

# ALG 1A

## Final Exam Review

### About the Final Exam

The final exam is comprehensive. It will assess your ability to demonstrate knowledge of the course learning objectives. The objectives are listed below. If you read the objective and feel unsure about the concepts and skills described, review the assignments and learning activities for that lesson.

Your final examination will be **online**.

The final exam will consist of 33 multiple choice questions. You will have three hours to complete the exam. You will need to print and bring a clean copy of the formula chart that is located in the Resources section of the course.

The final lesson for ALG 1A is a review for the final exam. You may want to refer to it frequently throughout the course as a way to periodically review for the final. You may also want to study the Chapter Tests and Standards Assessments.

You may bring pencils, a graphing calculator, and clean scratch paper to the testing room for the final exam. All scratch paper should be turned in when you complete the exam. **Remember, the final exam must be proctored.** You may take breaks during the course of the 3 hours, but you will not be able to leave the testing area.

### What to Bring

- several sharpened No. 2 pencils
- graphing calculator
- blank scratch paper

### Review Materials

- Texas Essential Knowledge and Skills
- Each lesson's graded assignments
- Each lesson's learning activities
- Review Tips (below)

## Review Tips

No lesson assignment will be weighted more than the others; therefore, you should spend the same amount of time studying each lesson assignment. Use the following resources as you study:

- your notes;
- your returned lessons;
- problems from each lesson section, especially from sections where you had trouble understanding the work. Work these problems until you are comfortable with the process;
- examples given in the textbook at the beginning of each section, especially in those sections where you had trouble understanding the work; and
- Chapter Review and Chapter Test sections at the end of each chapter in the textbook. Some of the problems on the final will look very similar to the Chapter Review and Chapter Test sections.

You do not need to memorize the formulas provided on the formula sheet (in the **Resources** section of this course). Just make sure that you understand how to use them. Not all formulas will be used, so do not panic if you have finished all of the questions and you have not used every formula.

## Course Objectives

The student will be able to do the following:

### Lesson 1

1. solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides;
2. rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property; and
3. solve mathematic and scientific formulas, and other literal equations, for a specified variable.

### Lesson 2

1. solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides.

### Lesson 3

2. determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities;
3. write and solve equations involving direct variation;
4. determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including  $y = mx + b$ ,  $Ax + By = C$ , and  $y - y_1 = m(x - x_1)$ ;
5. calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems;
6. graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems;
7. determine the effects on the graph of the parent function  $f(x) = x$  when  $f(x)$  is replaced by  $af(x)$ ,  $f(x) + d$ ,  $f(x - c)$ ,  $f(bx)$  for specific values of  $a$ ,  $b$ ,  $c$ , and  $d$ ;
8. decide whether relations represented verbally, tabularly, graphically, and symbolically define a function; and
9. evaluate functions, expressed in function notation, given one or more elements in their domains.

### Lesson 4

1. write linear equations in two variables in various forms, including  $y = mx + b$ ,  $Ax + By = C$ , and  $y - y_1 = m(x - x_1)$ , given one point and the slope and given two points;
2. write linear equations in two variables given a table of values, a graph, and a verbal description;
3. write the equation of a line that contains a given point and is parallel to a given line;
4. write the equation of a line that contains a given point and is perpendicular to a given line;
5. write an equation of a line that is parallel or perpendicular to the X or Y axis and determine whether the slope of the line is zero or undefined;
6. determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including  $y = mx + b$ ,  $Ax + By = C$ , and  $y - y_1 = m(x - x_1)$ ;
7. calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association;
8. compare and contrast association and causation in real-world problems;

9. write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems; and
10. write a formula for the  $n^{\text{th}}$  term of arithmetic and geometric sequences, given the value of several of their terms.

## **Lesson 5**

1. estimate graphically the solutions to systems of two linear equations with two variables in real-world problems;
2. write linear inequalities in two variables given a table of values, a graph, and a verbal description;
3. graph the solution set of linear inequalities in two variables on the coordinate plane;
4. graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist;
5. estimate graphically the solutions to systems of two linear equations with two variables in real-world problems;
6. graph the solution set of systems of two linear inequalities in two variables on the coordinate plane;
7. solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides; and
8. estimate graphically the solutions to systems of two linear equations with two variables in real-world problems.