

**Davison Community Schools
ADVISORY CURRICULUM COUNCIL
7-12 Mathematics Courses, CCSS aligned
Phase I/II, April 25th, 2013**

Math Advancement

Course Essential Questions:

What areas in mathematics do I need to improve on?

What are the strategies that I need to learn to become a better mathematics student?

How can I use a problem solving method to improve my ability to do math problems?

Unit 1: Solving Word Problems-Spiraled throughout the year.

Essential Question(s)

- How do you determine what a problem is asking you to do?
- How do you create a plan for solving a word problem?
- How do you decide on which strategy to use to solve a mathematical problem?
- How do you de-contextualize a word problem?
- What operation is necessary to answer the question being asked?

Essential Understanding(s)

- To understand what a problem is asking you to do, determine what do you know, what do you not need that is in the problem, and what do we want to find out.
- To create a plan for solving a word problem, look at the knowns and unknowns and determine the connection between them.
- When a strategy has been implemented, determine if there is anything that is still unclear. Do you need any other information?
- There are numerous strategies for solving mathematical problems, each of which is appropriate in certain context and we need to understand when each is most effective.
- To de-contextualize a word problem identify what in the problem is important, determine what is being asked, and determine how the information relates together.
- You should always check your answer for labels and to make sure that it is reasonable.

Curriculum Standards

Common Core Math Practices:

CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them

CCSS.Math.Practice.MP2 Reason abstractly and quantitatively.

CCSS.Math.Practice.MP4 Model with mathematics

CCSS.Math.Practice.MP6 Attend to precision

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Knowledge/Content Students will know ...	Skills/Processes Students will be able to...
<ul style="list-style-type: none"> • the four steps to problem solving as UPCC and what is involved in each of the steps. • Multiple strategies that can be used to solve mathematical problems. • Multiple strategies for de-contextualizing a problem. 	<ul style="list-style-type: none"> • apply the UPCC method for solving story problems. • Use multiple strategies to solve a mathematical problem • Determine the appropriate and most efficient strategy to de-contextualize a problem

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Unit 2: Intervention Structure and classroom support

Essential Question(s)

1. What is the student's foundation of Math skills?
2. How does the student progress their mathematical learning
3. What do struggling Math students need the most?

Essential Understanding(s)

- Each student will have a different foundation level which will be determined using the Star Math test.
- Through the use of Accelerated math program, Math Facts In a Flash, and re-teaching math concepts students will move towards mathematical fluency.
- Students need automaticity with basic math facts, mastery of critical math skills and motivation and self efficacy.

Curriculum Standards

Being that this course is an intervention course and will provide support for students and a wide range of foundational math levels, the standards used will range from the CCSS standards for kindergarten up to 8th grade. The standards that will be addressed will be dependent upon the individual needs of each student. The number of standards that will be addressed will also be dependent upon the number of learning gaps that are present for each individual student.

Knowledge/Content

Students will know about...

- ratios and Proportional relationships
- the number System
- expressions and equations
- Geometry
- Statistics and Probability
- Know that there are numbers that are not Rational.
- Understand the connections between proportional relationships, lines, and linear equations.
- Understand congruence and similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean

Skills/Processes

Students will be able to...

- analyze proportional relationships and use them to solve real-world and mathematical problems.
- apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
- Use properties of operations to generate equivalent expressions.
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
- draw, construct and describe geometrical figures and describe the relationships

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<p>theorem.</p>	<p>between them.</p> <ul style="list-style-type: none">• Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.• Use random sampling to draw inferences about a population.• Draw informal comparative inferences about two populations.• Investigate chance processes and develop, use, and evaluate probability models.• Approximate numbers that are not rational using by rational numbers.• Work with radicals and integer exponents.• Analyze and solve linear equations and pairs of simultaneous linear equations.• Define, evaluate, and compare functions.• Use functions to model relationships between quantities.• Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.• Investigate patterns of association in bi-variate data.
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Unit 3: Math Facts Fluency

<p>Essential Question(s)</p> <ul style="list-style-type: none"> • What strategies can I use to develop the required fluency skills? • How can I become quicker, more accurate, and more efficient when learning math facts? 	<p>Essential Understanding(s)</p> <ul style="list-style-type: none"> • There are a number of hands-on strategies that students can use to help develop fluency skills such as counters, rekenreks, open number lines,... • Through repeated practice using the Math facts in a flash program, through Math games, and the learning progression that takes place in order to become fluent students can reach math fluency.
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Curriculum Standards

CCSS required fluencies:

	Required Fluency
K	Add/subtract within 5
1	Add/subtract within 10
2	Add/subtract within 20 ₁ Add/subtract within 100 (pencil and paper)
3	Multiply/divide within 100 ₂ Add/subtract within 1000
4	Add/subtract within 1,000,000
5	Multi-digit multiplication
6	Multi-digit division Multi-digit decimal operations
7	Solve $px + q = r$, $p(x + q) = r$
8	Solve simple 2×2 systems by inspection

Knowledge/Content Students will know about...	Skills/Processes Students will be able to...
<ul style="list-style-type: none"> • multiple strategies used to solve related math fluency problems. • Student will know where their foundation of math is. 	<ul style="list-style-type: none"> • Solve math fluency problems quickly. • Solve math fluency problems accurately. • Solve math fluency problems efficiently.