

Lake Washington School District  
Teaching and Learning Framework

# **Eighth Grade** Mathematics

Connected Mathematics Project  
Power Standards | August 2007

# Eighth Grade | Mathematics

## Number Sense

Power Standards	Evidence of Learning
1. Understand the concept and symbolic representation and relative values of rational numbers (1.1.1, 1.1.2)	Explain the meaning of integers raised to whole number exponents and provide examples.  Explain the meaning of square root of a whole number and provide examples.  Order rational numbers including integers, whole number powers, and square roots, and explain why one rational number is greater than, equal to, or less than another.
2. Understand and use the distributive property and the properties of addition and multiplication on rational numbers (1.1.3)	Demonstrate the distributive property of multiplication over addition using an area model or picture.  Use the distributive property to factor expressions.
3. Complete multi-step computations with combinations of rational numbers using order of operations and addition, subtraction, multiplication, division, powers, and square roots (1.1.6)	Use properties to reorder and rearrange expressions to compute more efficiently.

## Measurement

Power Standards	Evidence of Learning
<i>Although there are no Power Standards involving the Pythagorean Theorem that students are expected to master, students will be introduced to:</i>	
1. The Pythagorean Theorem and its use in finding missing sides of a right triangle. (1.2.5)	

## Geometric Sense

Power Standards	Evidence of Learning
<i>Although there are no Power Standards that students are expected to master, students will be introduced to:</i>	
1. Understand and apply procedures to find distance between points in two-dimensional representations (1.3.3)	Apply the Pythagorean Theorem to find the length of a side of a right triangle or distance between two points.  Explain a method for finding the missing side of a triangle in a real-world setting (e.g. the height of a totem pole or building).

## Probability and Statistics

### Power Standards

1. Analyze variations in data to determine the effect on the measures of central tendency; identify clusters and outliers and determine how clusters or outliers may affect measures of central tendency (1.4.4)

### Evidence of Learning

Alter a set of data so that the median is a more reasonable measure than the mean.

Use and interpret the most appropriate measure of central tendency and the range to describe a given set of data (e.g. the model hourly wage earned by eighth graders is \$5.75 per hour and the range is \$5.00 to \$6.50, therefore there are very small differences in hourly wages for eighth graders).

2. Understand, apply and evaluate data techniques involving 2-variable data (1.4.3, 1.4.5)

Determine whether the methods of data collection used were appropriate for a given question or population.

Determine the equation for a reasonable line to describe a set of two-variable data.

Determine whether an equation for a line is appropriate for a given set of data and support the judgment with data.

## Algebraic Sense

### Power Standards

*Although there are no Power Standards involving quadratic and exponential equations, students should be introduced to these functions*

1. Apply processes that use repeated addition (linear) or repeated multiplication (exponential) (1.5.1)

### Evidence of Learning

Translate among equivalent numerical, graphical, and algebraic forms of a linear function.

Extend, represent, or create linear and non-linear patterns and sequences using tables and graphs.

2. Analyze a pattern, table, graph or model involving repeated addition to write an equation or rule (1.5.2)

Find the equation of a line in a variety of ways (e.g. from a table, graph, slope-intercept, two points).

Represent linear situations involving integers and whole number powers of integers using expressions, equations, inequalities, graphs, and tables.

Identify or write an equation or rule to describe a pattern, sequence, and/or a linear function.

Represent systems of equations and inequalities graphically.

Write an expression, equation, or inequality with two variables representing a linear model of a real-world problem.

## Algebraic Sense (continued)

### Power Standards

3. Understand and apply a variety of strategies to simplify expressions and solve multi-step linear equations, one-step linear inequalities, and systems of linear equations (1.5.5, 1.5.6)

### Evidence of Learning

Rearrange formulas to solve for a particular variable (e.g. given  $A=5bh$ , solve for  $h$ ).

Solve real-world situations involving linear relationships and verify that the solutions makes sense in relation to the problem.

Find the solution to a system of linear equations using tables and graphs.

Interpret solutions of systems of equations.

Solve multi-step equations involving fractions, decimals, and whole number powers of integers.