



## **Mathematics eLearning Guideline – Week 5**

### **Algebra I: Quadratic Functions**

- Students will identify key features of parabolas.
- Students will factor quadratic equations.

### **Geometry: Circles**

- Students will find the arc measure of a circle.
- Students will understand the relationship between arc length and the circumference of the circle.

### **MMA: Buying vs Renting a House**

- Students will compare benefits and drawbacks of renting vs. buying a home.
- Students will understand the steps involved in applying for a mortgage.

### **Algebra II: Rational Function**

- Students will add and subtract rational expressions.

### **preCalculus: Parametric Equation**

- Students will understand parametric equations.
- Students will convert parametric equations to rectangular equations.

### **AP Courses: Calculus AB, Calculus BC, Statistic**

- **Content Support** from Khan Academy: [Calculus AB](#), [Calculus BC](#), [Statistics](#)
- **AP Resources** from College Board: [Calculus AB](#), [Calculus BC](#), [Statistics](#)
- **AP Exam Test Prep** From Shmoop: [Login directions](#), [Calculus AB](#), [Calculus BC](#), [Statistics](#)

# MATH - Algebra 1

## Objectives

- Students will identify key features of parabolas.
- Students will find the greatest common factor of two or more expressions.
- Students will factor trinomials of the form  $x^2+bx+c$ .

**Note: Beginning the week of April 14th and in alignment with our Adjusted Grading Guidelines, teachers in grades 6-12 may assign student work from the Digital Backpack eLearning guide, or from the teacher's itsLearning course, for a grade.**

## For Parents

- In this unit, your student will learn about quadratic functions. Many real-world situations deal with quadratics and parabolas. Throwing a ball, diving from a platform and hitting a golf ball are all examples of situations that can be modeled by quadratic functions. They are frequently used in physics, engineering, and other sciences.

## For Students

### Parabolas

- [Task 1](#) Video: Parabolas Intro
- [Task 2 Practice](#): Interpret a quadratic graph (online)

### Factoring

- [Task 1 Video](#): Factoring with the distributive property ([notes](#))
- [Task 2 Practice](#): GCF factoring introduction (online)
- [Task 3 Video](#): Factoring quadratic as  $(x+a)(x+b)$
- [Task 4 Practice](#): Factoring quadratic intro (online)
- [Task 5 Practice](#): Factoring quadratics with a common factor (online)

## Resources

- [Desmos Graphing Calculator](#)
- Additional Video: [Factoring quadratics as  \$\(x+a\)\(x+b\)\$](#)
- Additional Practice: [Monomial factors of polynomials](#)
- [IXL](#)

# MATH - Geometry

## Objectives

- Students will find the measure of arcs of a circle.
- Students will understand the proportional relationship between the arc length and the circumference of the circle.

**Note: Beginning the week of April 14th and in alignment with our Adjusted Grading Guidelines, teachers in grades 6-12 may assign student work from the Digital Backpack eLearning guide, or from the teacher's itsLearning course, for a grade.**

## For Parents

- Your students will study the relationship between the arc length and the circumference of the circle. "Relationships" may or may not include algebraic expressions representing properties. Students may be expected to investigate geometric relationships.

## For Students

### Arc of Circles

- [Task 1 Video](#): Intro to arc measure
- [Task 2 Video](#): Finding arc measure
- [Task 3 Practice](#): Arc measure (online)
- [Task 4 Video](#): Finding arc measures with equations
- [Task 5 Practice](#): Arc measures with equations(online)
- [Task 6 Video](#): Arc length
- [Task 7 Practice](#): Arc length (online)

## Resources

- Extra Resource: [Arc Length](#)
- Extra Resource: [Determining Arc Length](#)

# MATH - MMA

## Objectives

- Students will compare the benefits and drawbacks of renting vs. buying a home.
- Students will understand the steps involved in applying for a mortgage.

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## For Parents

- This lesson will provide students with information on buying a home and where and how to begin the process. After comparing the differences between renting and buying, students will be introduced to the process of home buying.

## For Students

### **Renting versus Buying**

- **Task 1 Video:** Renting versus buying a home ([notes](#))
- **Task 2 Practice:** Renting versus buying a home ([answer key](#))

### **Mortgage**

- **Task 1 Video:** Introduction to mortgage loans
- **Task 2 Video:** Mortgage interest rates
- **Task 3 Practice:** Computing Mortgage Payment ([answer key](#))
- **Task 4** Check your understanding ([answer key](#))

## Resources

- **Critical Information You Need to Know:** [Investopedia](#)
- **Critical Information You Need to Know:** [Bankrate](#)
- **Critical Information You Need to Know:** [Practical Money Skills](#)

# MATH - ALGEBRA II

## Objectives

- Students will add and subtract rational expressions.

**Note: Beginning the week of April 14th and in alignment with our Adjusted Grading Guidelines, teachers in grades 6-12 may assign student work from the Digital Backpack eLearning guide, or from the teacher's itsLearning course, for a grade.**

## For Parents

- Your student will learn how to add and subtract rational expressions. A rational function is an algebraic fraction such that both the numerator and the denominator are polynomials. Many real-world problems require us to find the ratio of two polynomial functions (Rational Functions). Problems involving rates and concentrations often involve rational functions.

## For Students

### Add and Subtract Rational Expressions

- **Task 1 Video:** Adding & subtracting rational expression; like denominators
- **Task 2 Practice:** Adding & subtracting rational expression; like denominators (online)
- **Task 3 Video:** Intro to adding rational expressions with unlike denominators (**notes**)
- **Task 4 Video:** Subtracting rational expressions with unlike denominators
- **Task 5 Practice:** Add & subtract rational expressions: unlike denominators (online)
- **Task 6 Practice:** Add & subtract rational expressions (practice & answer key)

## Resources

- [Desmos Graphing Calculator](#)
- [Openstax](#)
- **Extra Practice:** [Adding & Subtracting Rational Expressions](#)

# MATH - preCALCULUS

## Objectives

- Students will understand parametric equations.
- Students will convert parametric equations to rectangular equations.

**Note: Beginning the week of April 14th, and in alignment with our Adjusted Grading Guidelines, teachers in grades 6-12 may assign student work from the Digital Backpack eLearning guide, or from the teacher's itsLearning course, for a grade.**

## For Parents

- Parametric equations allow the students to graph the complete position of an object over time. For example, parametric equations allow you to make a graph that represents the position of a point on a Ferris wheel. All the details like height off the ground, direction, and speed of spin can be modeled using the parametric equations.

## For Students

### Parametric Equations

- [Task 1 Video](#): Parametric equations intro
- [Task 2 Video](#): converting parametric equations to rectangular equations
- [Task 3 Practice](#): Parametric equations(online)
- [Task 4 Practice](#): Parametric equations ( practice & answer key)

## Resources

- [Desmos Graphing Calculator](#)
- [Openstax](#)
- **Article:** [Polar Coordinates](#)
- **Additional Notes:** [What is Polar System?](#)