

Welcome to Jesuit High School's Math Community!

Jesuit invites middle school students to join a math community where they can collaborate and develop their mathematics, problem-solving, and communication skills. The program aims to

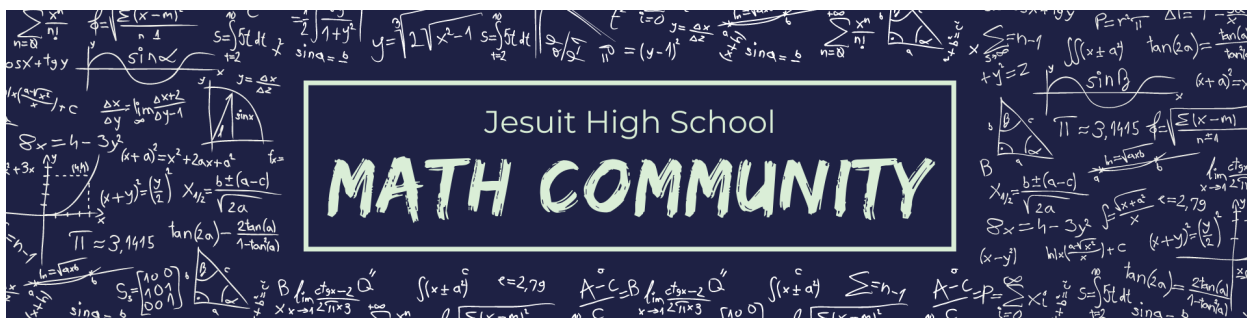
- Enhance a student's performance in their regular math class
- Provide opportunities to explore interesting topics beyond what is usually covered in a school's curriculum
- Assist students seeking to progress to a higher level of mathematics
- Support students interested in preparing for mathematics and science competitions

Jesuit High School's Math Community courses are virtual and conducted in real-time (in-person courses are available in the summer). Students participate in discussion-based lectures and collaborate to solve problems. Students are asked to participate with their video cameras on during the class period.

2023 online Spring Session courses include:

- [#099 Problem-Solving with Prealgebra: Strategies for Advanced Problems](#)
- [#123 Problem-Solving with Algebra: Solving & Graphing Quadratic Equations](#)
- [#137 Geometry Part Three: Quadrilaterals, Circles, Length, Area](#)

Questions? Please email questions to onlinelearning@jesuitportland.org.



#099 Problem-Solving with Prealgebra: Advanced Strategies

4/8-6/10 (10 Saturdays)

9:30 AM - 11 AM

\$225 (\$200 by 4/3)

Students will practice finding patterns, making lists, drawing pictures, and working backward to simplify complex math problems, and then apply prealgebra concepts to arrive at a solution. Students will strengthen mathematical skills and intuition through conversation, problem-solving, and mathematical puzzles. Students will learn counting techniques that are helpful for competition-style problems.

Prerequisites: Students should be able to apply operations on multi-digit numbers, negative numbers, fractions, decimals, and variables. Willingness to work on word problems that involve more than one step will be particularly helpful. The course is a good choice for students who can answer **22 or more** problems on [this placement quiz](#) (some questions have multiple problems). The problems below are examples of discussion topics for the course. They are not prerequisites.

Challenge 1

What is the units digit (ones digit) of 2^{2011} ?

Challenge 2

All even numbers from 2 through 288, except those ending in 0, are multiplied together. What is the units digit of the product?

Challenge 3

Tanya spent exactly \$7 for some 15-cent stamps and some 31-cent stamps. How many 15-cent stamps did she buy?

Challenge 4

Alice gave Bob as many dollars as Bob had. Bob then gave Alice as many dollars as Alice then had. At this point, each had 24 dollars. How much did Alice have at the beginning?

Challenge 5

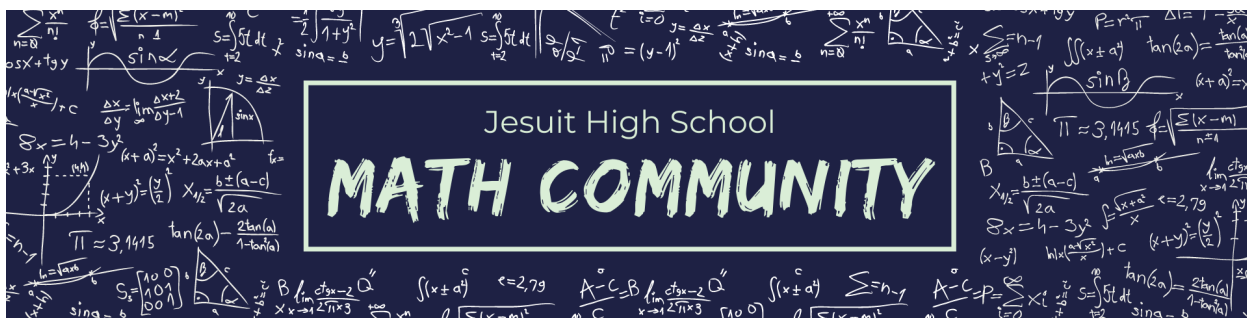
A frog is at the bottom of a 12-meter well. Each morning he climbs up 5 meters. Each night he slides down 3 meters. If he starts climbing on a Sunday, on which day will he reach the top of the well and escape?

Challenge 6

Two-thirds of the people in a room are seated in three-fourths of the chairs. The rest of the people are standing. If there are 6 empty chairs, how many people are in the room?

Challenge 7

At the pound, there are 40 dogs. If 22 dogs have spots and 30 dogs have short hair, what is the fewest number of dogs that can have short hair and spots?



#123 Problem-Solving with Algebra: Solving & Graphing Quadratic Equations

4/8-6/10 (10 Saturdays)

11:15 AM - 12:45 PM

\$225 (\$200 by 4/3)

Description: Solving quadratic equations and graphing quadratic functions are the most advanced topics in high school algebra. By graphing quadratic functions and solving quadratic equations, students will expand their foundations to include skills that will be instrumental in mastering algebra. Students will discuss and build skills involving **using squares of binomials to solve quadratic equations, completing the square, the quadratic formula, graphing parabolas, graphing circles, and quadratic inequalities.**

Prerequisite: This class is for students with solid prealgebra skills who can successfully complete this [placement quiz](#). The problems below are examples of discussion topics. They are not prerequisites.

Challenge 1

One root of a quadratic that has real coefficients is $2 - 3i$. What is the other root?

Challenge 2

Use the quadratic formula to find solutions to the equation $r^2 - 3r = 7$.

Challenge 3

Find the vertex and axis of Symmetry of the parabola that is the graph of the equation $y = x^2 + 2x + 5$.

Challenge 4

Graph the equation

$x = 2y^2 - 4y + 4$. What is its vertex?

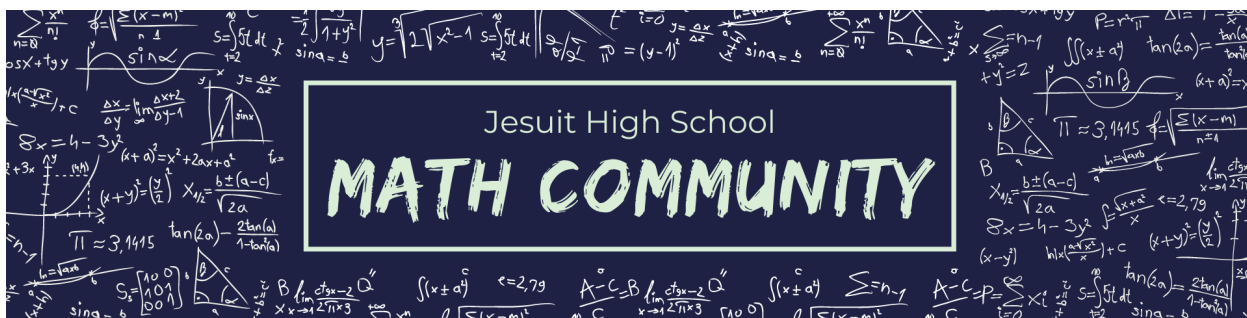
Challenge 5

Find the radius and center of the circle that is the graph of the equation

$4x^2 + 4y^2 + 4x - 16y = 7$.

Challenge 6

Describe all solutions to the inequality of $r^2 - 8r < -12$.



#137 Geometry Part Three: Quadrilaterals, Circles, Length, Area

4/8-6/10 (10 Saturdays)

2 PM - 3:30 PM

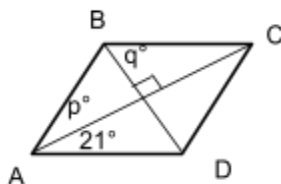
\$225 (\$200 by 4/3)

This is the third part of a three-part series that covers all topics included in Jesuit's Summer Session *Geometry* course and Jesuit's Geometry Challenge Exam for incoming freshmen. Topics include **quadrilaterals (angle measures in polygons, properties of parallelograms, rhombuses, rectangles, squares, and trapezoids), properties of circles (tangents, arc measures, properties of chords, inscribed angles, angle relationships, and equations of circles), and length and area (triangles, quadrilaterals, similar figures, and regular polygons).**

Prerequisites: Familiarity with parallel lines, perpendicular lines, and congruent triangles. From Algebra 1, students will need the following: the ability to manipulate variables to solve linear equations and inequalities, the ability to graph linear equations, and familiarity with simple radical expressions.

Challenge 1

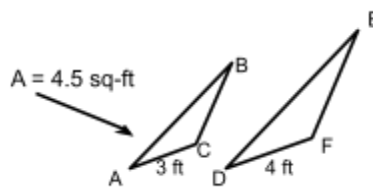
$ABCD$ is a parallelogram. Find the values p and q .



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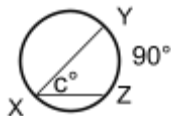
Challenge 3

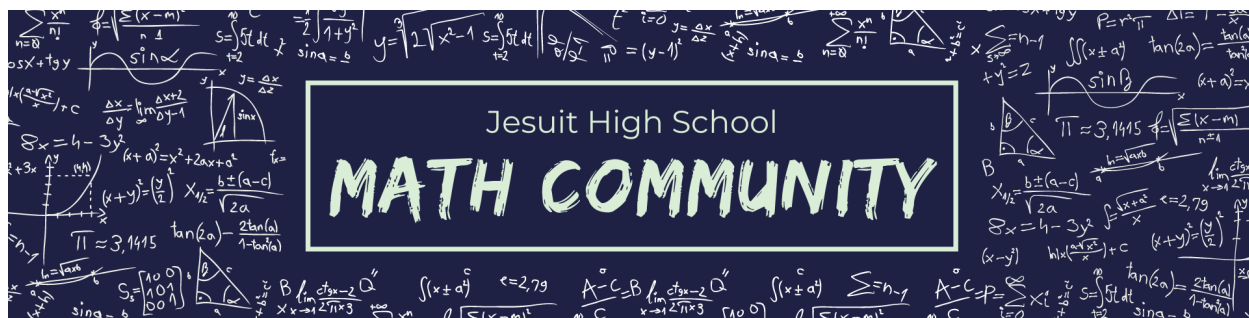
$\triangle ABC \sim \triangle DEF$. Find the ratio of the perimeters and of the areas. Then find the unknown area.



Challenge 2

Find the value of c .





Jesuit High School Math Community FAQ

Will I receive credit for Jesuit's Math Community courses?

Math Community courses that do not take place in the summer are not for credit.

How will I access my course?

Students access courses through Canvas, the classroom management software system that Jesuit uses. Students will receive an email with instructions for logging into their course through Canvas. The course's Canvas page will include a Zoom link for the course's class meetings.

What materials will I need?

Course materials will be accessed online through Canvas. A physical textbook will be available to borrow from Jesuit High School.

What if I have a question to ask about my class?

Before the class begins, you will receive an email address to contact your instructor.

If I attend Jesuit High School in the fall, will I still need to take a challenge exam if I complete a course with Jesuit's Math Community?

Yes. The three-part geometry series covers the material that is included in Jesuit's Geometry Challenge Exam; however, the class does not include the in-person evaluations Jesuit uses in courses for advancement. These classes are excellent opportunities to prepare for the on-campus challenge exams.

Will Jesuit's Math Community courses affect my GPA?

No. Some Math Community courses provide grades to give students feedback on their performance; however, the grades will not be included on a Jesuit transcript.

Does enrollment in Jesuit's Math Community affect admissions into Jesuit High School?

No. Jesuit's Math Community is unrelated to Jesuit High School's admissions process.