Integrated Math 2 Honors

Any Grade Level after successful completion of Integrated Math 1 Honors (10 Credits)

- ***Meets high school graduation requirement for math credits***
- ***Meets the UC/CSU subject area "C-Mathematics" requirement***

General Information

Description

In **Integrated Math 2 Honors**, students will go deeper into grade level standards as well as several Pre-Calculus and Integrated Math 3 standards. Student assignments will contain more critical thinking and have a higher depth of knowledge and more performance tasks. In this accelerated course, students will learn concepts such as:

- Manipulating algebraic expressions including rearranging and collecting terms, factoring, and applying properties of exponents
- Solving and understanding quadratic equations and inequalities.
- Understanding the concept of a function and use function notation, domain, and range.
- Interpreting functions given graphically, numerically, symbolically, and verbally.
- Modeling with functions using tables, functions, and understanding when the context allows for a model that is only an approximation.
- Writing, interpreting, and translating among various forms of quadratic equations and inequalities.
- Graphing and analyzing absolute-value functions and piece-wise functions.
- Experimenting, conjecturing and proving properties of triangles, quadrilaterals, polygons and circles.
- Using similarity to define and solve problems using right-triangle trigonometry.
- Using a coordinate system to analyze properties of circles, parabolas, ellipses, and hyperbolas.
- Using the unit circle and radians to extend trigonometry to any angle.
- Simplifying, graphing, and examining the structure of inverse functions and logarithmic functions.
- Proving and applying the properties of logarithmic functions.
- Performing arithmetic on complex numbers.
- Finding probability of independent, dependent and conditional events by experimentation, theoretical model, two-way tables, Venn diagrams and tree diagrams.

As in all math courses offered at SDUHSD, students are aware of and make use of all **Standards for Mathematical Practices:**

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. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Expectations and Goals

Students should have completed Integrated Math 1 Honors with "B" or higher.

- Students entering Integrated Math 1 College-Preparatory are required to take a summer bridge course and show proficiency.

Students entering Integrated Math 2 Honors should easily grasp higher level concepts and embrace rigorous curriculum. Students should already have mastered the following concepts:

- Working with radicals and rational exponents
- Understanding the connection between proportional relationships, lines, and linear equations.
- Solving linear equations as well as apply graphical and algebraic methods to analyze and solve systems of linear equations in two variables.
- Understanding arithmetic/geometric sequences and their relationship to linear/exponential functions.
- Defining, evaluating, and comparing functions, and use them to model relationships among quantities.
- Understanding congruence and similarity using transformational geometry.
- Solving real-world and mathematical problems using linear, exponential, quadratic and absolute value mathematical models.
- Solving quadratic equations using different methods.
- Graphing quadratic functions and fluently translate functions between different forms to identify key features of the function.
- Understanding, modeling, and performing arithmetic on vectors, matrices and complex numbers. Simplifying expressions with rational exponents.

Students entering **Integrated Math 2 Honors** should also be able to solve problems such as

<table>
<tr>
<td>Word Problem:

Almonds cost $8/pound and cashews cost $5/pound. Robin wants to make a 60 pounds of a mixture that will cost $7/pound. Use an inverse matrix to find out how many pounds each of almonds and cashews are needed to create this mixture.</td>
<td>Construction Problem:

Construct a regular hexagon using a compass and straightedge. Explain how you know the shape created is a regular hexagon.</td>
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<td>Word Problem:

Susan deposits $90 in a bank account that pays 2% interest annually. Create a function B(t) that represents the amount of money in the bank account t years after Susan's deposit. What is B(18) and what does it represent? Using a graphing calculator, solve and interpret B(t)=270.</td>
<td>Function Problem:

Graph the quadratic $g(x) = 3x^2 - 14x + 8$. . Rewrite g(x) in factored form and in vertex form. Explain the benefits of both forms and how each form is represented in the graph.</td>
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<tr>
<td>Rigid Motion Problem:
Triangle ABC, with vertices A(1,1), B(2,-3) and C(0,5), undergoes the following transformations:
• A reflection through the line $y = x$.
• A rotation of 90 degrees about A.
• A translation of 2 units up and 3 units left.
• What are the coordinates of the vertices of the triangle after it has undergone these three transformations?</td>
<td>Word Problem: Charlie and Joey are looking at the incomplete table:
<table>
<tr><td>x</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>f(x)</td><td>2</td><td>a</td><td>b</td><td>54</td></tr>
</table>
Charlie says that a=$19\frac{1}{3}$ and b = $26\frac{2}{3}$. Joey claims that a= 6 and b=18. Their teacher says that both answers are valid. Explain how each student came up with their values for a and b.</td>
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Students will be expected to work collaboratively as well as individually. On a regular basis, classes will include:

- Group problem solving followed by group presentations.
- Open ended problems that are applications of the content being covered.
- Challenge problems, which may consist of detailed diagrams and presentations.

Estimated Homework

1 to $1\frac{1}{2}$ hours per class period. This is a general guideline for planning and scheduling purposes. A student's individual ability level and competency may affect the actual preparation times needed.

This Class Is Best For...

Integrated Math 2 Honors is an accelerated and challenging course designed for students who excel in math.

Course Materials

Required Materials

Modules are adapted from The Mathematics Vision Project (see link below) using Common Core State Standards

Internet resources

- Course overviews, modules, standards sequencing, student help and more...

  https://sites.google.com/a/sduhsd.net/student-curriculum/