

Dept. of Education and
Early Development



ALASKA MATHEMATICS STANDARDS WITH LEARNING TARGETS GRADE 3

Adapted with permission from Kentucky Department Education, Frankfort, Kentucky 40601.

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Represent and solve problems involving multiplication and division.
Standard	3.OA.1. Interpret products of whole numbers (e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each). <i>For example, show objects in rectangular arrays or describe a context in which a total number of objects can be expressed as 5×7.</i>

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Find the product of multiple groups of objects.	Interpret products of whole numbers as a total number of objects in a number of groups.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Represent and solve problems involving multiplication and division.
Standard	3.OA.2. Interpret whole-number quotients of whole numbers (e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each). <i>For example, deconstruct rectangular arrays or describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.</i>

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Know what the numbers in a division problem represent.	<p>Explain what division means and how it relates to equal shares.</p> <p>Interpret quotients as the number of shares or the number of groups when a set of objects is divided equally.</p>		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Represent and solve problems involving multiplication and division.
Standard	3.OA.3. Use multiplication and division numbers up to 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Multiply and divide within 100.	Solve word problems in situations involving equal groups, arrays, and measurement quantities. Represent a word problem using a picture, an equation with a symbol for the unknown number, or in other ways.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Represent and solve problems involving multiplication and division.
Standard	3.OA.4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = ? \div 3$, $6 \times 6 = ?$.</i>

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Multiply and divide within 100.	Determine which operation (multiplication or division) is needed to determine the unknown whole number. Solve to find the unknown whole number in a multiplication or division equation.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Understand properties of multiplication and the relationship between multiplication and division.
Standard	<p>3.OA.5.</p> <p>Make, test, support, draw conclusions and justify conjectures about properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties.)</p> <ul style="list-style-type: none"> • Commutative property of multiplication: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known; • Associative property of multiplication: $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$; • Distributive property: Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$; • Inverse property (relationship) of multiplication and division.

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Multiply and divide within 100.	<p>Explain how the properties of operations work.</p> <p>Apply properties of operations as strategies to multiply and divide.</p>		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Understand properties of multiplication and the relationship between multiplication and division.
Standard	3.OA.6.
	Understand division as an unknown-factor problem. <i>For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.</i>

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Identify the multiplication problem related to the division problem. Identify the unknown factor in the related multiplication problem.	Use multiplication to solve division problems. Recognize multiplication and division as related operations and explain how they are related.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Multiply and divide up to 100.
Standard	3.OA.7. Fluently multiply and divide numbers up to 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. By the end of Grade 3, know from memory all products of two one-digit numbers.

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Know from memory all products of two one-digit numbers.	Analyze a multiplication or division problem in order to choose an appropriate strategy to fluently multiply or divide within 100.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Solve problems involving the four operations, and identify and explain patterns in arithmetic.
Standard	3.OA.8. Solve and create two-step word problems using any of the four operations. Represent these problems using equations with a symbol (box, circle, question mark) standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Know the order of operations (without parentheses). Know strategies for estimating.	Construct an equation with a letter standing for the unknown quantity. Solve two-step word problems using the four operations. Justify your answer using various estimation strategies.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Operations and Algebraic Thinking
Cluster	Solve problems involving the four operations, and identify and explain patterns in arithmetic.
Standard	3.OA.9.
	Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. <i>For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</i>

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Identify arithmetic patterns (such as even and odd numbers, patterns in an addition table, patterns in a multiplication table, patterns regarding multiples and sums).	<p>Explain rules for a pattern using properties of operations.</p> <p>Explain relationships between the numbers in a pattern.</p>		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Number and Operations in Base Ten
Cluster	Use place value understanding and properties of operations to perform multi-digit arithmetic.
Standard	3.NBT.1.
	Use place value understanding to round whole numbers to the nearest 10 or 100.

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Define “round or rounding” in relation to place value.			
Round a whole number to the nearest 10.			
Round a whole number to the nearest 100.			

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Number and Operations in Base Ten
Cluster	Use place value understanding and properties of operations to perform multi-digit arithmetic.
Standard	3.NBT.2. Use strategies and/or algorithms to fluently add and subtract with numbers up to 1000, demonstrating understanding of place value, properties of operations, and/or the relationship between addition and subtraction.

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Know strategies and algorithms for adding and subtracting within 1000. Fluently add and subtract within 1000.			

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Number and Operations in Base Ten
Cluster	Use place value understanding and properties of operations to perform multi-digit arithmetic.
Standard	3.NBT.3. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9×80 , 10×60) using strategies based on place value and properties of operations.

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Know strategies to multiply one-digit numbers by multiples of 10 (up to 90).	Apply knowledge of place value to multiply one-digit whole numbers by multiples of 10 in the range 10-90.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Number and Operations—Fractions
Cluster	Develop understanding of fractions as numbers.
Standard	3.NF.1.
	Understand a fraction $1/b$ (e.g., $1/4$) as the quantity formed by 1 part when a whole is partitioned into b (e.g., 4) equal parts; understand a fraction a/b (e.g., $2/4$) as the quantity formed by a (e.g., 2) parts of size $1/b$. (e.g., $1/4$).

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Recognize a unit fraction such as $\frac{1}{4}$ as the quantity formed when the whole is partitioned into 4 equal parts. Identify a fraction such as $\frac{2}{3}$ and explain that the quantity formed is 2 equal parts of the whole partitioned into 3 equal parts ($\frac{1}{3}$ and $\frac{1}{3}$ of the whole $\frac{3}{3}$)	Express a fraction as the number of unit fractions. Use accumulated unit fractions to represent numbers equal to, less than and greater than one ($\frac{1}{3}$ and $\frac{1}{3}$ is $\frac{2}{3}$; $\frac{1}{3}$, $\frac{1}{3}$, $\frac{1}{3}$, and $\frac{1}{3}$ is $\frac{4}{3}$).		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Number and Operations—Fractions
Cluster	Develop understanding of fractions as numbers.
Standard	3.NF.2.a
	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction $1/b$ (e.g., $1/4$) on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b (e.g., 4) equal parts. Recognize that each part has size $1/b$ (e.g., $1/4$) and that the endpoint of the part based at 0 locates the number $1/b$ (e.g., $1/4$) on the number line.

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

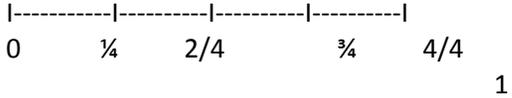
Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Define the interval from 0 to 1 on a number line as the whole.	Represent each equal part on a number line with a fraction.		
Divide a whole on a number line into equal parts.	Explain that the end of each equal part is represented by a fraction ($1/\text{the number of equal parts}$).		
Recognize that the equal parts between 0 and 1 have a fractional representation.			

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Numbers and Operations - Fractions
Cluster	Develop understanding of fractions as numbers.
Standard	3.NF.2.b
	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction a/b (e.g., $2/8$) on a number line diagram or ruler by marking off lengths $1/b$ (e.g., $1/8$) from 0. Recognize that the resulting interval has size a/b (e.g., $2/8$) and that its endpoint locates the number a/b (e.g., $2/8$) on the number line.

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Define the interval from 0 to 1 on a number line as the whole. Divide a whole on a number line into equal parts.	Define the interval from 0 to 1 on a number line as the whole. Divide a whole on a number line into equal parts. 		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Number and Operations—Fractions
Cluster	Develop understanding of fractions as numbers.
Standard	<p>3.NF.3.a-b</p> <p>Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <ol style="list-style-type: none"> a. Understand two fractions as equivalent if they are the same size (modeled) or the same point on a number line. b. Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$). Explain why the fractions are equivalent (e.g., by using a visual fraction model).

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Describe equivalent fractions. Recognize simple equivalent fractions.	Compare fractions by reasoning about their size to determine equivalence. Use number lines, size, visual fraction models, etc. to find equivalent fractions.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Number and Operations- Fractions
Cluster	Develop understanding of fractions as numbers.
Standard	3.NF.3c
	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. c. Express and model whole numbers as fractions, and recognize and construct fractions that are equivalent to whole numbers. <i>For example: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.</i>

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Recognize whole numbers written in fractional parts on a number line. Recognize the difference in a whole number and a fraction.	Explain how a fraction is equivalent to a whole number.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Number and Operations- Fractions
Cluster	Develop understanding of fractions as numbers.
Standard	<p>3.NF.3d</p> <p>Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions (e.g., by using a visual fraction model).</p>

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
<p>Explain what the numerator in a fraction represents and its location.</p> <p>Explain what the denominator in a fraction represents and its location.</p> <p>Recognize whether fractions refer to the same whole.</p>	<p>Determine if comparisons of fractions can be made (if they refer to the same whole).</p> <p>Compare two fractions with the same numerator by reasoning about their size.</p> <p>Compare two fractions with the same denominator by reasoning about their size.</p> <p>Record the results of comparisons using</p>		

	symbols $>$, $=$, or $<$. Justify conclusions about the equivalence of fractions.		
--	---	--	--

Alaska Mathematics Standards

Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
Standard	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 or hours (e.g., by representing the problem on a number line diagram or clock).

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Recognize minute marks on analog clock face and minute position on digital clock face.	Compare an analog clock face with a number line diagram.		
Know how to write time to the minute.	Use a number line diagram to add and subtract time intervals in minutes.		
Tell time to the minute.	Solve word problems involving addition and subtraction of time intervals in minutes.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
Standard	<p>3.MD.2.</p> <p>Estimate and measure liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Excludes compound units such as cm³ and finding the geometric volume of a container.); Add, subtract, multiply, or divide to solve and create one-step word problems involving masses or volumes that are given in the same units (e.g., by using drawings, such as a beaker with a measurement scale, to represent the problem). (Excludes multiplicative comparison problems [problems involving notions of “times as much.”]).</p>

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
<p>Explain how to measure liquid volume in liters.</p> <p>Explain how to measure mass in grams and kilograms.</p> <p>Add, subtract, multiply and divide units of liters, grams, and kilograms.</p> <p>Know various strategies to represent a word problem involving liquid volume or mass.</p>	<p>Solve one step word problems involving masses given in the same units.</p> <p>Solve one step word problems involving liquid volume given in the same units.</p>	<p>Measure liquid volumes using standard units of liters.</p> <p>Measure mass of objects using standard units of grams (g), and kilograms (kg).</p>	

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
Standard	3.MD.3. Select an appropriate unit of English, metric, or non-standard measurement to estimate the length, time, mass, or temperature (L).

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Identify English, metric and non-standard measurements. Identify units of measure for length, time, mass and temperature.	Estimate length, time, mass and temperature using English, metric or non-standard measurements.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Represent and interpret data.
Standard	3.MD.4.
	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i>

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Explain the scale of a graph with a scale greater than one.	Analyze a graph with a scale greater than one.		Create a scaled picture graph to show data.
Identify the scale of a graph with a scale greater than one.	Choose a proper scale for a bar graph or picture graph. Interpret a bar/picture graph to solve one or two step problems asking “how many more” and “how many less”.		Create a scaled bar graph to show data.

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Represent and interpret data.
Standard	3.MD.5. Measure and record lengths using rulers marked with halves and fourths of an inch. Make a line plot with the data, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Define horizontal axis. Identify each plot on the line as data or a number of objects.	Analyze data from a line plot. Determine appropriate unit of measurement. Determine appropriate scale for line plot.	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch.	Create a line plot where the horizontal scale is marked off in appropriate units- whole numbers, halves, or quarters.

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Represent and interpret data.
Standard	3.MD.6
	Explain the classification of data from real-world problems shown in graphical representations. Use the terms minimum and maximum. (L).

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Identify different types of graphs and their uses. Be familiar with other types of graphic representation of data (charts, etc.). Understand vocabulary: minimum and maximum.	Organize data from real-world situations into the appropriate type of graphic representation (graphs, charts, etc.).		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Standard	3.MD.7
	Recognize area as an attribute of plane figures and understand concepts of area measurement. <ul style="list-style-type: none"> a. A square with side length 1 unit is said to have “one square unit” and can be used to measure area. b. Demonstrate that a plane figure which can be covered without gaps or overlaps by n (e.g., 6) unit squares is said to have an area of n (e.g., 6) square units.

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Define “unit square”. Define area.	Relate the number (n) of unit squares to the area of a plane figure.	Cover the area of a plane figure with unit squares without gaps or overlaps.	

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Standard	3.MD.8
	Measure areas by tiling with unit squares (square centimeters, square meters, square inches, square feet, and improvised units).

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Measure areas by counting unit squares. Use unit squares of cm, m, in, ft, and other sizes of unit squares to measure area.			

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Standard	3.MD.9.a
	Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. <i>For example, after tiling rectangles, develop a rule for finding the area of any rectangle.</i>

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Find the area of a rectangle by tiling it in unit squares. Find the side lengths of a rectangle in units.	Compare the area found by tiling a rectangle to the area found by multiplying the side lengths.		

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Standard	3.MD.9.b
	Relate area to the operations of multiplication and addition. b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Multiply side lengths to find areas of rectangles.	Solve real world and mathematical area problems by multiplying side lengths of rectangles. Use rectangular arrays to represent whole-number products in multiplication problems.		

Alaska Mathematics Standards

Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Standard	3.MD.9. c
	Relate area to the operations of multiplication and addition. c. Use area models (rectangular arrays) to represent the distributive property in mathematical reasoning. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$.

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Multiply using an area model (array).	Relate area of a rectangle to multiplication and addition by modeling the distributive property. Area of a rectangle $3 \times (5+2) = 3 \times 5 + 3 \times 2$.		

Alaska Mathematics Standards

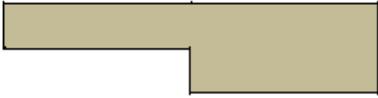
Grade 3

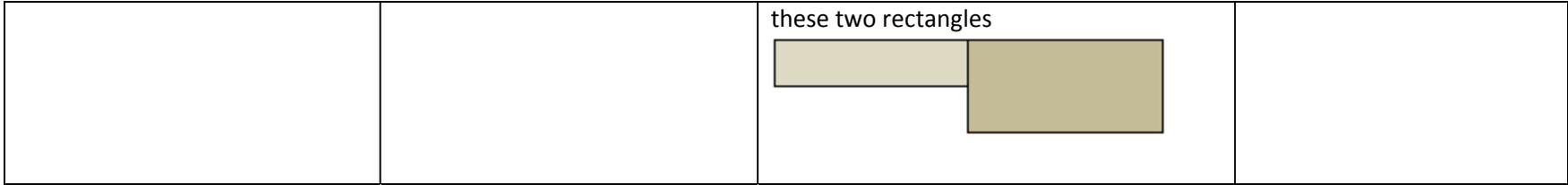
Grade Level/Course	3
Domain	Measurement and Data
Cluster	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Standard	3.MD.9.d
	Relate area to the operations of multiplication and addition. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. <i>For example, the area of a 7 by 8 rectangle can be determined by decomposing it into a 7 by 3 rectangle and a 7 by 5 rectangle.</i>

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Find areas of rectangles. Add areas of rectangles. Recognize that areas of each rectangle in a rectilinear (straight line) figure can be added together to find the area of the figure.	Use the technique of decomposing rectilinear figures to find the area of each rectangle to solve real world problems	Decompose rectilinear figures into non-overlapping rectangles. For example, this shape  decomposes into	



Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Measurement and Data
Cluster	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
Standard	3.MD.10 Solve real world and mathematical problems involving perimeters of polygons, including: <ul style="list-style-type: none"> • finding the perimeter given the side lengths; • finding an unknown side length; • exhibiting rectangles with the same perimeter and different areas; • exhibiting rectangles with the same area and different perimeters.

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Define a polygon. Define perimeter.	Find the perimeter when given the length of sides. Find the perimeter when there is an unknown side length.		Exhibit (design, create, draw, model, etc.) rectangles with the same perimeter and different areas. Exhibit rectangles with the same area and different perimeters.

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Geometry
Cluster	Reason with shapes and their attributes.
Standard	3.G.1 Categorize shapes by different attribute classifications and recognize that shared attributes can define a larger category. Generalize to create examples or non-examples.

Standards of Mathematical Practice

Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.
---	---------------------------------------	--	-------------------------	--------------------------------------	----------------------	-------------------------------------	--

Learning Targets

Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Identify and define rhombuses, rectangles, and squares as examples of quadrilaterals based on their attributes.	Describe, analyze, and compare properties of two-dimensional shapes. Compare and classify shapes by attributes, sides and angles. Group shapes with shared attributes to define a larger category (e.g., quadrilaterals).		Draw examples of quadrilaterals that do and do not belong to any of the subcategories.

Alaska Mathematics Standards Grade 3

Grade Level/Course	3
Domain	Geometry
Cluster	Reason with shapes and their attributes.
Standard	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 1/4 of the area of the shape.</i>

Standards of Mathematical Practice							
Make sense of problems and persevere to solve them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Learning Targets			
Knowledge	Reasoning	Skill	Products
Facts and concepts we want students to know.	Use what they know to reason or solve problems.	Use knowledge and reasoning to act skillfully.	Use knowledge, reasoning, and skills to create a concrete product.
Know that shapes can be partitioned into equal areas. Describe the area of each part as a fractional part of the whole.	Relate fractions to geometry by expressing the area of part of a shape as a unit fraction of the whole.		