

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum**

“Numbers constitute the only universal language.”

- Nathanael West

STEM Department

Melissa Strype, Supervisor

Curriculum Committee

Tasha Delp

Kimberly Mate

Curriculum Developed:

July 2020

Date of Board Approval:

September 15, 2020

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum**

Table of Contents

Section	
Mission Statement.....	3
Affirmative Action Statement.....	3
EDUCATIONAL GOALS.....	4
Introduction.....	5
Curriculum Pacing Chart	6
Unit I: Social and Emotional Learning Skills	7
Unit II: Operations with Fractions	11
Unit III: Operations with Decimals.....	15
Unit IV: Problem Solving Skills	19
APPENDIX A: Suggested Supplemental Resource.....	23

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum**

Mission Statement

We commit to inspiring and empowering all students in Randolph schools to reach their full potential as unique, responsible and educated members of a global society.

**Affirmative Action Statement
Equality and Equity in Curriculum**

The Randolph Township School district ensures that the district's curriculum and instruction are aligned to the state's standards. The curriculum provides equity in instruction, educational programs and provides all students the opportunity to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socioeconomic status.

N.J.A.C. 6A:7-1.7(b): Section 504, Rehabilitation Act of 1973; N.J.S.A. 10:5; Title IX, Education Amendments of 1972

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

EDUCATIONAL GOALS
VALUES IN EDUCATION

The statements represent the beliefs and values regarding our educational system. Education is the key to self-actualization, which is realized through achievement and self-respect. We believe our entire system must not only represent these values, but also demonstrate them in all that we do as a school system.

We believe:

- The needs of the child come first
- Mutual respect and trust are the cornerstones of a learning community
- The learning community consists of students, educators, parents, administrators, educational support personnel, the community and Board of Education members
- A successful learning community communicates honestly and openly in a non-threatening environment
- Members of our learning community have different needs at different times. There is openness to the challenge of meeting those needs in professional and supportive ways
- Assessment of professionals (i.e., educators, administrators and educational support personnel) is a dynamic process that requires review and revision based on evolving research, practices and experiences
- Development of desired capabilities comes in stages and is achieved through hard work, reflection and ongoing growth

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Introduction

The Academic Skills cycle course is designed for students who require skill development in one or more specific areas. Concurrent with academic skill development, emphasis will be placed on foundational math skills, organization and time management, as well as students working toward increased responsibility and independence. The Academic Skills math teacher, in collaboration with the students, parents, content area teachers, and administrators, will provide instruction for each student based on specific needs and determine program goals for individuals. Skills will be taught directly or in conjunction with assignments from academic courses. Re-teaching, reinforcement of identified skills, and ongoing assessment will evidence growth and attainment of goals. Attainment of individual goals will be the criteria used to conclude student participation in the program. To achieve these goals, the course will be guided by the New Jersey Student Learning Standards, Collaborative for Academic, Social, and Emotional Learning (CASEL), and goals established by the Randolph Township Board of Education.

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum
Curriculum Pacing Chart**

SUGGESTED TIME ALLOTMENT	UNIT NUMBER	CONTENT - UNIT OF STUDY
Ongoing	I	Social and Emotional Learning Skills
Ongoing	II	Operations with Fractions
Ongoing	III	Operations with Decimals
Ongoing	IV	Problem Solving Skills

**Pacing is flexible based on individual student needs.*

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum**

Unit I: Social and Emotional Learning Skills

TRANSFER: Students will be able to formulate their own goals, find the resources they need to achieve objectives, communicate effectively in writing and in person, recognize essential skills they must acquire, and effectively pursue acquisition of those skills.		
<p>STANDARDS / GOALS:</p> <p>CASEL: Recognize one’s own emotions, thoughts, and values, and identify how they influence behavior.</p> <p>CASEL: Assess one’s strengths and limitations with a well-grounded sense of confidence, optimism, and a growth mindset.</p> <p>CASEL: Regulate one’s emotions, thoughts, and behaviors in different situations – effectively managing stress, controlling impulses, and motivating oneself.</p> <p>CASEL: Identify, set, and work toward personal and academic goals.</p> <p>CASEL: Communicate clearly, listen actively, cooperate with others, and seek and offer help when needed.</p>	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
	Effective study habits are directly related to academic success.	How can you be successful in the classroom?
	Academic success requires organization and preparation.	What does it mean to be prepared for class?
	Planning and time management help students achieve success.	What habits or traits might promote success?
	Efficient time management is essential for academic and personal success.	What does time management mean?
	Communicating effectively and fostering multiple literacies (reading, writing, speaking, listening, and utilizing technology) are essential life skills.	How do you determine the right approach when communicating with others?
	<u>KNOWLEDGE</u> Students will know:	<u>SKILLS</u> Students will be able to:
	Academic success is achieved through preparation and organization.	Utilize a planner or electronic resource to record homework and due dates for projects and assessments.

**Randolph Township Schools
 Randolph Middle School
 Academic Skills: Math Curriculum**

Unit I: Social and Emotional Learning Skills

<p>CASEL: Make constructive choices about personal behavior and social interactions.</p> <p>CASEL: Evaluate consequences of one’s actions and consider the well-being of oneself and others.</p> <p>NJ 2016 SLS: English Language Arts SL.6.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners – building on other’s ideas and expressing one’s own ideas clearly.</p> <p>SL.6.2: Interpret information presented in diverse media and formats (visually, quantitatively, or orally) and explain how it contributes to a topic under study.</p>	<p>Effective work habits include organization and prioritizing; skills that enhance lifelong learning.</p> <p>Goals can be reached, and stress and conflict avoided by creating a plan that breaks a task into manageable components.</p> <p>Effective time management increases productivity.</p> <p>Appropriate tools can facilitate organization and improve learning.</p> <p>Learning requires struggle, failure, hard work, and fortitude; it also requires knowing when and where to seek help.</p> <p>KEY TERMS: agenda, binder, dividers, folders, notebooks, organization, time-management, chunking, tracking, scheduling, collaborating, discussing, self-regulating, communicating, recognizing, evaluating, valuing</p>	<p>Organize and prioritize tasks effectively.</p> <p>Organize and break down the steps of a long- or short- term project.</p> <p>Identify and gather appropriate materials before beginning a task.</p> <p>Organize notebooks, binders, books, folders, backpack, and locker.</p> <p>Connect what happens in the classroom to their lives in a multitude of ways through class discussions and written reflections.</p>
---	---	---

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Unit I: Social and Emotional Learning Skills

ASSESSMENT EVIDENCE: Students will show their learning by:

- Self-assessing organization by utilizing notebook and binder checks
- Monitoring SMART Goal progress
- Compiling a portfolio to show growth through the completion of weekly assignments
- Self-assessing their progress through completion of student checklist
- Collaborating with teacher to evaluate individual ScootPad progress (online program)
- Evaluating one's understanding of skills through the completion of formative assessments
- Monitoring MAP test progress with teacher three times per school year

KEY LEARNING EVENTS AND INSTRUCTION:

- Pre-assess student organizational skills
- Mini-lessons/Advisory lessons targeting organization, decision-making, communication, task-management, and time-management
- Formative assessments to adjust instruction
- Self-reflection and self-assessment
- Goal-setting

**Randolph Township Schools
 Randolph Middle School
 Academic Skills: Math Curriculum**

Unit I: Social and Emotional Learning Skills

SUGGESTED TIME ALLOTMENT	Ongoing*
SUPPLEMENTAL UNIT RESOURCES	<p>Required Resources: MAP tests and reports ScootPad program and reports CASEL Online Resources Scholastic Math Magazines</p> <p>Suggested Resources: <i>Responsive Advisory Meeting</i> Resource Book SMART Goal Handouts Student checklist Teacher-created worksheets MyQPortal Online Resources Big Ideas Red Accelerated Textbook</p>

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Unit II: Operations with Fractions

TRANSFER: Students will be able to recognize fractions as real numbers, perform mathematical operations with them, and apply their knowledge to real-world, problem-solving scenarios.

STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p>NJ 2016 SLS: Math 3.NF.A.3.B: Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p>	<p>Fractions come in different forms, but equivalent fractions can be generated to represent the same part.</p>	<ul style="list-style-type: none"> • How are equivalent fractions helpful when solving problems?
<p>3.NF.A.3.C: Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.</p>	<p>The mathematical operation performed on fractions may differ depending on the situation or context.</p>	<ul style="list-style-type: none"> • How can changing key words in a problem influence how you solve it?
<p>4.NF.B.3.C: Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.</p> <p>4.NF.B.4: Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.</p>	<p><u>KNOWLEDGE</u> Students will know:</p>	<p><u>SKILLS</u> Students will be able to:</p>
	<p>Equivalent fractions can be represented by visual models.</p> <p>All numbers can be represented in fraction form.</p> <p>All mathematical operations can be performed with numbers in all forms.</p>	<p>Illustrate equivalent fractions by using visual models.</p> <p>Recognize that whole numbers can be written as fractions with a denominator of 1 and vice versa.</p> <p>Compute with addition and subtraction using fractions and mixed numbers with like denominators.</p>

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Unit II: Operations with Fractions

<p>4.NF.B.4.B: Understand a multiple of $\frac{a}{b}$ as a multiple of $\frac{1}{b}$, and use this understanding to multiply a fraction by a whole number.</p> <p>5.NF.A.1: Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.</p> <p>5.NF.B.4: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.</p> <p>5.NF.B.6: Solve real world problems involving multiplication of fractions and mixed numbers.</p> <p>5.NF.B.7: Apply and extend previous understandings of division to divide unit fractions by whole numbers and vice versa.</p> <p>6.NS.A.1: Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.</p>	<p>Real-world situations can be modeled using operations with fractions.</p> <p>KEY TERMS: equivalent fraction, visual model, numerator, denominator, sum, difference, product, quotient, reciprocal, simplify, reduce, like, unlike, whole number, mixed number, unit fraction</p>	<p>Apply previous understanding of multiplication to be able to multiply fractions and whole numbers.</p> <p>Label fractions with unlike denominators as equivalent fractions with like denominators to add and subtract them.</p> <p>Apply previous understandings of division to be able to divide fractions by whole numbers and vice versa.</p> <p>Solve real-world problems using the four operations with fractions and whole numbers.</p>
---	--	--

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Unit II: Operations with Fractions

ASSESSMENT EVIDENCE: Students will show their learning by:

- Compiling a portfolio to show growth through the completion of weekly assignments
- Self-assessing progress through completion of student checklist
- Collaborating with teacher to evaluate individual Scoot Pad progress (online program)
- Evaluating one's understanding of skills through the completion of formative assessments
- Applying their understanding of the relationship between division and fractions to applicable real-world scenarios (i.e. design "meal options" of slice combinations of pizza and develop a quality menu plan to innovate pizza purchases)
- Monitoring MAP test progress with teacher three times per school year

KEY LEARNING EVENTS AND INSTRUCTION:

- Students will complete individualized Scoot Pad Pathway based on MAP diagnostic and/or Scoot Pad diagnostic
- Supplemental lessons and small group/individual instruction when necessary
- Use of manipulatives
- Use fraction circle pizza pieces to generate equivalent fractions and add fractions.

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum**

Unit II: Operations with Fractions

SUGGESTED TIME ALLOTMENT	Ongoing*
SUPPLEMENTAL UNIT RESOURCES	<p>Required Resources: MAP tests and reports Scoot Pad program and reports CASEL Online Resources Scholastic Math Magazines</p> <p>Suggested Resources: <i>Responsive Advisory Meeting</i> Resource Book SMART Goal Handouts Student checklist Teacher-created worksheets MyQPortal Online Resource: Designer Pizza Big Ideas Red Accelerated Textbook</p>

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum**

Unit III: Operations with Decimals

TRANSFER: Students will be able to recognize place value with decimals to compare them, perform mathematical operations with them, and apply their knowledge to real-world, problem-solving scenarios.		
STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p>NJ 2016 SLS: Math</p> <p>5.NBT.A.3: Read, write, and compare decimals to thousandths.</p> <p>5.NBT.A.3.B: Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.</p> <p>5.NBT.A.4: Use place value understanding to round decimals to any place.</p> <p>5.NBT.B.7: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.</p>	Fractions express a relationship between two numbers.	<ul style="list-style-type: none"> How do we solve problems with whole numbers and decimals?
	The mathematical operation performed on decimals may differ depending on the situation or context.	<ul style="list-style-type: none"> How can changing key words in a problem influence how you solve it?
	<u>KNOWLEDGE</u> Students will know:	<u>SKILLS</u> Students will be able to:
	Decimal placement affects the magnitude of numbers and how they are compared.	<p>Read decimals correctly to the thousandths place.</p> <p>Compare decimals with different place values to the thousandths place.</p> <p>Order decimals with different place values to the thousandths place.</p>

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Unit III: Operations with Decimals

<p>6.NS.B.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p> <p>7.NS.A.2.D: Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>	<p>Decimals can be rounded to make mathematical operations easier to complete.</p> <p>All mathematical operations can be completed with numbers in decimal form.</p> <p>All rational numbers can be represented in different forms, including decimals.</p> <p>Real world situations can be modeled using operations with decimals.</p>	<p>Apply rounding rules for whole numbers to round a decimal to any place value.</p> <p>Compute with addition and subtraction using decimals with different place values.</p> <p>Apply previous understanding of multiplication to be able to multiply decimals with different place values.</p> <p>Apply previous understandings of division to be able to divide decimals with different place values.</p> <p>Convert a rational number to a decimal using long division.</p> <p>Determine whether a decimal is terminating or repeating after converting it from a rational number.</p> <p>Solve real-world problems using the four operations with decimals.</p>
--	---	--

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Unit III: Operations with Decimals

	KEY TERMS: decimal, whole number, sum, difference, product, quotient, divisor, dividend, rational number, terminating decimal, repeating decimal, place value, tenths, hundredths, thousandths, rounding	
--	---	--

ASSESSMENT EVIDENCE: Students will show their learning by:

- Compiling a portfolio to show growth through the completion of weekly assignments
- Self-assessing their progress through completion of student checklist
- Collaborating with teacher to evaluate individual Scoot Pad progress (online program)
- Evaluating one's understanding of skills through the completion of formative assessments
- Applying knowledge of decimal place value to real-world scenarios. (i.e. compute fluently and make reasonable estimates by developing a system for keeping and using financial records).
- Monitoring MAP test progress with teacher three times per school year

KEY LEARNING EVENTS AND INSTRUCTION:

- Students will complete individualized Scoot Pad Pathway based on MAP diagnostic and/or Scoot Pad diagnostic
- Financial education performance task
- Supplemental lessons and small group/individual instruction when necessary
- Use of manipulatives
- Reconcile a checking account register to a checking account statement.

**Randolph Township Schools
 Randolph Middle School
 Academic Skills: Math Curriculum**

Unit III: Operations with Decimals

SUGGESTED TIME ALLOTMENT	Ongoing*
UNIT RESOURCES	<p>Required Resources: MAP tests and reports ScootPad program and reports CASEL Online Resources Scholastic Math Magazines</p> <p>Suggested Resources: <i>Responsive Advisory Meeting</i> Resource Book SMART Goal Handouts Student checklist Teacher-created worksheets https://www.tdbank.com/wowzone/lessons/Gr6-8Lesson2.pdf MyQPortal Online Resources Big Ideas Red Accelerated Textbook</p>

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum**

Unit IV: Problem Solving Skills

TRANSFER: Students will be able to practice and apply strategies for problem solving, communicate in a mathematical setting, represent more difficult problems by analyzing patterns, and connect their math knowledge and skills to real-world scenarios.		
STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p>NJ 2016 SLS: Math</p> <p>4.NF.B.3.D: Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.</p> <p>4.NF.B.4.C: Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.</p> <p>5.NF.A.2: Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem.</p>	Application of math skills to real-world scenarios is essential to success outside the math classroom.	How can I use the skills that I have learned in the math classroom to be successful in other aspects of my life?
	Mathematicians employ strategies to help persevere in solving difficult problems.	What strategies can be utilized when I encounter a math problem that I do not immediately understand?
	<u>KNOWLEDGE</u> Students will know:	<u>SKILLS</u> Students will be able to:
	Mathematical operations can be applied to real-world problems involving fractions.	Analyze key words in word problems with fractions to determine the operation needed to solve it.
		Solve real-world problems with fractions using the correct operation.

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Unit IV: Problem Solving Skills

<p>5.NF.B.7.C: Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.</p> <p>5.NBT.B.7: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.</p> <p>6.NS.A.1: Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.</p> <p>Standards for Mathematical Practice MP1: Make sense of problems and persevere in solving them. MP2: Reason abstractly and quantitatively. MP3: Construct viable arguments and critique the reasoning of others.</p>	<p>Mathematical operations can be applied to real-world problems involving decimals.</p> <p>Mathematics can be used to represent abstract ideas in a concrete way.</p> <p>Mathematical conclusions should be supported by mathematically sound reasoning.</p> <p>Many strategies and tools can be used to solve problems and it is important to know when to use each one.</p> <p>KEY TERMS: fraction, decimal, sum, difference, product, quotient, visual model, key words, reciprocal, justify</p>	<p>Analyze key words in word problems with decimals to determine the operation needed to solve it.</p> <p>Solve real-world problems with decimals using the correct operation.</p> <p>Explain how to represent a real-world problem using numbers and variables.</p> <p>Construct a visual model to represent an abstract mathematical problem.</p> <p>Justify answers to real-world problems and analyze the reasoning of others.</p> <p>Differentiate between strategies for solving problems to best choose the most appropriate one.</p>
--	---	--

**Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum**

Unit IV: Problem Solving Skills

<p>MP4: Model with mathematics. MP5: Use appropriate tools strategically. MP6: Attend to precision. MP7: Look for and make use of structure. MP8: Look for and express regularity in repeated reasoning.</p>		
<p>ASSESSMENT EVIDENCE: Students will show their learning by:</p> <ul style="list-style-type: none">• Compiling a portfolio to show growth through the completion of weekly assignments• Self-assessing their progress through completion of student checklist• Collaborating with teacher to evaluate individual Scoot Pad progress (online program)• Evaluating one’s understanding of skills through the completion of formative assessments• Solving problems that arise in mathematics and in other contexts.• Monitoring MAP test progress with teacher three times per school year <p>KEY LEARNING EVENTS AND INSTRUCTION:</p> <ul style="list-style-type: none">• Students will complete individualized Scoot Pad Pathway based on MAP diagnostic• Supplemental lessons and small group/individual instruction when necessary• Use of manipulatives		

**Randolph Township Schools
 Randolph Middle School
 Academic Skills: Math Curriculum**

Unit IV: Problem Solving Skills

SUGGESTED TIME ALLOTMENT	Ongoing*
UNIT RESOURCES	<p>Required Resources: MAP tests and reports ScootPad program and reports CASEL Online Resources Scholastic Math Magazines</p> <p>Suggested Resources: <i>Responsive Advisory Meeting</i> Resource Book SMART Goal Handouts Student checklist Teacher-created worksheets MyQPortal Online Resource Big Ideas Red Accelerated Textbook</p>

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

APPENDIX A: Suggested Supplemental Resource

Name _____

Date _____

Academic Skills Assignment Checklist

Period _____

Use this checklist to keep track of your progress in Academic Skills. When an assignment is completed, you can put a sticker or a stamp in the completed column.



Name of Assignment	Completed?

Randolph Township Schools
Randolph Middle School
Academic Skills: Math Curriculum

Specific	<i>What do you want to achieve?</i> <i>Who needs to be involved to accomplish this goal?</i> <i>When do you want to have your goal finished?</i> <i>Why should you achieve this goal exactly?</i>	
Measurable	<i>How can you measure progress and know if you've successfully met your goal?</i>	
Achievable	<i>Are you capable of achieving the goal?</i> <i>Do you have the needed skills?</i> <i>If you haven't, how can you build them?</i>	
Relevant	<i>Why should you achieve this goal?</i> <i>What is the impact?</i>	
Timely	<i>What is the due date of your goal?</i> <i>Can the goal be achieved until this date?</i>	
SMART Goal		