

NJDOE MODEL CURRICULUM

CONTENT AREA: Math GRADE: 3 UNIT: # 3 UNIT NAME: Problem Solving w/ 4 Operations and Fractions on a Number Line

STUDENT LEARNING OBJECTIVES		CORRESPONDING CCSS	
1	Tell and write time to the nearest minute to solve word problems with addition and subtraction involving time intervals in minutes.	3.MD.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
2	Solve one-step word problems by estimating, measuring, and comparing liquid volumes and masses using appropriate tools and units.	3.MD.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as beaker with a measurement scale) to represent the problem.
3	Interpret the unit fraction $\frac{1}{b}$ as the quantity formed by 1 of b equal parts of a whole and the fraction $\frac{a}{b}$ as the quantity formed by a parts $\frac{1}{b}$; e.g., 3 unit fractions of $\frac{1}{4}$ add to the quantity $\frac{3}{4}$.	3.NF.1	Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.
4	Represent the equal parts of shapes as a unit fraction (e.g., a pizza cut into 8 equal slices has 8 slices and each slice has quantity $\frac{1}{8}$ of the whole pizza).	3.G.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as $\frac{1}{4}$ of the area of the shape.</i>
5	Make a drawing of a number line depicting the position of $\frac{1}{b}$ (with $b = 2, 3, 4, 6,$ or 8). Represent the unit fraction $\frac{1}{4}$ on the number line by dividing the number line between 0 & 1 into 4 equal lengths and naming the point at the end of the first length as the position of unit fraction $\frac{1}{4}$; apply the same method for locating the points $\frac{1}{2}, \frac{1}{3}, \frac{1}{5}, \frac{1}{6},$ and $\frac{1}{8}$ on the number line.	3.NF.2a	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a) Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.
6	Make a drawing of a number line depicting a fraction $\frac{a}{b}$ (with $a < b$ and $b = 2, 4, 3, 4, 6,$ or 8).	3.NF.2b	Understand a fraction as a number on the number line; represent fractions on a number line diagram. b) Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.
7	Fluently multiply and divide within 50, using the relationship between multiplication and division (e.g., if $44 \div 2$ equals 22, then 22×2 must equal 44).	3.OA.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations.

STUDENT LEARNING OBJECTIVES		CORRESPONDING CCSS	
8	Find the value of an unknown (expressed as a letter) in an equation that is a representation of a two-step word problem (with any four operations) and assess the reasonableness of the value.	3.OA.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Major Content **Supporting Content** **Additional Content** (Identified by PARCC Model Content Frameworks). ***Bold type indicates grade level fluency requirements.*** (Identified by PARCC Model Content Frameworks).

Selected Opportunities for Connection to Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. **Reason abstractly and quantitatively.**
 - SLO #1 Use quantitative reasoning to create a coherent representation of time and time intervals in order to solve problems regarding time.
 - SLO #3 Understand and make sense of fraction quantities and their relationship to whole numbers.
 - SLO #4 Understand and make sense of fraction quantities in terms of whole shapes.
 - SLO #5 Understand and make sense of fraction units as quantities on a number line.
3. **Construct viable arguments and critique the reasoning of others.**
 - SLO #1 Use and apply previously stated definitions and assumptions about time to tell, write, and solve word problems involving intervals of minutes on a clock.
 - SLO #3 Understand and use stated assumptions and definitions to interpret fractions as parts of wholes.
4. **Model with mathematics.**
 - SLO #1 Apply previously learned concepts about time and time intervals to solve word problems involving addition and subtraction of time intervals.
 - SLO #2 Apply previously learned concepts about measurement to solve 1-step word problems involving comparing liquid volumes & masses.
 - SLO #8 Apply previously learned concepts regarding all four operations to find the unknown value in an equation expressed as a 2-step word problem.
5. **Use appropriate tools strategically.**
 - SLO #2 Consider and use available tools, such as drawings, diagrams, and beakers, appropriately when solving word problems comparing liquid volume and mass.
 - SLO #5 Consider and use available tools, such as drawings and the number line, when solving problems involving the number line and fraction units.
 - SLO #6 Consider and use available tools, such as drawings and the number line, when depicting a fraction.
6. **Attend to precision.**
 - SLO #2 Specify units of measurement appropriate to the problem.
7. **Look for and make use of structure.**
 - SLO #7 Look for and discern patterns between multiplication and division to fluently solve multiplication and division problems.
8. **Look for and express regularity in repeated reasoning.**
 - SLO #8 Evaluate the reasonableness of results from equations derived from two-step word problems.

Bold type identifies possible starting points for connections to the SLOs in this unit.

Greater Brunswick Charter School Curriculum

Grade level: 3		Subject: Math			Unit #: 3		
Day	Topic	SLO	Learning Objectives	Essential Questions	Suggested Student Activities		Possible Resources (in addition to MyMath)
					Whole Group	Small Group / Stations	
1	<ul style="list-style-type: none"> Fractions Multiplication <p><i>Don't limit your practice in math facts to the opportunities listed in the curriculum. Keep them in mind every day.</i></p>		<ul style="list-style-type: none"> To determine foundational readiness for the content To improve X fluency 			<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath p.563-566 OnlineMultiplicationGames A number of games that can be adapted to be used with multiplication or division
2	<ul style="list-style-type: none"> Unit Fraction Division 	3, 4	<ul style="list-style-type: none"> To determine the denominator in a unit fraction given a diagram divided into parts. To improve ÷ fluency 	<i>How are all unit fractions alike?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 10.1 p.569-574 CommonCorePractice OnlineDivisionGames GoodStrategyResource
3	Parts of a whole	3	To determine the numerator of a fraction given a diagram divided into parts.	<i>How can I make a fraction from a diagram?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 10.2 P 575-580.
4	Parts of a group	3	To determine the numerator of a fraction given a group of objects.	<i>How can I make a fraction from a group of different objects?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 10.3 p.581-586
5	<ul style="list-style-type: none"> Diagrams Multiplication 	3	To draw diagrams given a fraction	<i>How can I make a diagram and a fraction from a real life situation?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath p.587-594
6	Assessment	3, 4				<ul style="list-style-type: none"> Review Assessment 	
7	Fractions on a number line	5, 6	To place fractions on a number line according to their relative value	<i>How can I show one fraction is more than another using a number line?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 10.4 p.595-600 KhanAcademyLesson MakeyourownPractice

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8	<ul style="list-style-type: none"> Equivalent fractions Division 	3, 4, 5, 6	To determine equal fractions having different denominators.	<i>How can fractions be equal if they don't use the same numbers?</i>	<i>Much of these two lessons is not identified in the Model Curriculum for this unit, but while you are in this portion of the book the school has chosen, you may as well address it.</i>	<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 10.6 p.601-606
9	Fractions equal to 1 Comparing Fractions	3, 4, 5, 6	To write a fraction equal to 1 with any denominator. To compare fractions with the same denominator.	<i>What fractions are the same as one whole thing?</i> <i>What makes the difference between fractions with the same denominator?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 10.7, 10.8 p.607-618
10	Fractions	3, 4, 5, 6	To solidify learning in the unit.	<i>Do I know this well enough to handle hard problems?</i>		<ul style="list-style-type: none"> Independent Practice Intervention/Enrichment as needed for strugglers i-Ready 	<ul style="list-style-type: none"> MyMath p.619-622
11	Assessment					<ul style="list-style-type: none"> Review Assessment 	
12	Measurement and capacity	2	To determine readiness for further study.	<i>What do I know from my life about measuring liquids?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath p.625-632
13	Scale of liquid and weight measures	2	To determine the scale of measure to use for an object.	<i>Which measure should I use for an object?</i> <i>There is no conversion between metric and customary measures needed.</i>	<i>Students need only know the difference between a measure and a thousand times that measure. The same as asking if you are going to measure something using inches or miles.</i>	<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 11.1, 11.3 p.633-638, 645-650 <i>Feel free to use science time for some of this</i> CapacityPractice
13	Solving capacity and mass problems	2, 8	To solve problems in liquid capacity and mass.	<i>How can I know what I need and what to do to solve real life problems?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 11.2, 11.4 p.639-644, 651-656 <i>Feel free to use science time for some of this.</i>

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14	Solving capacity and mass problems	2, 8	To solve problems in liquid capacity and mass.	<i>How can I know what I need and what to do to solve real life problems?</i>	<i>Just more practice because this is the goal of the unit on this topic.</i>	<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment as needed for strugglers i-Ready 	<ul style="list-style-type: none"> MassPractice ChoicesOnThisPage
15	Assessment	2, 8				<ul style="list-style-type: none"> Review Assessment 	
16	<ul style="list-style-type: none"> Time to the minute Multiplication 	1	To determine the time from an analog clock.	<i>What time does that clock say it is?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 11.5 p.659-664 TimeReadingPractice-CCS
17	Elapsed time	1, 8	To determine the time that has passed between two clock readings.	<i>How much time has gone by?</i>		<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath 11.6 p.665-670
18	<ul style="list-style-type: none"> Problems with time Division 	1,2, 8	To find solutions to reasonably life-like situations.	<i>How can I use my skills in +, -, X, and / as well as time measures to solve real problems.</i>	<i>Keep a focus here. This is the main point of the unit in applications of time.</i>	<ul style="list-style-type: none"> Lesson & Guided Practice Independent Practice Intervention/Enrichment i-Ready 	<ul style="list-style-type: none"> MyMath p.671-676 ElapsedTimeResources TimeLapsePractice-MTR TimeLapsePractice-SZ TimeLapsePractice-CCS
19	Problems with measure and time	1, 2, 8	To determine assessment readiness	<i>Do I know what I need to know to solve problems using time and measures?</i>		<ul style="list-style-type: none"> Independent Practice Intervention/Enrichment as needed for strugglers i-Ready 	<ul style="list-style-type: none"> MyMath p.677-680
20	Assessment	1, 2, 8				<ul style="list-style-type: none"> Review Assessment 	<ul style="list-style-type: none"> MyMath p.
Word Wall Candidates							
Half / Halves Fraction Heavier Analog Liter Time interval		Third / Thirds Unit Fraction Lighter Digital Milliliter		Fourth/Fourths/Quarter Equivalent Hour Capacity Gram		Numerator Minute Liquid volume Kilogram	Denominator Second Mass Metric

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Authentic Application

Your Goal: To create a schedule for your school and home day.

Your Role: Planner

Your Audience: You

The Situation: You are to create a time schedule for your day from the time you wake up to the time you go to sleep. You will need to record the times you use each day for five school days including the start time of each activity, the end time for each activity, and the elapsed time for each activity. Then, you should also list for each activity the amount of time you believe you really need for each.

Your Product: A chart showing your daily time schedule including:

Activity Name	Start Time of Activity	Time Actually Needed for Activity	Elapsed Time of Activity in my Schedule	End Time of Activity
Example: Eat breakfast	7:00 AM	17 minutes	15 minutes	7:15 AM

Your Success: Scoring Rubric:

	1	2	3	4
Use of day	Most of the day is scheduled but there are more than 3 time gaps in the schedule.	Most of the day is planned. Only 3 gaps or fewer exist.	Every minute of the day is planned in 5 minute intervals.	Every minute of the day is planned in 1 minute intervals.
Activity inclusion	Many typical activities are missing.	Most major activities in a typical child's life are listed.	All major activities are listed in the schedule	All major activities are listed as well as activities that occur on only some days.
Mathematics	Some of the times are correctly added.	Most of the time are correctly added.	All of the times are correctly added and listed.	All of the times are correctly added and listed and there are additional notations on the schedule.