

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.

Student is able to "stick with" problems and will try multiple methods to reach a solution.

2. Reason abstractly and quantitatively.

Student understands that written numerals represent real world objects and quantities.

3. Construct viable arguments and critique the reasoning of others.

Student is able to explain his/her own mathematical ideas and strategies and he/she responds to the thinking of others.

4. Model with mathematics.

Student uses pictures, objects, numbers, and/or words to express his/her mathematical thinking and reasoning.

5. Use appropriate tools strategically.

Student selects the appropriate tools and resources to solve a problem.

6. Attend to precision.

Student uses detailed and accurate mathematical vocabulary to communicate mathematical understandings.

7. Look for and make use of structures.

Student notices attributes and structures in mathematics such as: sorts shapes by the number of sides or recognizes that $4+6=10$ and $6+4=10$.

8. Look for and express regularity in repeated reasoning.

Student predicts the next number or shape in a sequence or pattern.

The eight standards for mathematical practice describe the "know-how" or habits of mind that we seek to develop in students. These practices define important methods and skills that students need to be mathematically proficient.

Portland Public Schools



Great Expectations:

Standards and Practices for K-2 Mathematics

What are the Common Core State Standards?

For over a decade, research studies of mathematics education in high performing countries have concluded that mathematics instruction in the United States must become more focused and coherent in order to improve mathematics achievement. Historically math standards have varied from state to state. In June of 2009, the development of the **Common Core State Standards** (CCSS) began. Oregon, along with over 45 other states, has adopted the CCSS and will assess them in 2014 -15. In 2011 Portland Public Schools began implementing these high level standards and practices in grades K, 1, and 2.

The CCSS provide a clear and consistent understanding of what students are expected to learn in K-12 math. Common standards will help ensure that students are receiving a high quality education consistently, from school to school, and state to state. The Common Core State Standards (CCSS) for mathematics includes two types of standards: one for **mathematical practices** (how students engage, apply, and extend their understandings of mathematical concepts) and one for **mathematical content** (what mathematical skills and procedures students are expected to know).

This guide outlines the mathematical content and practice standards that are taught in the primary grades. In grades K-2, the math content standards provide a solid foundation in whole numbers, addition, subtraction, measurement, and geometry. The eight mathematical practices define the ways that students engage with mathematics and are described in detail in this document.

Additional information on the CCSS in Oregon can be found at:

<http://www.ode.state.or.us/search/page/?id=3380>

Kindergarten Math Content Standards	First Grade Math Content Standards	Second Grade Math Content Standards
<p>Counting and Cardinality</p> <ul style="list-style-type: none"> Counts to 100 by ones and tens Reads and writes numbers from 0-20 Counts forward beginning with any number less than 100 Counts up to 20 objects when asked "How many?" Compares two groups of objects as greater than, less than, or equal to Compares two numbers between 1-10 (e.g., greater, less) <p>Operations and Algebraic Thinking</p> <ul style="list-style-type: none"> Understands addition as adding to and putting together Understands subtraction as taking from and taking apart Solves addition and subtraction word problems using objects or drawings Fluently adds and subtracts within 5 <p>Number and Operations in Base Ten</p> <ul style="list-style-type: none"> Works with numbers 11-19 to begin to understand place value (e.g., tens, ones) <p>Measurement and Data</p> <ul style="list-style-type: none"> Describes and compares attributes (e.g., heavier, lighter, more, less, larger, smaller) Sorts and classifies objects and counts the number of objects in each category <p>Geometry</p> <ul style="list-style-type: none"> Identifies and describes two and three dimensional shapes Analyzes, compares, and creates two and three dimensional shapes Describes objects in the environment using shape names and position terms (e.g., above, below, beside, behind, next to) Identifies common shapes found in the environment (e.g., squares in tiles, rectangles in windows) Uses basic shapes to construct other shapes (e.g., two triangles make a rectangle) 	<p>Operations and Algebraic Thinking</p> <ul style="list-style-type: none"> Represents and solves word problems involving addition and subtraction within 20 Understands and applies properties of addition and subtraction Understands the relationship between addition and subtraction Is accurate and fluent with addition and subtraction facts through 10 Uses strategies to add and subtract within 20 Works with addition and subtraction equations Understands the meaning of the equal sign (e.g., $4+1=5$, $2+4=7-1$) <p>Numbers and Operation in Base Ten</p> <ul style="list-style-type: none"> Counts to 120 beginning at any number less than 120 Reads and writes numerals and can match a written numeral to a group of objects Compares two-digit numbers based on place value using $>$, $=$, $<$ symbols Understands and uses place value (tens, ones) to solve problems Mentally finds 10 more or 10 less than any two-digit number <p>Measurement and Data</p> <ul style="list-style-type: none"> Orders and compares three objects by length Measures an object using non-standard units (e.g. cubes, pencils, fingers) Tells and writes time in hours and half-hours Organizes, represents, and interprets data <p>Geometry</p> <ul style="list-style-type: none"> Knows the difference between the defining attributes (e.g., 3 sides on a triangle) and non-defining attributes (e.g., color) of shapes Creates new two or three dimensional shapes from other shapes (e.g., 2 cubes make a rectangular prism) Breaks circles and rectangles into two and four equal shares and describes using words (e.g., halves, fourths, quarters) 	<p>Operations and Algebraic Thinking</p> <ul style="list-style-type: none"> Represents and solves word problems involving addition and subtraction within 100 Is fluent with addition and subtraction facts to 20 Works with equal groups of objects to gain foundations for multiplication (e.g., arrays, repeated addition, etc.) <p>Number and Operations in Base Ten</p> <ul style="list-style-type: none"> Understands place value (e.g., ones, tens, hundreds, thousands) Skip counts 5's, 10's, and 100's within 1000 Compares three-digit numbers based on place value using $>$, $=$, $<$ symbols Uses multiple strategies to add and subtract double digit numbers within 100 Adds and subtracts within 1000 using models, strategies, and drawings <p>Measurement and Data</p> <ul style="list-style-type: none"> Measures, estimates, and compares the lengths of objects in standard units Represents addition and subtraction on a number line Tells and writes time from analog and digital clocks to the nearest 5 minutes using a.m. and p.m. Solves word problems involving dollar bills, quarters, dimes, nickels, and pennies using $\\$ and ¢ correctly Represents and interprets data on line plots, picture graphs, and bar graphs <p>Geometry</p> <ul style="list-style-type: none"> Recognizes and draws shapes according to given attributes (e.g., number of angles, number of faces) Identifies triangles, quadrilaterals, pentagons, hexagons, and cubes Divides a rectangle into equal squares and finds the total number Divides circles and rectangles into equal pieces (2, 3, or 4), and describes the whole as two halves, three thirds, or four fourths