

## **COURSE OF STUDY MATHEMATICS**

**Name of Course:** Fundamentals of Math

**Length of Course:** 180 Days

**Course Number:**

**Type of Offering:** General

**Grade Level:** 9+

**Credit Value:** 1 credit

**Prerequisite/s:**

**Minutes:** 7200

### **COURSE DESCRIPTION:**

Students who complete this course are well prepared for further work in math. They will have the skills needed to work a variety of problem types. They are flexible in writing equations and practiced in attending to details. They have successful experiences with problem solving through work ethic and skill.

### **TEXBOOK/S (if applicable)**

**Title:** Connecting Math Concepts

**Publisher:** SRA/McGraw-Hill

**Copyright:** 2003

**OTHER RESOURCES:** Textbook Ancillary Materials

Teacher Generated Materials

Calculator Applications

Internet-Based Applications

7/28/14

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9

Unit of Study: 1-10

Instructional Time: 800 minutes

Anchor & Academic Standard (Eligible Content)	Content	Teaching Method(s)	Materials & Resources	Assessment
<p>MA.2 Understand the meanings of operations, use operations and understand how they relate to each other</p> <p>MA.3 Compute accurately and fluently and make reasonable estimates.</p> <p>2.2.8.B Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimals, fractions, percents and proper and improper fractions</p> <p>MD.2. Represent and /or analyze mathematical situations using numbers, symbols, words, tables and or graphs</p> <p>2.8.8.G Represent relationships with tables or graphs in the coordinate plane and verbal or symbolic rules</p>	<p>Finding missing factors</p> <p>Fraction Review</p> <p>Fraction operations</p> <p>Whole number operations- problem solving</p> <p>Create number families for binary categories.</p> <p>Family Tables</p>	<ul style="list-style-type: none"> <li>- Co-teaching</li> <li>-Small group instruction</li> <li>- Direct Instruction</li> <li>-Guided Practice</li> <li>-Brainstorming</li> <li>-Practice and application</li> </ul>	<ul style="list-style-type: none"> <li>-Textbook- <u>Connecting Math Concepts</u> SRA, 2003</li> <li>-Independent black line masters</li> <li>-Teacher Generated Materials</li> <li>-Mastery Tests</li> <li>-Calculator Applications</li> </ul>	<ul style="list-style-type: none"> <li>-Homework</li> <li>-Book Tests</li> <li>-Test Remedies</li> <li>-Quizzes</li> <li>-Teacher observation</li> </ul>

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9

Unit of Study: 11-20

Instructional Time: 800 minutes

Anchor & Academic Standard (Eligible Content)	Content	Teaching Method(s)	Materials & Resources	Assessment
<p>MA.1 Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems 2.1.8.G Represent and use numbers in equivalent forms</p> <p>MA.2 Understand the meanings of operations, use operations and understand how they relate to each other</p> <p>MA.3 Compute accurately and fluently and make reasonable estimates. 2.2.8.B Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimals, fractions, percents and proper and improper fractions</p>	<p>Mixed numbers Equivalent fractions Fraction Review Rewriting equations with an unknown</p> <p>Fraction operations Fraction /corresponding division problem/ corresponding multiplication problem</p>	<ul style="list-style-type: none"> <li>- Co-teaching</li> <li>-Small group instruction</li> <li>- Direct Instruction</li> <li>-Guided Practice</li> <li>-Brainstorming</li> <li>-Practice and application</li> </ul>	<ul style="list-style-type: none"> <li>-Textbook- <u>Connecting Math Concepts</u>, SRA, 2003</li> <li>-Independent black line masters</li> <li>-Teacher Generated Materials</li> <li>-Mastery Tests</li> <li>-Calculator Applications</li> <li>-Internet-Based Applications</li> </ul>	<ul style="list-style-type: none"> <li>-Homework</li> <li>-Book Test</li> <li>-Test Remedies</li> <li>-Quizzes</li> <li>-Teacher observation</li> </ul>

7/28/14

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9

Unit of Study: 11-20

Instructional Time: 800 minutes

Anchor & Academic Standard (Eligible Content)	Content	Teaching Method(s)	Materials & Resources	Assessment
<p>M11.A.2.1 Apply ratio and/or proportion in problem-solving situations                      2.1.8.D Apply ratio and proportion to mathematical problem situations</p> <p>M8.B.2.3 Use, describe and/or develop procedures to determine measures of perimeter, circumference, area surface area and/or volume                      2.3.8.D Estimate use and describe measures of distance, rate, perimeter, area, volume, weight, mass and angles</p> <p>MD.2. Represent and /or analyze mathematical situations using numbers, symbols, words, tables and or graphs                      :2.8.8.C Create and interpret expressions,</p>	<p>Refer to a word problem to write a ratio equation and solve                      Identify whether equations for ratio problems are appropriately written</p> <p>Perimeter of polygons                      Area of rectangles</p> <p>Create/solve number-families to solve word problems                      Use number-family tables to answer related problems</p>	<ul style="list-style-type: none"> <li>- Co-teaching</li> <li>-Small group instruction</li> <li>- Direct Instruction</li> <li>-Guided Practice</li> <li>-Brainstorming</li> <li>-Practice and application</li> </ul>	<ul style="list-style-type: none"> <li>-Textbook- <u>Connecting Math Concepts</u> SRA, 2003</li> <li>-Independent black line masters</li> <li>-Teacher Generated Materials</li> <li>-Mastery Tests</li> <li>-Calculator Applications</li> <li>-Internet-Based Applications</li> </ul>	<ul style="list-style-type: none"> <li>-Homework</li> <li>-Book Test</li> <li>-Test Remedies</li> <li>-Quizzes</li> <li>-Teacher observation</li> </ul>





<p>measure and list the properties of complementary, supplementary and vertical angles.</p> <p>MD.2. Represent and /or analyze mathematical situations using numbers, symbols, words, tables and or graphs</p> <p>2.8.8.C Create and interpret expressions, equations that model problem situations.</p>	<p>Create/use number family to solve a comparison word problem</p> <p>Create number-family tables to work word problems</p>			
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7/28/14

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9

Unit of Study: 31-40

Instructional Time: 1000 minutes

Anchor & Academic Standard (Eligible Content)	Content	Teaching Method(s)	Materials & Resources	Assessment
<p>MA.1 Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems 2.1.5G Develop and apply number theory concepts</p> <p>MA.2 Understand the meanings of operations, use operations and understand how they relate to each other 2.2.8.B Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimals, fractions, percents and proper and improper fractions</p> <p>M11.A.3 Use estimation strategies in problem solving situations 2.2.11.B Use estimation to solve for which an exact answer is not needed</p>	<p>Write a fraction as a division problem</p> <p>Division problems</p> <p>Estimating answers by rounding Use estimation to determine whether problem has the wrong answer</p>	<ul style="list-style-type: none"> <li>- Co-teaching</li> <li>-Small group instruction</li> <li>- Direct Instruction</li> <li>-Guided Practice</li> <li>-Brainstorming</li> <li>-Practice and application</li> </ul>	<ul style="list-style-type: none"> <li>-Textbook- <u>Connecting Math Concepts</u> SRA, 2003</li> <li>-Independent black line masters</li> <li>-Teacher Generated Materials</li> <li>-Mastery Tests</li> <li>-Calculator Applications</li> <li>-Internet-Based Applications</li> </ul>	<ul style="list-style-type: none"> <li>-Homework</li> <li>-Book Tests</li> <li>-Test Remedies</li> <li>-Quizzes</li> <li>-Teacher observation</li> </ul>



<p>measure and list the properties of complementary, supplementary and vertical angles.</p> <p>MD.2. Represent and /or analyze mathematical situations using numbers, symbols, words, tables and or graphs</p> <p>2.8.8.C Create and interpret expressions, equations that model problem situations.</p>	<p>Create/use fraction number families with use of a diagram</p> <p>Create number-family to work various problems that involve classification or comparison</p>			
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TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9+

Unit of Study: 41-50

Instructional Time: 1000 minutes

Anchor & Academic Standard (Eligible Content)	Content	Teaching Method(s)	Materials & Resources	Assessment
<p>MA.1 Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems 2.1.5G Develop and apply number theory concepts</p> <p>MA.2 Understand the meanings of operations, use operations and understand how they relate to each other 2.2.8.B Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimals, fractions, percents and proper and improper fractions</p> <p>M11.A.3 Use estimation strategies in problem solving situations 2.2.11.D Describe and explain the amount of error that may exist in a</p>	<p>Write a fraction based on a diagram Fractions and equivalent decimal values</p> <p>Fraction operations</p> <p>Use estimation to determine whether problem has the wrong answer</p>	<ul style="list-style-type: none"> <li>- Co-teaching</li> <li>-Small group instruction</li> <li>- Direct Instruction</li> <li>-Guided Practice</li> <li>-Brainstorming</li> <li>-Practice and application</li> </ul>	<ul style="list-style-type: none"> <li>-Textbook- <u>Connecting Math Concepts</u> SRA, 2003</li> <li>-Independent black line masters</li> <li>-Teacher Generated Materials</li> <li>-Mastery Tests</li> <li>-Calculator Applications</li> <li>-Internet-Based Applications</li> </ul>	<ul style="list-style-type: none"> <li>-Homework</li> <li>-Book Tests</li> <li>-Test Remedies</li> <li>-Quizzes</li> <li>-Teacher observation</li> </ul>

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9+

Unit of Study: 41-50

Instructional Time: 1000 minutes

<b>Anchor &amp; Academic Standard (Eligible Content)</b>	<b>Content</b>	<b>Teaching Method(s)</b>	<b>Materials &amp; Resources</b>	<b>Assessment</b>
<p>computation using estimates</p> <p>M11.A.2.1 Apply ratio and/or proportion in problem-solving situations</p> <p>2.1.8.D Apply ratio and proportion to mathematical problem situations</p> <p>M8.C.3 Locate points or describe relationships using the coordinate plane.</p> <p>2.8.5.H Locate and identify points on a coordinate system</p> <p>MD.2. Represent and /or analyze mathematical situations using numbers, symbols, words, tables and or graphs</p> <p>2.8.8.C Create and interpret expressions, equations that model problem situations.</p>	<p>Solve a ratio-table problem, some that involve fractions</p> <p>Locate and identify ordered pairs on a coordinate system</p> <p>Use information shown in a number family table to work items that compare two quantities</p> <p>Write a number family for a sentence that compares two things</p>			

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9+

Unit of Study: 51-60

Instructional Time: 1200 minutes

<b>Anchor &amp; Academic Standard (Eligible Content)</b>	<b>Content</b>	<b>Teaching Method(s)</b>	<b>Materials &amp; Resources</b>	<b>Assessment</b>
<p>M11.A.1.1 Represent and/or use numbers in equivalent forms 2.1.8.A Represent and use numbers in equivalent forms</p> <p>MA.2 Understand the meanings of operations, use operations and understand how they relate to each other</p> <p>M.A.3.3 Compute and/or explain operations with integers, fractions and /or decimals. 2.2.8.A Complete calculations by applying the order of operations</p> <p>M11.A.2.1 Apply ratio and/or proportion in problem-solving situations 2.1.8.D Apply ratio and proportion to mathematical situations</p>	<p>Conversions- fraction, decimal, and equivalent mixed number Convert decimals and fractions with denominator of 100 into equivalent percent values and vice versa Complex fractions</p> <p>Work two/three-step word problems that specifies two/three operations</p> <p>Work a set of ratio-table problems , some of which require a fraction number family that refer to a difference</p>	<ul style="list-style-type: none"> <li>- Co-teaching</li> <li>-Small group instruction</li> <li>- Direct Instruction</li> <li>-Guided Practice</li> <li>-Brainstorming</li> <li>-Practice and application</li> </ul>	<ul style="list-style-type: none"> <li>-Textbook- <u>Connecting Math Concepts</u> SRA, 2003</li> <li>-Independent black line masters</li> <li>-Teacher Generated Materials</li> <li>-Mastery Tests</li> <li>-Calculator Applications</li> <li>-Internet-Based Applications</li> </ul>	<ul style="list-style-type: none"> <li>-Homework</li> <li>-Book Tests</li> <li>-Test Remedies</li> <li>-Quizzes</li> <li>-Teacher observation</li> </ul>

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9+

Unit of Study: 51-60

Instructional Time: 1200 minutes

Anchor & Academic Standard (Eligible Content)	Content	Teaching Method(s)	Materials & Resources	Assessment
<p>M11.C.1.1 Identify and or use parts of circles and segments associated with circles                      2.9.8.G Approximate the value of pi through experimentation</p> <p>M8D.2.1 Select and/or use a strategy to simplify an expression, solve an equation and/or check the solution for accuracy                      2.8.8.C Create and interpret expressions, equations that model problem situations.</p>	<p>Identify and use the properties of diameter and radius of a circle.                      Circumference</p> <p>Use inverse operations to undo a problem that has an unknown                      Solve problems with variables</p> <p>Use comparison facts to complete a number family</p>			

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9+

Unit of Study: 61-70

Instructional Time: 1400 minutes

Anchor & Academic Standard (Eligible Content)	Content	Teaching Method(s)	Materials & Resources	Assessment
<p>M11.A.1.1 Represent and/or use numbers in equivalent forms                      2.1.8.A Represent and use numbers in equivalent forms</p> <p>MA.2 Understand the meanings of operations, use operations and understand how they relate to each other</p> <p>M.A.3.3 Compute and/or explain operations with integers, fractions and /or decimals.                      2.2.8.A Complete calculations by applying the order of operations</p> <p>M11.A.2.1 Apply ratio and/or proportion in problem-solving situations                      2.1.8.D Apply ratio and proportion to mathematical problem situations</p>	<p>Write an equation that shows a fraction, an equivalent fraction with denominator of 100, and an equivalent percent value</p> <p>Use inverse operations to solve multi-step word problems</p> <p>Solve a set of multiplication/division word problems by making ratio equations</p> <p>Discriminate between ratio table problems and ratio equations</p>	<ul style="list-style-type: none"> <li>- Co-teaching</li> <li>-Small group instruction</li> <li>- Direct Instruction</li> <li>-Guided Practice</li> <li>-Brainstorming</li> <li>-Practice and application</li> </ul>	<ul style="list-style-type: none"> <li>-Textbook- <u>Connecting Math Concepts</u> SRA, 2003</li> <li>-Independent black line masters</li> <li>-Teacher Generated Materials</li> <li>-Mastery Tests</li> <li>-Calculator Applications</li> <li>-Internet-Based Applications</li> </ul>	<ul style="list-style-type: none"> <li>-Homework</li> <li>-Book Tests</li> <li>-Test Remedies</li> <li>-Quizzes</li> <li>-Teacher observation</li> </ul>

TUNKHANNOCK AREA SCHOOL DISTRICT

Course: Fundamentals of Math

Grade Level: 9+

Unit of Study: 61-70

Instructional Time: 1400 minutes

<b>Anchor &amp; Academic Standard (Eligible Content)</b>	<b>Content</b>	<b>Teaching Method(s)</b>	<b>Materials &amp; Resources</b>	<b>Assessment</b>
<p>M8.B.2.3 Apply appropriate techniques, tools and formulas to determine measurement 2.3.8.D Estimate, use and describe measures of distance, rate, perimeter, area, volume, weight, mass and angles.</p> <p>M8D.2.1 Select and/or use a strategy to simplify an expression, solve an equation and/or check the solution for accuracy 2.8.8.C Create and interpret expressions, equations that model problem situations.</p> <p>M.E.3 Understand and/or apply basic concepts of probability or outcomes 2.7.8 E Make valid inferences, predictions and arguments based on probability</p>	<p>Work a set of area-of-rectangle problems, some of which ask about the length of a side</p> <p>Use inverse operations to solve a pair of equations</p> <p>Write a statement of equality or inequality for two values</p> <p>Actual/expected outcomes Probability as a fraction</p>			