Fairfax Collegiate
2026 Summer Program
Problem Solving Course Syllabus
Rising Grades 4-6

Course Description

Learn strategies for solving challenging word problems.

Solve real-world problems by drawing diagrams, spotting patterns, making tables, and applying logic.

Students conquer math challenges and learn how to effectively solve word problems. The course introduces problem-solving strategies in a clear, approachable way, helping students understand how to break tricky problems into manageable steps. Lessons build confidence by showing students different ways to think about math, reason through situations, and choose methods that make sense for them.

Students explore a variety of strategies to make sense of real-world problems They practice each strategy through short lessons, guided examples, and problem sets.

At the end of the course, students take home a folder containing all of the work they completed during the session. They leave better prepared for school-year math and more confident tackling new word problems with a set of strategies they know how to use.

Not sure which math class is right for your child? Fairfax Collegiate offers free diagnostic tests and free consultations via Zoom. Make an appointment to talk to our team by visiting https://calendar.app.google/2CJodncw8FW1NYqaA.

Learning Objectives

Course Goals	**School Year Preparation:** Students practice problem solving skills that will prepare them for upcoming school years. **Learn New Concepts:** Students learn new mathematical concepts that they have not yet encountered in their math courses.
Course Topics	**Think One Method:** Students learn to think about how much could get completed in one hour and use that information to see how long it takes to complete a task.

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	Two Ten Method: Students replace numbers in a word problem with two and ten to make the problem easier, and then use that model to solve with the original numbers. **Draw a Picture Method:** Students draw a picture of the situation in a word problem to help them visualize what is going on. **Venn Diagram Method:** Students use a Venn Diagram to look at how sets overlap with each other and use that information to make sense of situations. **Subtraction Method:** Students draw pictures and recognize how finding a larger value and then subtracting a smaller value from within can help solve some types of problems. **Function Machines:** Students see how function machines do the same thing to each input and will give an output through various operations. **Algebra Problem Solving:** Students are introduced to variables and algebraic equations in the context of word problems. **Pattern Problem Solving:** Students learn various methods for solving problems with patterns such as making a list, working backwards, and working with unusual patterns. **Logic Problem Methods:** Students learn logic methods to make sense of various types of situations. These problems use statements like “squares are rectangles, but not all rectangles are squares”. **Fractions/Ratios Methods:** Students learn how fractions and ratios can help solve problems like with similar triangles or other shapes and for measurement. **Geometric Methods:** Students learn how to use geometric methods to solve word problems, including using things like perfect squares **Permutation Problem Solving Methods:** Students learn methods for solving problems related to permutations. There are specific formulas for these problems that students learn and use. **Cryptarithms and Whodunits Methods:** Students learn how to solve more difficult multi-step problems related to more difficult logic problems and cryptography and codes.

Course Schedule

Class Meeting 1	**Introduction and Ice Breaker:** Students get to know each other and their instructor, and they briefly review classroom rules. **Take Diagnostic:** Students take the Diagnostic Test. **Take Diagnostic:** Students take the Diagnostic Test.
Class Meeting 2	**Starter Problem 1:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use.

	Lesson 1 - Think One and Two-Ten: Students learn about and then practice the Think One and Two-Ten methods for solving problems.
Class Meeting 3	**Starter Problem 2:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use. **Lesson 2 - Draw a Picture and Venn Diagrams:** Students learn about and then practice the Draw a Picture and Venn Diagram Methods of solving word problems **Progress Test:** Students take a progress test to assess how well they are progressing in terms of learning to use the problem solving techniques.
Class Meeting 4	**Starter Problem 3:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use. **Lesson 3 - Subtraction:** Students learn about and practice the Subtraction method for solving word problems.
Class Meeting 5	**Progress Test:** Students take a progress test to assess how well they are progressing in terms of learning to use the problem solving techniques. **Starter Problem 4:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use. **Lesson 4 - Function Machines:** Students learn about and practice using Function Machines to problem solve.
Class Meeting 6	**Starter Problem 5:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use. **Lesson 5 - Algebra:** Students learn about and practice how variables and algebraic equations work in the context of word problems.
Class Meeting 7	**Starter Problem 6:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use. **Lesson 6 - Patterns:** Students learn about and practice methods for solving problems utilizing patterns, such as making a list, working backwards, and working with unusual patterns.
Class Meeting 8	**Starter Problem 7:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use. **Lesson 7 - Logic:** Students learn about and practice solving problems usimg logic methods to make sense of various types of situations. These problems use statements like “squares are

	rectangles, but not all rectangles are squares". **Progress Test:** Students take a progress test to assess how well they are progressing in terms of learning to use the problem solving techniques.
Class Meeting 9	**Starter Problem 8:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use. **Lesson 8 - Fractions:** Students learn about and practice using fractions and ratios to solve problems with similar triangles or other shapes and for measurement.
Class Meeting 10	**Starter Problem 9:** Students look at a type of problem before they have received specific instructions for the best way to solve it, with the goal to get them thinking about strategies and concepts they can use. **Lesson 9 - Geometry:** Students learn about and use geometric methods to solve word problems, including finding perfect squares. **Take Final Assessment:** Students take the Final Assessment to see how far they have progressed over the course of the session.