

Hands-on, Minds-on Teaching and Learning

A presentation on active learning, and
the Common Core Standards

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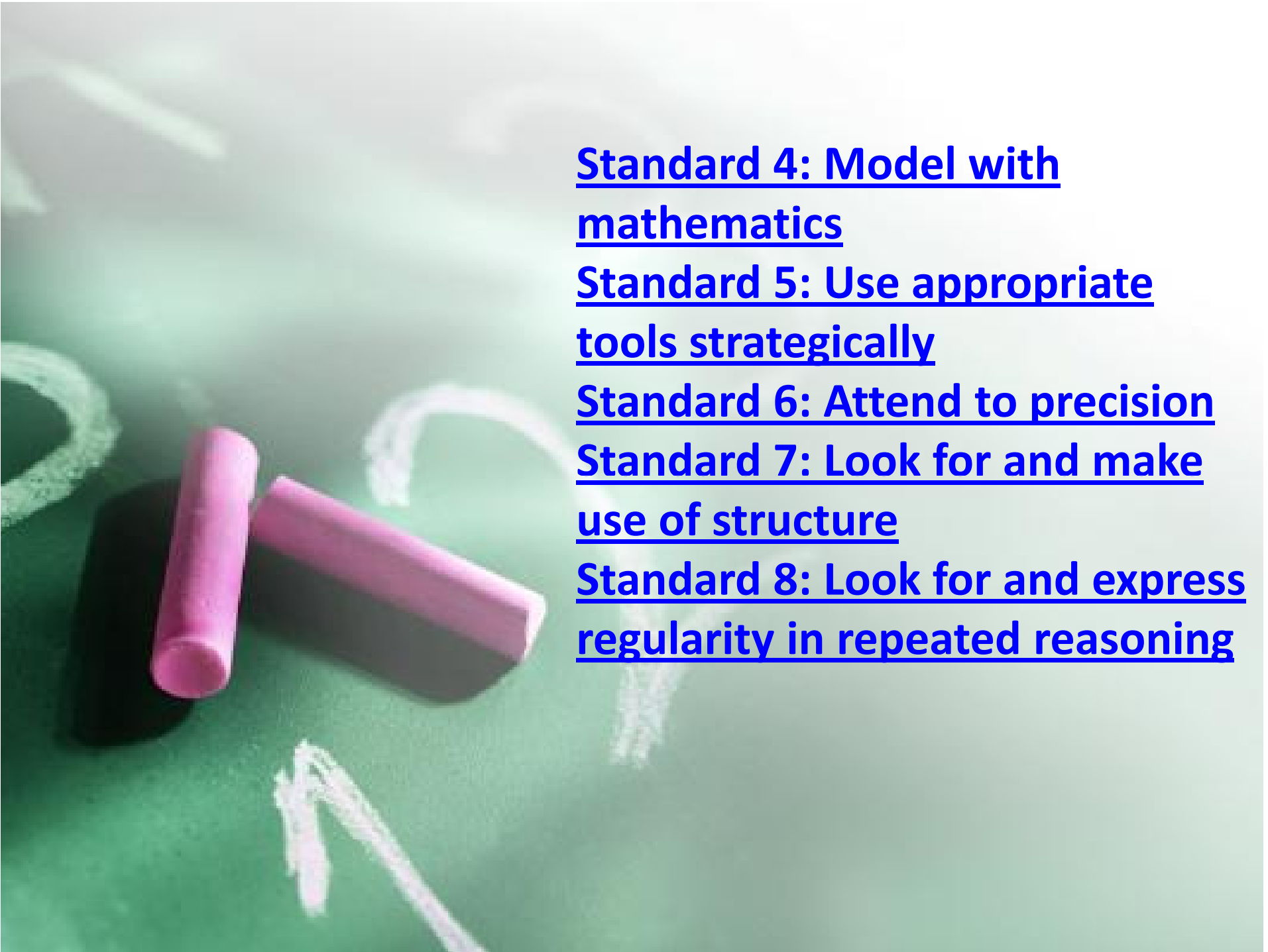


The eight Mathematical Practices from the Common Core Standards

Standard 1: Make sense of problems and persevere in solving them

Standard 2: Reason abstractly and quantitatively

Standard 3: Construct viable arguments and critique the reasoning of others

A green chalkboard with two pieces of pink chalk and some faint white chalk markings. The chalkboard is the background for the text on the right.

Standard 4: Model with mathematics

Standard 5: Use appropriate tools strategically

Standard 6: Attend to precision

Standard 7: Look for and make use of structure

Standard 8: Look for and express regularity in repeated reasoning



Represent and interpret data.

[CCSS.Math.Content.1.MD.C.4](#) Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

First grade, data analysis

First Activity – a Nonstandard approach to Data Analysis

with thanks to Mary Clarke, Cerritos College

Handouts and solutions are available at the [Google sites website](#) (yellow card)

Groups of two, please get your worksheets up here and your manipulatives as soon as you have organized your group

[CCSS.Math.Content.6.SP.B.5c](#) Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

First Activity – a Nonstandard approach to Data Analysis



[CCSS.Math.Content.6.SP.B.5c](#) Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.



Brain Theory, some new changes to the model of brain growth and learning capabilities

Readings and handouts at the Google site

Site is not public domain but instead is available to those with the web address

CCSS Domains and NCTM Topics Comparisons

Common Core State Standards Domains													
<i>Target More Focused Learning Across Grade Levels to Achieve Deeper Understanding</i>	K	1st	2nd	3rd	4th	5th	6th	7th	8th	High School			
	Counting and Cardinality												
	Numbers & Operations Base 10						Ratios & Proportional Relationships			Number & Quality			
			Numbers & Operations - Fractions			The Number System							
	Operations & Algebraic Thinking						Expressions & Equations						Algebra
								Functions					
	Geometry									Geometry			
	Measurement & Data						Statistics & Probability			Statistics & Probability			
	National Council of Teachers of Mathematics Standard Topics	K-2			3-5			6-8			9-12		
	<i>Number & Operations</i>		✓			✓			✓			✓	
<i>Algebra</i>		✓			✓			✓			✓		
<i>Geometry</i>		✓			✓			✓			✓		
<i>Measurement</i>		✓			✓			✓			✓		
<i>Data Analysis & Probability</i>		✓			✓			✓			✓		
<i>Problem Solving</i>		✓			✓			✓			✓		
<i>Reasoning & Proof</i>		✓			✓			✓			✓		
<i>Communication</i>		✓			✓			✓			✓		
<i>Connections</i>		✓			✓			✓			✓		
<i>Representations</i>		✓			✓			✓			✓		

Foundational piece of reasoning and thinking algebraically in the early grades

[CCSS.Math.Content.1.OA.D.7](#) Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.

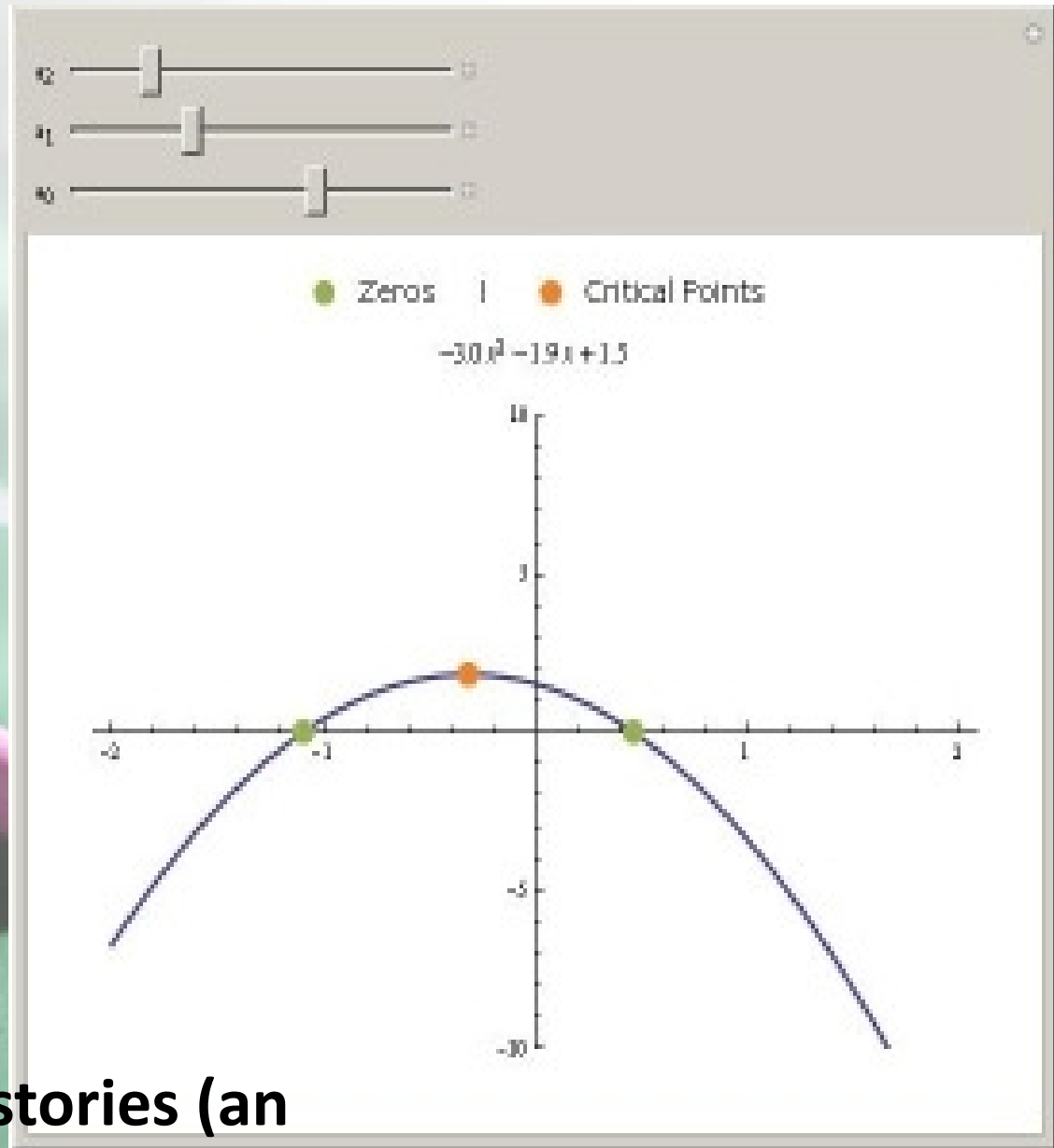
[CCSS.Math.Content.1.OA.D.8](#) Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = _ - 3$, $6 + 6 = _$.*

Learning about the Equal Sign



The most misunderstood symbol in algebra, the equal sign.

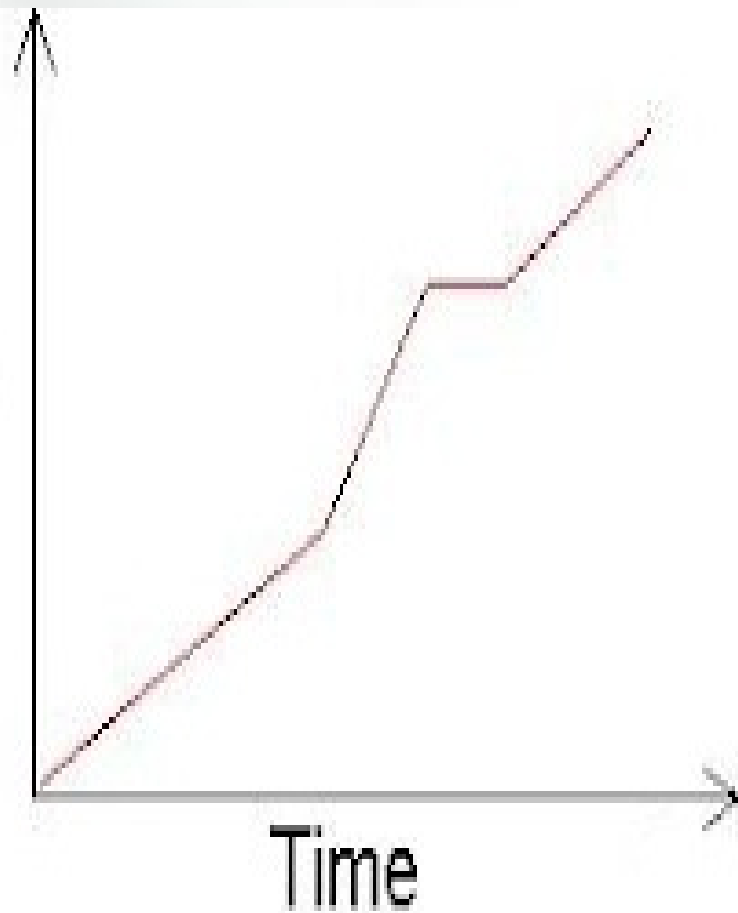
**Ignore the axes
and scale, tell
me a story**



**From graphs to stories (an
exercise in inverse learning)**

**Note titles of
axes, but absence
of scale.**

Distance



Geometry

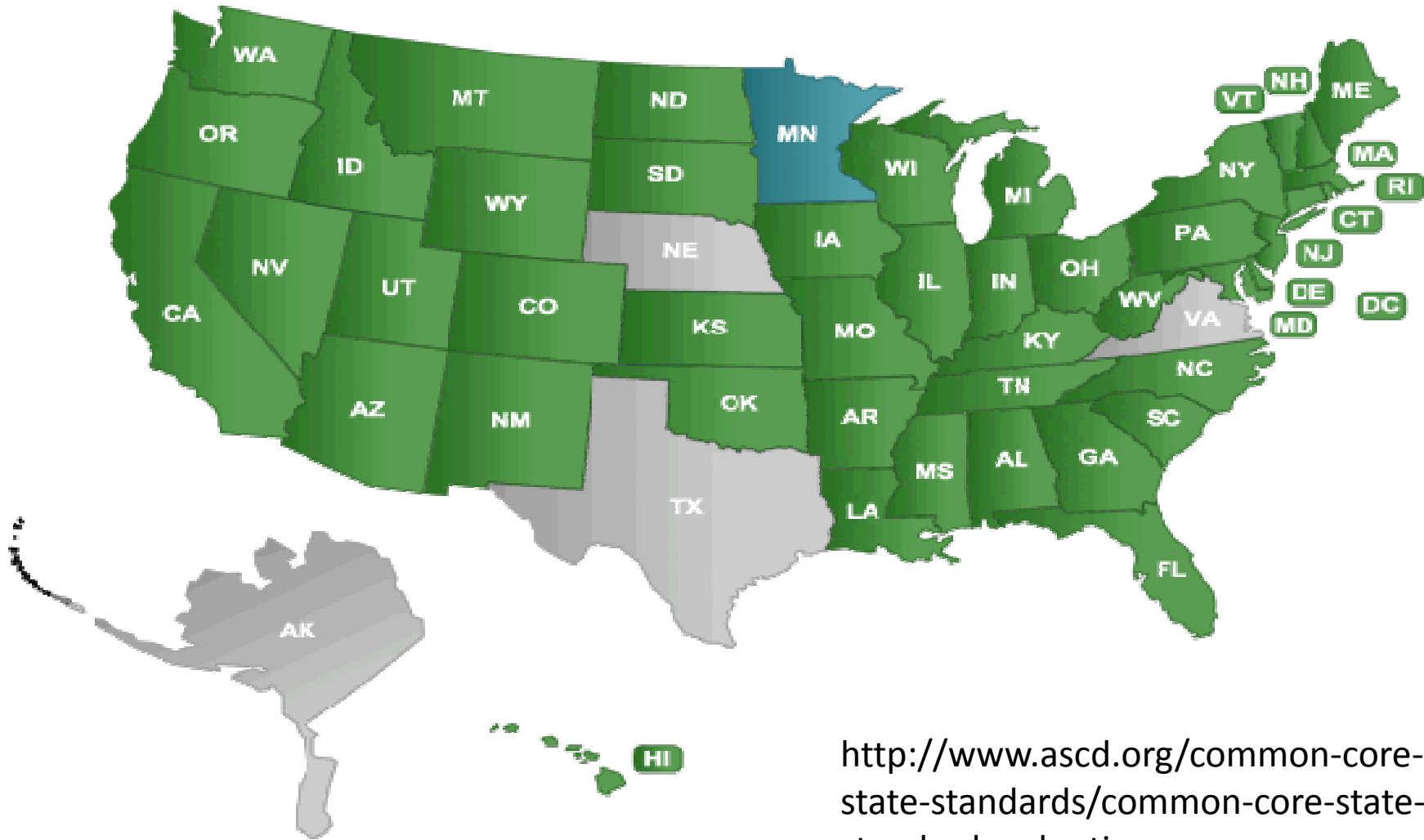
[CCSS.Math.Content.7.G.B.4](#) Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

Working with radius squares
Form groups and come to the front to retrieve your supplies and manipulatives.

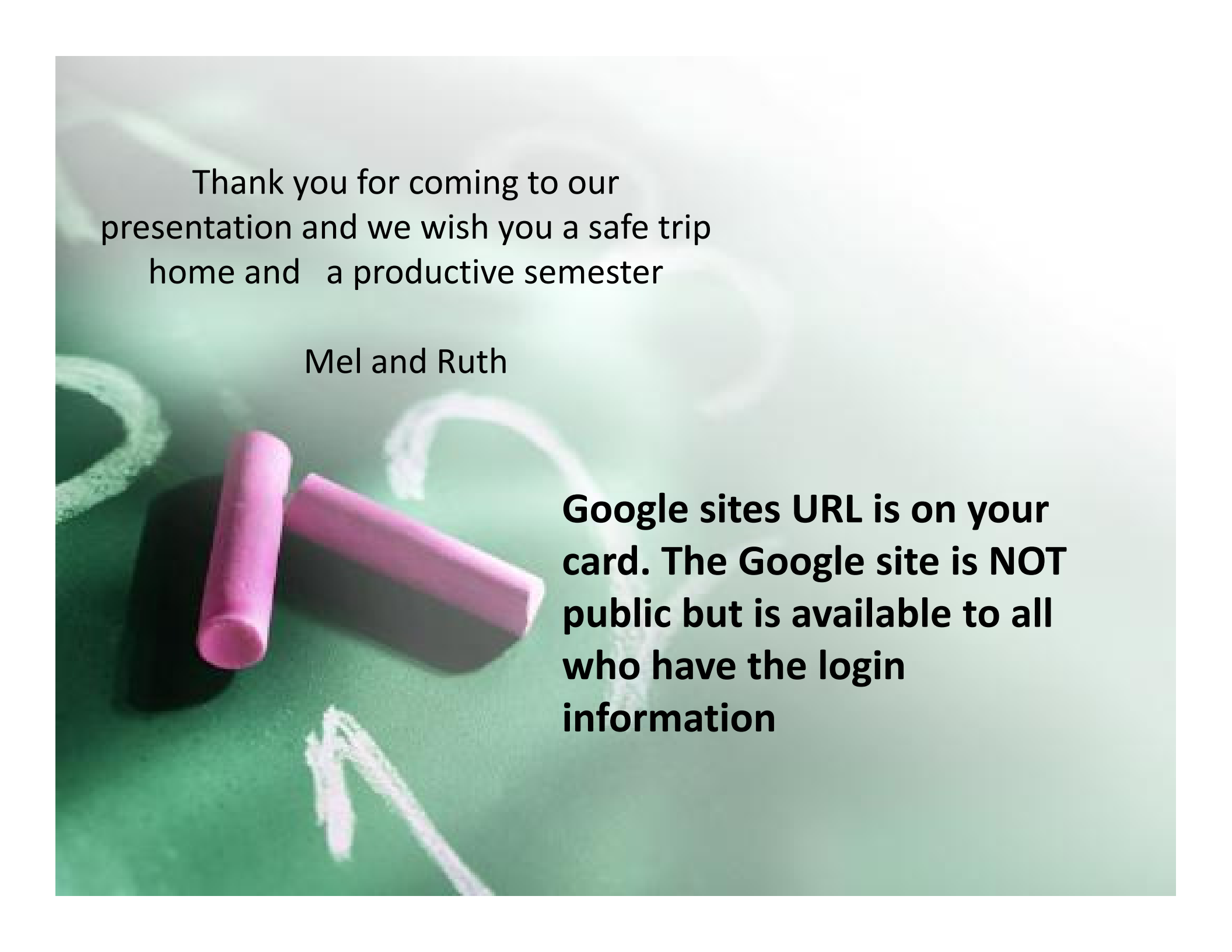
Radius squares and Walmart bags



Common Core Standards Map



<http://www.ascd.org/common-core-state-standards/common-core-state-standards-adoption-map.aspx>

The background of the slide is a chalkboard. Two pieces of pink chalk are lying on the board, one standing upright and one lying horizontally. There are some faint white chalk drawings on the board, including a large circle and some lines. The text is overlaid on the chalkboard.

Thank you for coming to our
presentation and we wish you a safe trip
home and a productive semester

Mel and Ruth

**Google sites URL is on your
card. The Google site is NOT
public but is available to all
who have the login
information**

