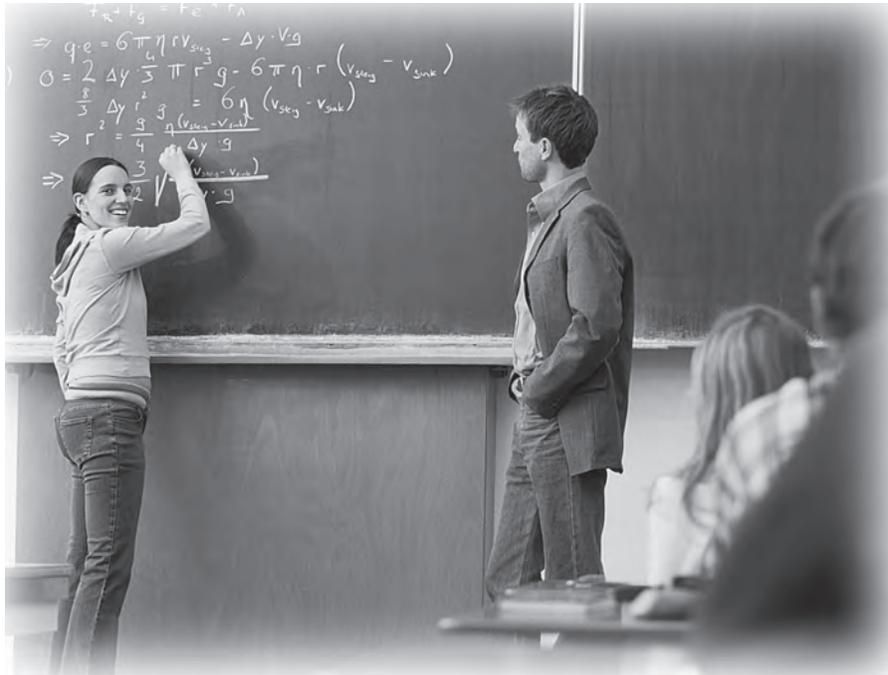


Oklahoma School Testing Program

Oklahoma Core Curriculum Tests (OCCT)

End-of-Instruction ACE Algebra II

PARENT, STUDENT, AND TEACHER GUIDE



2012–2013

Oklahoma State Department of Education

2704122

**Testing Dates
2012–2013 School Year**

Winter Testing

December 3–December 21, 2012
(Online extended through January 11, 2013)

Trimester Testing

January 21–February 8, 2013
(Online extended through February 15, 2013)

Spring Testing

April 15–May 3, 2013
(Online extended through May 10, 2013)

Summer Testing

June 3–August 2, 2013



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**STATE SUPERINTENDENT OF PUBLIC INSTRUCTION
STATE OF OKLAHOMA**

Dear Parent/Guardian and Student::

Soon students will be participating in the ACE Algebra II End-of-Instruction Oklahoma Core Curriculum Test. This test is designed to measure knowledge of Algebra II competencies contained in the Oklahoma C³ Standards, the basis of Oklahoma's core curriculum.

You will receive a report about your child's performance on the test. If your student does not attain at least a proficient score on this test, retake opportunities will be available.

This guide provides practice questions, objectives covered in the test, and a list of test-taking tips. Discuss these materials with your child ahead of time to encourage test preparedness. During the test week, it is very important for students to get plenty of sleep, eat a good breakfast, and arrive at school on time.

If you have any questions about the ACE Algebra II End-of-Instruction Test, please contact your local school or the State Department of Education.

Sincerely,
Your State Superintendent of Public Instruction

**OKLAHOMA STATE DEPARTMENT OF EDUCATION
2500 NORTH LINCOLN BOULEVARD, OKLAHOMA CITY, OK 73105-4599
(405) 521-3301, FAX: (405) 521-6205
www.sde.ok.gov**

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The Oklahoma Core Curriculum Tests

The Governor, state legislators, and other Oklahoma elected officials have committed themselves to ensuring that all Oklahoma students receive the opportunity to learn the skills required to succeed in school and in the workplace. To achieve this goal, schools must prepare every Oklahoma student for colleges, universities, and careers that require new and different skills.

Under the direction of the Legislature, Oklahoma teachers, parents, and community leaders met to agree upon the skills that students are expected to master by the end of each grade. The results of their efforts, Oklahoma C³ Standards, provide the basis for Oklahoma's core curriculum.

In addition, the Legislature established the criterion-referenced test component of the Oklahoma School Testing Program to measure students' progress in mastering the Oklahoma C³ Standards objectives. Tests have been developed by national test publishers that specifically measure the Oklahoma C³ Standards objectives at the end-of-instruction levels. Teachers from throughout Oklahoma have been involved in the review, revision, and approval of the questions that are included in the tests.

In contrast to a norm-referenced testing program, the Oklahoma Core Curriculum Tests compare student performance with performance standards established by the State Board of Education. The performance standards are based upon recommendations from groups of Oklahoma educators who evaluated the test and recommended the performance standards for the different levels of performance for each test. The Oklahoma Performance Index, or OPI, is a scaled score earned by a student that places the student into one of the four performance levels (Advanced, Proficient, Limited Knowledge, Unsatisfactory).

The state statute reads as follows: "Each student who completes the instruction for English II, English III, United States History, Biology I, Algebra I, Geometry, and Algebra II at the secondary level shall complete an end-of-instruction test, to measure for attainment in the appropriate state academic content standards in order to graduate from a public high school with a standard diploma."

All students shall take the tests prior to graduation, unless otherwise exempt by law.

Beginning with students entering the ninth grade in the 2008–2009 school year, every student shall demonstrate mastery of the state academic content standards in the following subject areas in order to graduate from a public high school with a standard diploma: Algebra I, English II, and two of the following five: Algebra II, Biology I, English III, Geometry, and United States History.

To demonstrate mastery, the student shall attain at least a proficient score on the end-of-instruction criteria. Students who do not attain at least a proficient score on any end-of-instruction test shall be provided remediation and the opportunity to retake the test up to three times each calendar year or will be allowed to substitute approved alternate tests in order to meet this requirement. School districts shall report the student's performance levels on the end-of-instruction tests on the student's high school transcript.

This guide provides an opportunity for parents, students, and teachers to become familiar with this test. It presents general test-taking tips, lists the Oklahoma C³ Standards objectives that could be assessed in a statewide testing program, and provides practice multiple-choice questions.

Test-Taking Tips

The following tips provide effective strategies for taking the Oklahoma Core Curriculum Tests. Test-taking skills cannot replace study based on the Oklahoma C³ Standards objectives, which serve as the foundation for the tests. **To access a practice test, go to www.ctb.com/ok and click on the Experience Online Testing (Student) button.**

General Test-Taking Tips

- DO . . .** read this guide carefully and complete the practice test.
- DO . . .** make sure you understand all test directions. If you are uncertain about any of the directions, raise your hand to ask questions before testing has started.
- DO . . .** make notes or work problems on your scratch paper if needed.
- DO . . .** read each question and every answer choice carefully. Choose the best answer for each question.
- DO . . .** be sure that you have seen all four answer choices before making your selection. On an online test, this may require you to use the scroll bar on the right side of the test question.
- DO . . .** check your work if you finish a test session early. Use the extra time to answer any questions that you skipped in that section.
- DO . . .** remember that if you cannot finish the test within the time allotted, you will be given additional time to complete the test.

- DON'T . . .** wait until the last minute to study for the test. The test covers a lot of material, and you cannot learn it all in a short amount of time.
- DON'T . . .** worry about the test. Students who are calm and sure of themselves do better on tests.
- DON'T . . .** spend too much time on any one question. If a question takes too long to answer, skip it and answer the other questions. You can return to any questions you skipped after you have finished all other questions in the section.
- DON'T . . .** attempt to leave the online testing system by clicking the Stop Test tab. Doing so will result in ending that section of the test.

The ACE Algebra II Test

This online multiple-choice test is administered in two sections, each approximately 60 minutes in length, with up to an additional 20 minutes for testing directions. The test is not strictly timed. Testing sessions for students who need more time can be extended. However, some studies have shown that more than one hour of additional time can contribute to a decrease in student scores. This additional time is available as an immediate extension of the testing session; it is not available as a separate session at another time.

Students who finish a test section early should make sure their work is complete and are encouraged to check and verify their answers within that section prior to closing their test booklets or saving and exiting an online test. Once a test section has been completed, students will not be allowed to return to that section.

Calculators may be used on the ACE Algebra II End-of-Instruction Assessment.

Subject-specific Requirements

- ACE Algebra I, ACE Geometry, and ACE Biology I:
 - Scientific Calculators meeting general requirements may be used on all/specified sections.
- ACE Algebra II:
 - Graphing Calculators meeting general requirements may be used on all/specified sections.

General Requirements

- Calculators are permitted but are not required.
- Calculator capabilities described for a specific subject give the *maximum* capabilities allowed; calculators with less capability are acceptable.
- Students may not share calculators.
- Students may use their own calculators or those provided by the school.
- Calculators that make noise must have the sound feature turned off.
- Calculators that have paper tape must have the tape removed.
- Calculators with power cords must have the cord removed.
- All calculators must have the memory cleared before and after the test session.
- Any programs or applications must be removed prior to the test session.

Prohibited Calculators

- Pocket organizers
- Handheld or laptop computers
- Electronic writing pads or pen-input devices
- Calculators built into cellular phones or other electronic communication devices
- Calculators with a typewriter keypad (QWERTY format)
- **Calculators with programs or applications that cannot be removed or disabled (e.g., Polynomial Root-Finder and Simultaneous Equation Solver on TI-86)**
- Calculators with built-in computer algebra systems, such as, but not limited to:
 - Casio: Algebra fx 2.0, ClassPad 300, and all model numbers that begin with CFX-9970G
 - Texas Instruments: All model numbers that begin with TI-89, TI-92, or TI-Inspire
 - Hewlett-Packard: HP-48GII and all model numbers that begin with HP-40G or HP-49G

Test Security and Validity

- Using a calculator that does not meet the above requirements invalidates the test results and is a violation of test security and test validity. Any violation will be reported to the State Superintendent and may result in revocation of teaching and/or administrative certificates.

The following sections of this guide:

- list the Oklahoma C³ Standards that are covered on the ACE Algebra II End-of-Instruction test.
 - reproduce the student directions.
 - present practice test questions.
-

Oklahoma C³ Standards (2009 Revision)

The Oklahoma C³ Standards measured in the End-of-Instruction ACE Algebra II multiple-choice test are presented below. They represent Oklahoma Core Curriculum that is applicable to Algebra II course study and that can be assessed in a statewide testing program. The Oklahoma C³ Standards for Algebra II are grouped into standards with specific objectives listed under each one. Student performance on the multiple-choice test will be reported at the standard and objective levels.

End-of-Instruction ACE Algebra II

Standard 1: Number Systems and Algebraic Operations – The student will perform operations with rational, radical, and polynomial expressions, as well as expressions involving complex numbers.

1. Rational Exponents
 - a. Convert expressions from radical notations to rational exponents and vice versa.
 - b. Add, subtract, multiply, divide, and simplify radical expressions and expressions containing rational exponents.
2. Polynomial and Rational Expressions
 - a. Divide polynomial expressions by lower degree polynomials.
 - b. Add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.
3. Complex Numbers
 - b. Add, subtract, multiply, divide, and simplify expressions involving complex numbers.

Standard 2: Relations and Functions – The student will use the relationships among the solution of an equation, zero of a function, x-intercepts of a graph, and factors of a polynomial expression to solve problems involving relations and functions.

1. Functions and Function Notation
 - a. Recognize the parent graphs of polynomial, exponential, radical, quadratic, and logarithmic functions and predict the effects of transformations on the parent graphs, using various methods and tools which may include graphing calculators.
 - b. Add, subtract, multiply, and divide functions using function notation.
 - c. Combine functions by composition.
 - d. Use algebraic, interval, and set up notations to specify the domain and range of functions of various types.
 - e. Find and graph the inverse of a function, if it exists.
2. Systems of Equations
 - a. Model a situation that can be described by a system of equations or inequalities and use the model to answer questions about the situation.
 - b. Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.

3. Quadratic Equations and Functions
 - a. Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.
 - b. Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.
 - c. Model a situation that can be described by a quadratic function and use the model to answer questions about the situation.
4. Identify, graph, and write the equations of the conic sections (circle, ellipse, parabola, and hyperbola).
5. Exponential and Logarithmic Functions
 - a. Graph exponential and logarithmic functions.
 - b. Apply the inverse relationship between exponential and logarithmic functions to convert from one form to another.
 - c. Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.
6. Polynomial Equations and Functions
 - a. Solve polynomial equations using various methods and tools which may include factoring and synthetic division.
 - b. Sketch the graph of a polynomial function.
 - c. Given the graph of a polynomial function, identify the x- and y-intercepts, relative maximums and relative minimums, using various methods and tools which may include a graphing calculator.
 - d. Model a situation that can be described by a polynomial function and use the model to answer questions about the situation.
7. Rational Equations and Functions
 - a. Solve rational equations.
 - b. Sketch the graph of a rational function.
 - c. Given the graph of a rational function, identify the x- and y-intercepts and the vertical asymptotes, using various methods and tools which may include a graphing calculator.
 - d. Model a situation that can be described by a rational function and use the model to answer questions about the situation.

Standard 3: Data Analysis and Statistics – The student will use data analysis and statistics to formulate and justify predictions from a set of data.

1. Analysis of Collected Data Involving Two Variables
 - a. Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.
 - b. Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.
3. Identify and use arithmetic and geometric sequences and series to solve problems.

Oklahoma School Testing Program

Oklahoma Core Curriculum Tests

ACE Algebra II

Test Blueprint for School Year 2012–2013

The Test Blueprint reflects the degree to which each standard and objective is represented on the test. The overall distribution of operational items in a test form is intended to look as follows:

C ³ Standards and Objectives		Ideal Number of Items	Ideal Percentage of Test
Number Sense and Algebraic Operations (1.0)		15	27%
1.1	Rational Exponents	5–6	
1.2	Polynomial and Rational Expressions	5–6	
1.3	Complex Numbers	4	
Relations and Functions (2.0)		31	56%
2.1	Functions and Function Notation	5	
2.2	System of Equations	5	
2.3	Quadratic Equations and Functions	5	
2.4	Conic Sections	4	
2.5	Exponential and Logarithmic Functions	4	
2.6	Polynomial Equations and Functions	4	
2.7	Rational Equations and Functions	4	
Data Analysis, Probability, and Statistics (3.0)		9	16%
3.1	Analysis of Collected Data	5	
3.3	Arithmetic and Geometric Sequences	4	
Total Test		55	100%

- A minimum of four items is required to report results for an objective, and six items are required to report for a standard.
- Percents are approximations and may result in a sum other than 100 due to rounding.
- Second column represents the goal for aligning the OCCT to the C³ standards and objectives.
- The Oklahoma C³ Algebra I standards correspond to the *PASS* Algebra I standards. In 2014–2015 the Common Core State Standards will be assessed.

ACE Algebra II Practice Test

Note for students:

The practice test in the following section is a shortened version of a test similar to the End-of-Instruction ACE Algebra II test you will take.

Follow the instructions below as you take the practice test.

Practice Test Directions

1. Mark your answers to the practice test questions on the inside back cover of this guide.
2. Look at the ACE Algebra II Practice Test on the next page. Read the directions at the top of the page.
3. Look at Sample A in the box. Read it to yourself and think of the answer. Then look at the answer document. The correct answer to Sample A has been filled in. This shows you how to mark your answers.
4. Read Sample B of the ACE Algebra II Practice Test. Mark your answer to Sample B. Then answer the remaining practice questions. Fill in the circle for each answer completely, as shown in the sample. You may underline, mark, make notes, or work out problems in your test booklet. However, make sure you mark your answers on your answer document.
5. When you are finished, check your answers against the answer key printed on page 17 of this guide. The standard, objective, and skill for each question are also shown.

Section 1

Directions

Read each question and choose the best answer. Find the question number on the answer document that matches the question number in the ACE Algebra II Practice Test. Then mark your answer on the answer document.

The correct answer for Sample A has been filled in on the answer document to show you how to mark your answers. Mark your answer for Sample B.

Sample A

$$f(x) = x^3 - 3x^2 - 4x + 12$$

Which of these is a root of $f(x)$?

- A -3
- B 3
- C 4
- D 12

Sample B

Which is equivalent to $49^{\frac{3}{2}}$?

- F 21
- G 98
- H 294
- J 343

Section 1

1 Profits (P) are equal to sales (S) minus expenses (E). If expenses are equal to travel (T) plus materials (M) which system of equations models this situation?

A $P = S - E$
 $E = T + M$

B $P = S + E$
 $E = T + M$

C $P = S - E$
 $E = T - M$

D $P = S + E$
 $E = T - M$

2

$$(2\sqrt{5} + 3)(\sqrt{5} - 1)$$

What is the simplified form of this expression?

F $\sqrt{5} - 3$

G $\sqrt{5} + 7$

H $2\sqrt{5} - 3$

J $2\sqrt{5} + 7$

3

$$\frac{4x^2y}{8xy^2} \div \frac{12xy^2}{8x^6y^3}$$

Which expression represents the quotient?

A $\frac{x^5}{3}$

B $\frac{3}{x^5}$

C $\frac{x^6}{3}$

D $\frac{3}{x^6}$

4 A landscape designer has to construct a rectangular flower bed with a perimeter of 100 feet and the maximum possible area. What is the area of the flower bed?

F 25 sq. ft

G 100 sq. ft

H 625 sq. ft

J 2,500 sq. ft

Section 1

5

Arithmetic Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 + (n - 1)d$$

$$\text{Sum: } s_n = \frac{n}{2}(a_1 + a_n)$$

Geometric Sequences & Series

$$n^{\text{th}} \text{ term: } a_n = a_1 r^{(n - 1)}$$

$$\text{Sum: } s_n = \frac{a_1(1 - r^n)}{(1 - r)}$$

Which formula could be used to find the sum of an arithmetic series if the last term is unknown?

A $s_n = \frac{n}{2}(2a_1 + (n - 1)d)$

B $s_n = \frac{n}{2}(2a_1 + (n + 1)d)$

C $s_n = n(2a_1 + (n - 1)d)$

D $s_n = n(2a_1 + (n + 1)d)$

6

$$f(x) = 2x + 7$$

$$g(x) = 3x^2 - 1$$

Which expression represents $f(g(x))$?

F $6x^2 + 5$

G $6x^2 + 12$

H $3x^2 - 2x - 8$

J $3x^2 + 2x + 6$

7

$$2 - x - \frac{1}{3 - x}$$

What is the simplified form of this expression?

A $\frac{1}{3 - 2x}$

B $\frac{x^2 - x + 3}{3 - x}$

C $\frac{x^2 - 5x + 5}{3 - x}$

D $\frac{x^2 - 5x + 7}{3 - x}$

Section 1

8 What is the equation of a circle with center $(-4, 2)$ and diameter 6?

F $(x - 4)^2 + (y + 2)^2 = 6$

G $(x + 4)^2 + (y - 2)^2 = 6$

H $(x - 4)^2 + (y + 2)^2 = 9$

J $(x + 4)^2 + (y - 2)^2 = 9$

9

$$f(x) = \frac{x^2 - 9}{16 - x^2}$$

What are the vertical asymptotes of this function?

A $x = \pm 3$

B $x = \pm 4$

C $y = \pm 3$

D $y = \pm 4$

10 Which function has the fewest domain restrictions for real numbers?

F $f(x) = \frac{1}{x - 1}$

G $f(x) = \frac{1}{x + 1}$

H $f(x) = \frac{1}{x^2 - 1}$

J $f(x) = \frac{1}{x^2 + 1}$

11 Which equation represents the solution for x in the formula $6^x = 21$?

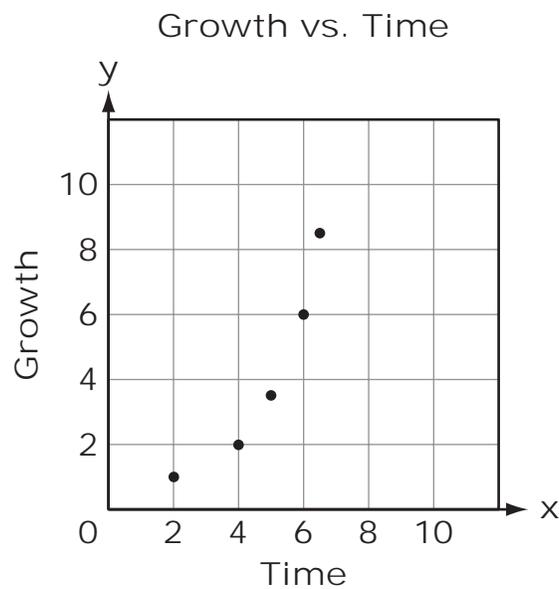
A $x = \frac{\log 6}{\log 21}$

B $x = \frac{\log 21}{\log 6}$

C $x = \log 21 - \log 6$

D $x = \log 21 + \log 6$

12



Which type of function best models the data in the scatter plot?

F exponential

G linear

H logarithmic

J quadratic

Section 1

13 What are the solutions of $x^2 + 5x - 3 = 0$?

If $ax^2 + bx + c = 0$ and $a \neq 0$, then

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- A $\frac{-5 + \sqrt{13}}{2}$ and $\frac{-5 - \sqrt{13}}{2}$
- B $\frac{-5 + \sqrt{37}}{2}$ and $\frac{-5 - \sqrt{37}}{2}$
- C $\frac{5 + \sqrt{13}}{2}$ and $\frac{5 - \sqrt{13}}{2}$
- D $\frac{5 + \sqrt{37}}{2}$ and $\frac{5 - \sqrt{37}}{2}$

14 What is the completely simplified equivalent of $\frac{2}{5+i}$?

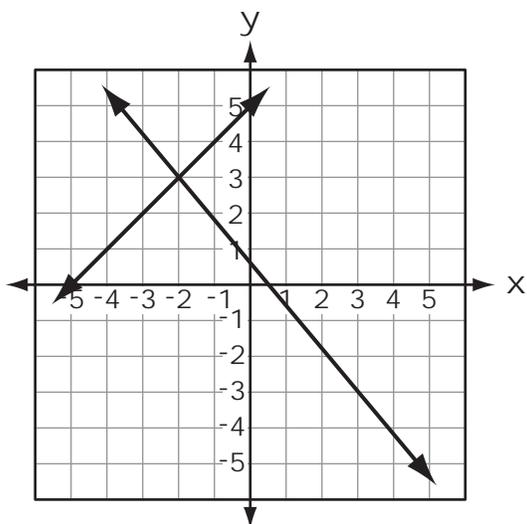
- F $\frac{5-i}{12}$
- G $\frac{5+i}{12}$
- H $\frac{5-i}{13}$
- J $\frac{5+i}{13}$

15

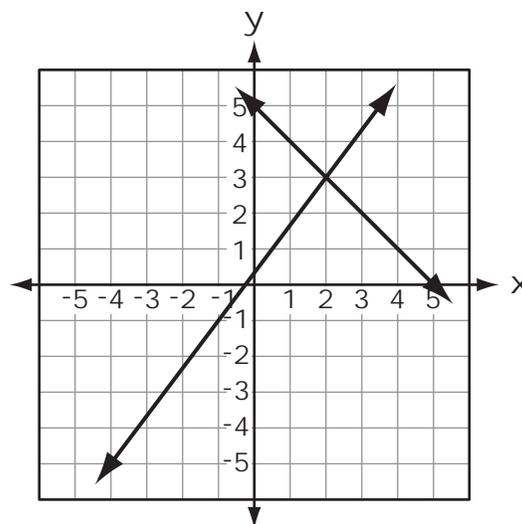
$$\begin{cases} x + y + 5 = 0 \\ x - y - 1 = 0 \end{cases}$$

Which graph shows the solution to this system of equations?

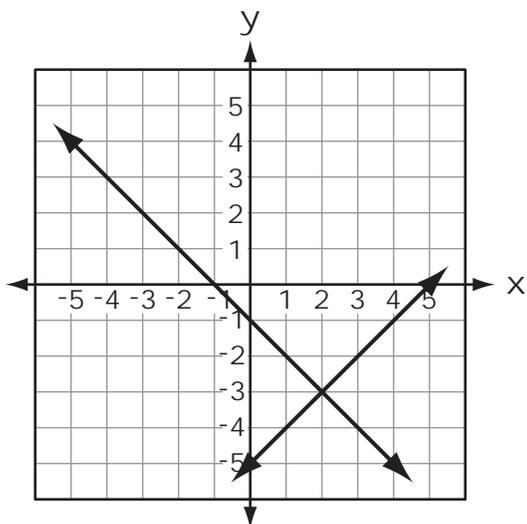
A



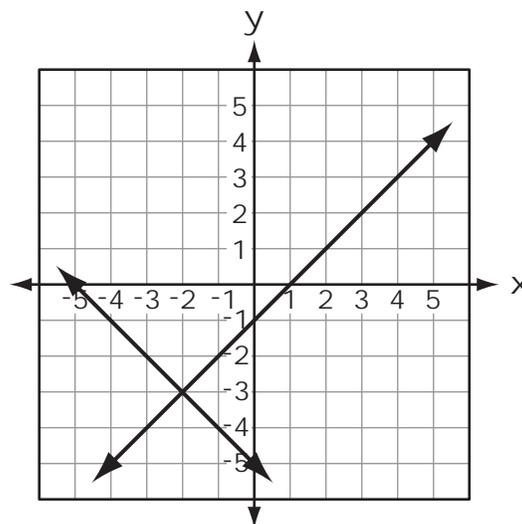
B



C



D



Answer Key

ACE Algebra II				
Item Number	Correct Answer	Standard (pp. 4 and 5)	Objective	Skill
Sample A	B	2	6	a
Sample B	J	1	1	a
1	A	2	2	a
2	G	1	1	b
3	C	1	2	b
4	H	2	6	d
5	A	3	3	-
6	F	2	1	c
7	C	1	2	b
8	J	2	4	-
9	B	2	7	c
10	J	2	1	d
11	B	2	5	b
12	F	3	1	b
13	B	2	3	a
14	H	1	3	b
15	D	2	2	b

ACE Algebra II

SAMPLES

A	(A)	(●)	(C)	(D)
B	(F)	(G)	(H)	(J)

Section 1

1 (A)(B)(C)(D)	11 (A)(B)(C)(D)	21 (A)(B)(C)(D)	31 (A)(B)(C)(D)
2 (F)(G)(H)(J)	12 (F)(G)(H)(J)	22 (F)(G)(H)(J)	32 (F)(G)(H)(J)
3 (A)(B)(C)(D)	13 (A)(B)(C)(D)	23 (A)(B)(C)(D)	33 (A)(B)(C)(D)
4 (F)(G)(H)(J)	14 (F)(G)(H)(J)	24 (F)(G)(H)(J)	34 (F)(G)(H)(J)
5 (A)(B)(C)(D)	15 (A)(B)(C)(D)	25 (A)(B)(C)(D)	35 (A)(B)(C)(D)
6 (F)(G)(H)(J)	16 (F)(G)(H)(J)	26 (F)(G)(H)(J)	36 (F)(G)(H)(J)
7 (A)(B)(C)(D)	17 (A)(B)(C)(D)	27 (A)(B)(C)(D)	37 (A)(B)(C)(D)
8 (F)(G)(H)(J)	18 (F)(G)(H)(J)	28 (F)(G)(H)(J)	
9 (A)(B)(C)(D)	19 (A)(B)(C)(D)	29 (A)(B)(C)(D)	
10 (F)(G)(H)(J)	20 (F)(G)(H)(J)	30 (F)(G)(H)(J)	

STOP

**Do not go on to Section 2
until you are instructed to do so.**

Section 2

38 (F)(G)(H)(J)	48 (F)(G)(H)(J)	58 (F)(G)(H)(J)	68 (F)(G)(H)(J)
39 (A)(B)(C)(D)	49 (A)(B)(C)(D)	59 (A)(B)(C)(D)	69 (A)(B)(C)(D)
40 (F)(G)(H)(J)	50 (F)(G)(H)(J)	60 (F)(G)(H)(J)	70 (F)(G)(H)(J)
41 (A)(B)(C)(D)	51 (A)(B)(C)(D)	61 (A)(B)(C)(D)	71 (A)(B)(C)(D)
42 (F)(G)(H)(J)	52 (F)(G)(H)(J)	62 (F)(G)(H)(J)	72 (F)(G)(H)(J)
43 (A)(B)(C)(D)	53 (A)(B)(C)(D)	63 (A)(B)(C)(D)	73 (A)(B)(C)(D)
44 (F)(G)(H)(J)	54 (F)(G)(H)(J)	64 (F)(G)(H)(J)	74 (F)(G)(H)(J)
45 (A)(B)(C)(D)	55 (A)(B)(C)(D)	65 (A)(B)(C)(D)	75 (A)(B)(C)(D)
46 (F)(G)(H)(J)	56 (F)(G)(H)(J)	66 (F)(G)(H)(J)	
47 (A)(B)(C)(D)	57 (A)(B)(C)(D)	67 (A)(B)(C)(D)	

