



# What Your Child Will Learn in Algebra I

A State-Assessed Course

2014-2015



**Howard  
County**

Includes *What Can You do to Help?*

## COMMON CORE STANDARDS

The Common Core State Standards Initiative is a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). The standards were developed in collaboration with teachers, school administrators, and experts to provide a clear and consistent framework to prepare our children for college and the workforce.

These standards define the knowledge and skills students should have within their K-12 education experience so that they will graduate from high school able to succeed in entry-level, credit-bearing academic college courses and in workforce training programs. The standards are informed by the highest, most effective models from states across the country and countries around the world. They provide teachers and parents with a common understanding of what students are expected to learn and provide appropriate benchmarks for all students, regardless of where they live.

Source: [www.corestandards.org/about-the-standards](http://www.corestandards.org/about-the-standards)

## MARYLAND'S COLLEGE AND CAREER-READY STANDARDS

Following the adoption of the Common Core Standards, the Maryland Department of Education launched a broad-based, year-long process to analyze the new standards and compare the alignment of the PK-12 State Curriculum to the Common Core State Standards. As a result, the Maryland Department of Education developed the Maryland Common Core Curriculum Frameworks. These Frameworks in English/Language Arts and Mathematics define the essential skills and knowledge that students need to know and be able to do in order to achieve the academic goals of the Common Core State Standards. The Frameworks are the foundation of Maryland's curriculum and have guided the development of curriculum resources. Maryland's College and Career-Ready Standards are based on the Common Core State Standards.

Maryland's Standards:

- Are evidence-based.
- Are aligned with college and work expectations.
- Are clear, understandable, and consistent.
- Include rigorous content and application of knowledge through high-order skills.
- Build upon strengths and lessons of current state standards.
- Are informed by other top performing countries, so that all students are prepared to succeed in our global economy and society.

# Family Guide and the Maryland High School Assessments



## Maryland High School Assessments

The assessed courses are Algebra I, English 10, Biology, and American Government. Students must pass the assessments in these courses to earn a Maryland high school diploma. The assessments ensure that graduates have mastered the basic skills they need to succeed after high school. The English 10 and Algebra I assessments measure student achievement of Maryland's College and Career-Ready Standards. The administration of High School Assessments in Government and Biology will continue. The skills and knowledge necessary to demonstrate understanding of each course's content are embedded in the Howard County Public School System (HCPSS) curriculum. The four courses associated with the assessments are typically taken during freshman and sophomore years.

The American Government assessment was suspended in 2011, but was restored in the spring of 2012 by Maryland legislative mandate. The Government HSA is a graduation requirement for students who enter Grade 9 in school year 2013-2014 and beyond.

## High School Graduation Assessment Requirements

| Course              | Tester Status                                                                 | SY 2014-2015                                                        | SY 2015-2016     |
|---------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------|
| Algebra I           | Enrolled in Algebra I for the first time beginning in the Fall 2014           | PARCC Algebra I<br>or<br>Algebra/<br>Data Analysis HSA/<br>Mod-HSA* | PARCC Algebra I  |
|                     | Completed Algebra I prior to the Fall of 2014                                 |                                                                     |                  |
| English 10          | Enrolled in English 10 for the first time beginning in the Fall 2014          | PARCC English 10<br>or<br>English 10 HSA/<br>Mod-HSA*               | PARCC English 10 |
|                     | Completed English 10 prior to the Fall of 2014                                |                                                                     |                  |
| Biology             | Enrolled in Biology for the first time beginning in the Fall 2014             | Biology HSA/<br>Mod-HSA*                                            | Biology HSA      |
|                     | Completed Biology prior to the Fall of 2014                                   |                                                                     |                  |
| American Government | Enrolled in American Government for the first time beginning in the Fall 2014 | Government HSA/<br>Mod-HSA*                                         | Government HSA   |
|                     | Completed American Government prior to the Fall of 2014                       |                                                                     |                  |

\* Mod-HSA is for identified special education students only.

## Passing Scores for Required High School Graduation Assessment Requirements

| Algebra/Data Analysis HSA | PARCC Algebra I            | English HSA | PARCC English 10           | Biology HSA | Government HSA |
|---------------------------|----------------------------|-------------|----------------------------|-------------|----------------|
| 412                       | To be determined Fall 2015 | 396         | To be determined Fall 2015 | 400         | 394            |

## Assessment Outcomes

- The following chart lists possible outcomes after taking the required state high school assessments.

| Assessed Course | + | Required Assessment | = | Outcome                                          |
|-----------------|---|---------------------|---|--------------------------------------------------|
| Pass            |   | Pass                |   | On track to receive Maryland High School Diploma |
| Pass            |   | FAIL                |   | Assistance and Re-take exam                      |
| FAIL            |   | Pass                |   | Re-take course                                   |
| FAIL            |   | FAIL                |   | Re-take course and exam                          |

# Interventions and Online Courses

## Interventions and Retaking Assessments

- Howard County Policy 8030 states that a student may retake a test in order to increase a test score if the student participates in an approved assistance program to strengthen areas of weakness. Students who fail a required state assessment must receive appropriate assistance before re-taking the exam. Howard County also offers a variety of interventions before and during the required state assessed courses. In addition, the school system has several different options for students to receive appropriate assistance. The chart below summarizes the interventions that are available. Contact your school counselor for additional information.

| Before Course               | During Course                                     | After Course<br>(Appropriate Assistance)        |
|-----------------------------|---------------------------------------------------|-------------------------------------------------|
| Middle School Interventions | Co-taught Seminar Courses                         | Summer School                                   |
| Summer School Prep Course   | Co-teaching in general education classes          | Mastery Courses                                 |
|                             | Tutorial classes for extra assistance and support | After school intervention programs and tutoring |
|                             | After-school intervention programs and tutoring   | Saturday Bridge Academy                         |

## AP Substitute Exams for the required Maryland State Assessments

- To encourage more rigorous coursework and eliminate duplicate testing, MSDE accepts scores of 3, 4, and 5 on identified Advanced Placement (AP) exams (see below) in place of passing scores on the corresponding state assessments.

| MD HSA                | Advanced Placement exam<br>(acceptable scores: 3, 4, 5)                                                | Student Requirements                                                                                                                                                                             |
|-----------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Algebra/Data Analysis | <ul style="list-style-type: none"> <li>Calculus AB</li> <li>Calculus BC</li> <li>Statistics</li> </ul> | <ul style="list-style-type: none"> <li>Take AP course and test</li> <li>Earn acceptable score</li> <li>Substitute acceptable AP score for the required state assessment passing score</li> </ul> |
| English               | <ul style="list-style-type: none"> <li>English Language</li> <li>English Literature</li> </ul>         |                                                                                                                                                                                                  |
| Biology               | <ul style="list-style-type: none"> <li>Biology</li> </ul>                                              |                                                                                                                                                                                                  |
| Government            | <ul style="list-style-type: none"> <li>U.S. Government and Politics</li> </ul>                         |                                                                                                                                                                                                  |

## Bridge Plan for Academic Validation

- The Bridge Plan for Academic Validation provides eligible students an additional opportunity to meet the testing requirement that will lead to a Maryland High School Diploma. Students must demonstrate defined knowledge and skills to graduate, either through the traditional testing program, which includes passing or earning the required combined score, determined by fall 2015, or the Bridge Plan program. An HCPSS student who thinks (s)he qualifies for this option is encouraged to explore the Bridge Plan for Academic Validation option with a school counselor.
- The Bridge Plan has been approved by the Maryland State Board of Education and is included in the Code of Maryland Regulations (COMAR).

# Frequently Asked Questions Regarding the HSA

## Do middle school students taking high school level courses take the required state assessments?

Middle school students taking high school level courses must take the appropriate required assessments. All middle school students are required to pass any state assessment they take in middle school. Students who take and pass a required state assessment in middle school will have those scores count toward their graduation requirements.

## Are English language learners required to take the required state assessment?

Maryland, like other states, gauges students' progress in acquiring English fluency throughout their education. Schools enroll English Language Learners (ELL) in credit-bearing courses when it is determined they can be successful in them. ELL students will take the required state assessment when they are enrolled in the appropriate course.

## How does Howard County's instructional program prepare my child for the required state assessment?

All tested courses have the state's Core Learning Goals embedded within the Howard County essential curriculum. The Howard County curriculum extends the Core Learning Goals to content that is beyond the core; however, all content needed for the required state assessment is contained within the essential curriculum.

## What accommodations are used for students in Special Education?

Any accommodation provided in daily instruction and on classroom assessments, as documented in the student's IEP, must also be provided on the required state assessments.

## Do other students qualify for accommodations?

Maryland allows testing accommodations for students who need them. The accommodation(s) must be documented in the student's IEP, 504 plan, or ELL plan.

## When will my child take the required state assessments?

Students will take the required state assessments at the end of designated courses.

## What is the passing score on the required state assessments?

The passing score for HSA algebra/data analysis is 412, for biology 400, for HSA English 396 and for Government 394. The passing score for PARCC Algebra I and PARCC English 10 will be determined in the fall of 2015.

## How will parents receive test results?

Parents will receive their child's test score report from the Howard County Public School System approximately 10 weeks after the tests are administered. If additional information is requested, the parent can contact the school or the school system's accountability coordinator.

## If students fail an assessment, will they be able to retake it during the school year to ensure they graduate on time?

Most students take the state required assessments either in ninth or tenth grade. They will have the opportunity to receive extra help and retake any failed tests before graduation.

## When is mandatory assistance provided?

Schools will provide appropriate assistance to students who fail an assessment. Students can retake an assessment only after they participate in appropriate assistance.

## What are alternative ways to meet the state required high school graduation assessment requirements?

Within the Howard County Public School System, students have the following alternatives to passing the required state assessments:

- Advanced Placement (AP) test substitution allows students to use an approved score on the state assessed-related AP test in place of taking the required state assessment.
- The Combined-Score Option allows students to offset a lower performance on one test with higher performance on another.
- The Bridge Plan for Academic Validation is available for students who have been unable to pass one or more state assessments, despite assistance. Students must meet three general eligibility criteria: taken and failed the test twice, participation in appropriate assistance, and satisfactory progress toward graduation. Students eligible for participation will meet with school staff to determine the projects to be included in the student's Academic Validation Project Package.

# Maryland High School Graduation Requirements

**Credit Requirements:** Students must earn a minimum of 21 credits to graduate. Credits can be earned in the following areas:

| CORE REQUIREMENTS        |                                                                                                                                                                                                                                       |                          | OTHER REQUIREMENTS   |                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Subject Area             | Current Specific Credit Requirements                                                                                                                                                                                                  | State Assessed Course    | Subject Area         | Current Specific Credit Requirements                                                                                                                                                                                                            |
| Mathematics <sup>^</sup> | 3 credits*, including:<br>• 1 credit in Common Core Algebra I<br>• 1 credit in Common Core Geometry                                                                                                                                   | Algebra I                | Fine Arts            | 1 credit                                                                                                                                                                                                                                        |
|                          |                                                                                                                                                                                                                                       |                          | Physical Education   | 1/2 credit, including:<br>Lifetime Fitness                                                                                                                                                                                                      |
| English                  | 4 credits, including:<br>• 1 credit in Common Core English 9<br>• 1 credit in Common Core English 10<br>• 1 credit in Common Core English 11<br>• 1 credit in Common Core English 12                                                  | English 10               | Health               | 1/2 credit, including:<br>Health Education or<br>Current Health Issues                                                                                                                                                                          |
|                          |                                                                                                                                                                                                                                       |                          | Technology Education | 1 credit                                                                                                                                                                                                                                        |
| Science                  | 3 credits, including:<br>• 1 credit in Biology<br>• 2 additional credits including laboratory experience, in any or all of the following areas:<br>» Earth Science<br>» Environmental Science<br>» Life Science<br>» Physical Science | Biology                  | Program Choice       | 2 credits in World Language**<br>OR<br>2 credits in American Sign Language*** OR<br>2 credits in an approved Advanced Technology Program OR<br>4 credits in a Career Academy (State-approved Career and Technology Education Completer Program) |
| Social Studies           | 3 credits, including:<br>• 1 credit in U.S. History<br>• 1 credit in Local, State and National Government<br>• 1 credit in World History                                                                                              | American Government **** | Electives            | 1-3 credits to include courses beyond requirements.                                                                                                                                                                                             |

<sup>^</sup> Beginning with students entering Grade 9 in the 2014-2015 school year, students are required to enroll in 4 math classes.

\* Students who successfully completed high school level mathematics in middle school still need to earn 3 credits in mathematics, preferably in higher level courses. The University System of Maryland has changed its admission policy to require four consecutive years of high school math for students who entered Grade 9 in fall 2011 or later. Please check with each of your prospective colleges or universities for their specific entrance requirements.

\*\* Students who received credit for Spanish I or French I based on work in middle school still need to earn at least 2 credits in World Language for this program choice option.

\*\*\* Students must complete both ASL I and II to meet the requirement. These courses may not meet all colleges' entrance requirements.

\*\*\*\* This exam will count as a graduation requirement for students who enter Grade 9 in school year 2013-2014 and beyond.

# Algebra I Course Description

## Algebra I Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Communicate mathematical problems and solutions clearly and accurately, using appropriate symbols, definitions, and degrees of precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

## The Mathematical Content Standards

The Mathematical Content Standards (Essential Curriculum) that follow are designed to promote a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the mathematical practices to the content. The content standards that set an expectation of understanding are potential “points of intersection” between the Mathematical Content Standards and the Mathematical Practices.

## Unit 1: Relationships between Quantities and Reasoning with Equations

### Reason quantitatively and use units to solve problems.

- Choose and interpret units consistently in formulas: choose and interpret the scale and the origin in graphs and data displays.
- Define appropriate quantities for the purpose of descriptive modeling.
- Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

### Interpret the structure of expressions.

- Interpret parts of an expression, such as terms, factors, and coefficients.
- Interpret complicated expressions by viewing one or more of their parts as a single entity.

### Work with radicals and integer exponents.

- Know and apply the properties of integer exponents to generate equivalent expressions.
- Use square root and cube root symbols to represent solutions to simple quadratic and cubic equations. Evaluate square roots of small perfect squares and cube roots of small perfect cubes.

### Extend the properties of exponents to rational exponents.

- Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values.
- Rewrite expressions involving radicals and rational exponents using the properties of exponents.

### Create equations that describe numbers or relationships.

- Create equations and inequalities in one variable and use them to solve problems.

### Understand solving equations as a process of reasoning and explain the reasoning.

- Explain each step in solving a linear equation. Construct a viable argument to justify a solution method.

### Solve equations and inequalities in one variable.

- Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

### Create equations that describe numbers or relationships.

- Rearrange linear formulas to highlight a quantity of interest.

### Understand the concept of a function and use function notation.

- Understanding that a function assigns to each element of the domain exactly one element of the range.
- Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

### Create equations that describe numbers or relationships.

- Create linear equations to represent relationships between quantities.
- Graph equations on coordinate axes with labels and scales.

### Represent and solve equations and inequalities graphically.

- Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane.

### Create equations that describe numbers or relationships.

- Represent constraints by linear equations or inequalities, and by systems of linear equations and/or inequalities.
- Interpret solutions as viable or non-viable options in a modeling context.

# Algebra I Course Description

## Unit 2: Linear and Exponential Relationships

**Understand the concept of a function and use function notation.**

- Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.

**Build a function that models a relationship between two quantities.**

- Determine an explicit expression, a recursive process, or steps for calculation from a context.
- Combine standard function types using arithmetic operations.
- Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

**Construct and compare linear and exponential models and solve problems.**

- Distinguish between situations that can be modeled with linear functions and with exponential functions.
  - Prove that linear functions grow by equal differences over equal intervals; and that exponential functions grow by equal factors over equal intervals.
  - Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
  - Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

Construct linear and exponential functions given a graph, a description of a relationship, or a table.

**Interpret linear and exponential functions that arise in applications in terms of a context.**

- Interpret key features of a function graph and table in terms of the quantities, and sketch the graph.
- Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- Calculate and interpret the average rate of change of a function a specified interval. Estimate the rate of change from a graph.

**Analyze linear and exponential functions using different representations.**

- Graph linear and exponential functions expressed symbolically and show key features of the graph.
- Compare properties of two functions each represented in different ways.

**Build new functions from existing functions.**

- Identify the effect of the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative).
- Find the values of  $k$  given the graphs.

**Interpret expressions for functions in terms of the situations they model.**

- Interpret the parameters in a linear or exponential function in terms of a context.

**Summarize, represent, and interpret data on quantitative variables.**

- Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
  - Fit a function to the data; use functions fitted to data to solve problems in the context of the data.
  - Informally assess the fit of a linear function by plotting and analyzing residuals.
  - Fit a linear function for a scatter plot that suggests a linear association.

**Interpret linear models.**

- Interpret the slope and the intercept of a linear model in the context of the data.
- Compute and interpret the correlation coefficient of a linear fit.
- Distinguish between correlation and causation.

**Solve systems of equations.**

- Analyze and solve pairs of simultaneous linear equations.
  - Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs.
  - Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations.
  - Solve real-world and mathematical problems leading to two linear equations in two variables.
- Solve systems of linear equations exactly and approximately.

**Represent and solve equations and inequalities graphically.**

- Explain why the  $x$ -coordinates of the points where the graphs of the equations  $y = f(x)$  and  $y = g(x)$  intersect are the solutions of the equation  $f(x) = g(x)$ ; find the solutions approximately.
- Graph the solutions to a linear inequality in two variables as a half-plane.
- Graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

# Algebra I Course Description

## Unit 3: Descriptive Statistics

**Summarize, represent, and interpret data on a single count or measurement variable.**

- Represent data with plots on the real number line (dot plots, histograms, and box plots).
- Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different sets.
- Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points.

**Summarize, represent, and interpret data on two categorical and quantitative variables.**

- Summarize categorical data for two categories in two-way frequency tables.
- Interpret relative frequencies in the context of the data.

## Unit 4: Quadratic Functions and Modeling

**Perform arithmetic operations on polynomials.**

- Understand that polynomials are closed under the operations of addition, subtraction, and multiplication.
- Add, subtract, and multiply polynomials.

**Build a function that models a relationship between two quantities.**

- Write a quadratic function that describes a relationship between two quantities.

**Analyze functions using different representations.**

- Graph linear and quadratic functions and show intercepts, maxima, and minima.

**Interpret functions that arise in applications in terms of a context.**

- For a quadratic function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
- Relate the domain of a function to its graph and, where applicable, to the quantitative relationships it describes.

**Interpret the structure of expressions.**

- Interpret quadratic expressions that represent a quantity in terms of its context.
  - Interpret parts of an expression, such as terms, factors, and coefficients.
  - Interpret complicated expressions by viewing one or more of their parts as a single entity.
- Use the structure of an expression to identify ways to rewrite it.

**Write expressions in equivalent forms to solve problems.**

- Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
  - Factor a quadratic expression to reveal the zeros of the function it defines.
  - Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

**Solve equations and inequalities in one variable.**

- Solve quadratic equations in one variable.
- Use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions. Derive the quadratic formula from this form.
- Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring.

**Analyze functions using different representations.**

- Use the process of factoring and completing the square in a quadratic function to show zeroes, extreme values, and symmetry of the graph, and interpret these in terms of a context.

# Sample Test Questions

There will be two portions of the PARCC Assessments for Algebra I. The first is a Performance-Based Assessment (PBA) and the second is an End of Year Assessment (EOY). On the PBA exam, students will be asked to solve problems involving the key knowledge and skills for their grade level, express mathematical reasoning and construct a mathematical argument, and apply concepts to solve and model real-world problems. On the EOY exam, students will demonstrate their acquired skills and knowledge by answering computer-based, machine-scorable questions. The results of both exams will be combined to produce a student's summative assessment score. Items on both portions of the test will assess the following components of rigor:

- Conceptual understanding
- Procedural fluency
- Application

## Types of Tasks

- Type I: Tasks assessing concepts, skills and procedures.
- Type II: Tasks assessing expressing mathematical reasoning.
- Type III: Tasks assessing modeling and applications.

## Type I Tasks

### Sample #1

Solve the following equation:

$$(3x - 2)^2 = 6x - 4$$

When you are finished, enter the solution(s) below.

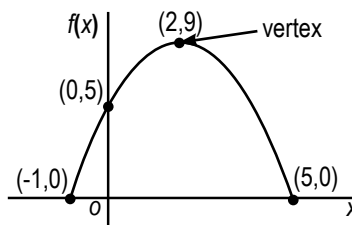
Solution 1:

Click  to enter another solution, or click

Reset

### Sample #2

A portion of the graph of a quadratic function  $f(x)$  is shown in the  $xy$ -plane. Selected values of a linear function  $g(x)$  are shown in the table.



| $x$ | $g(x)$ |
|-----|--------|
| -4  | 7      |
| -1  | 1      |
| 2   | -5     |
| 5   | -11    |

For each comparison below, use the drop-down menu to select a symbol that correctly indicates the relationship between the first and the second quantity.

| First Quantity                                             | Comparison           | Second Quantity                                                |
|------------------------------------------------------------|----------------------|----------------------------------------------------------------|
| The y-coordinate of the y-intercept $f(x)$                 | <input type="text"/> | The y-coordinate of the y-intercept $g(x)$                     |
| $f(3)$                                                     | <input type="text"/> | $g(3)$                                                         |
| Maximum value of $f(x)$ on the interval $-5 \leq x \leq 5$ | <input type="text"/> | Maximum value of the $g(x)$ on the interval $-5 \leq x \leq 5$ |
| $\frac{f(5) - f(2)}{5 - 2}$                                | <input type="text"/> | $\frac{g(5) - g(2)}{5 - 2}$                                    |

# Sample Test Questions

## Type II Tasks

### Sample

Myla's swimming pool contains 16,000 gallons of water when it is full. On Thursday, her pool was only partially full. On Friday, Myla decided to fill her pool completely using a hose that flowed at a rate of 10 gallons per minute. It took her 5 hours to completely fill her pool.

#### Part A

Type a number into each box to complete the sentences.

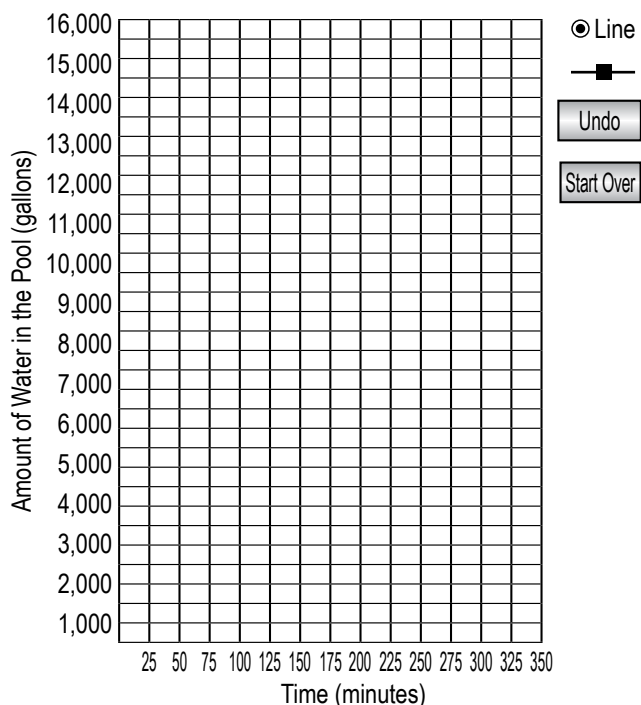
Before Myla started filling the pool, there were  gallons of water in the pool.

The rate at which water is being added to the pool is  gallons per hour.

#### Part B

On the coordinate plane provided, graph a linear function that represents the number of gallons of water in Myla's pool given the amount of time, in minutes, she spent filling her pool on Friday.

Select two points on the coordinate plane and the line containing two points will be automatically drawn. You can undo your last step by clicking "Undo". You can reset the tool by clicking "Start Over".



## Type III Tasks

### Sample

A local mini-golf course charges \$5 per person to play a round of golf, and the course sells 120 rounds of golf per week. The manager of the course studied the effect of raising the price to increase revenue and found the following data.

The table shows the price, number of rounds of golf, and weekly revenue for different numbers of \$0.25 increases in price.

| Number of \$0.25 price increases, $n$ | 0      | 1        | 2      | 3        | 4      |
|---------------------------------------|--------|----------|--------|----------|--------|
| Price of a round of golf, $p(n)$      | \$5.00 | \$5.25   | \$5.50 | \$5.75   | \$6.00 |
| Number of rounds of golf sold, $s(n)$ | 120    | 117      | 114    | 111      | 108    |
| Weekly revenue, $r(n)$                | \$600  | \$614.25 | \$627  | \$638.25 | \$648  |

#### Part A

Based on the data, write a linear function to model the price of one round of golf  $p(n)$ , in terms of  $n$ , the number of \$0.25 increases.

Based on the data, write a linear function to model the number of rounds of golf sold in a week,  $s(n)$ , in terms of  $n$ , the number of \$0.25 increases.

#### Part B

Based on the data, write a quadratic function for the weekly revenue in a week,  $r(n)$ , in terms of  $n$ , the number of \$0.25 increases.

Use your quadratic function to determine the weekly revenue in a week when tickets cost \$6.25.

#### Part C

The maximum possible weekly revenue in what percent greater than the weekly revenue with no price increases? Justify your answer graphically or algebraically.



**Your involvement in your child's educational development is very important for academic achievement. Tests represent only ONE aspect of your child's development. Awareness, support, and praise of your child's accomplishments in all academic areas are extremely helpful.**

## GENERAL TEST-TAKING TIPS FOR PARENTS

Your child should:

- Get a good night's sleep the night before the test.
- Eat breakfast the morning of a test.
- Have a happy morning - avoid family conflict.
- Practice at home with timed activities - doing homework, playing a game, doing a chore.
- Arrive at school on time in order to relax prior to testing time.

## ENCOURAGING ACHIEVEMENT

- Set high expectations for your child.
- Make it clear that school is your child's first priority.
- Provide a quiet place for your child to study.
- Help your child with homework.
- Show interest in your child's schoolwork.
- Limit the amount of television your child watches.
- Encourage your child to take challenging courses.

## TAKING THE TEST

Encourage your child to:

- Stay positive.
- Think of the experience as a challenge.
- Read directions carefully.
- Look at the wording of the question to determine what is being asked and to find key words.
- Attempt every question - do not give up.
- Go back and check work.
- Write in complete sentences and be detailed when explaining thinking.

Answer each part of every question fully..

### **[www.hcpss.org](http://www.hcpss.org)**

This is the homepage for the Howard County Public School System. Click on Test Scores for information about assessments.

### **[hcpssfamilymath.weebly.com](http://hcpssfamilymath.weebly.com)**

This is the HCPSS Family Mathematics Support Center website. Parents and students can find valuable resources to support mathematical understanding and proficiency.

### **[www.marylandpublicschools.org/msde](http://www.marylandpublicschools.org/msde)**

This is the homepage for the Maryland State Department of Education. Click on Parents to find information about helping your child.

### **[www.mdk12.org](http://www.mdk12.org)**

The School Improvement in Maryland web site contains practical information and tools to help educators and parents better understand state tests. Here you can find background information about the HSA and the Maryland School Assessments.

### **[www.hsaexam.org](http://www.hsaexam.org)**

The High School Assessment web site contains information on the specific High School Assessments, how students are assessed, and examples and sample tests in algebra/data analysis, biology, English, and American government.

### **[www.mdreportcard.org](http://www.mdreportcard.org)**

This site is the online version of the Maryland School Performance Report, including scores on state tests.





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