



**7<sup>th</sup> Grade**

**Parent Guide for Understanding the Math Common Core**

	<b>Ratios and Proportional Relationships</b>	<b>The Number System</b>	<b>Expressions and Equations</b>	<b>Geometry</b>	<b>Statistics and Probability</b>
<b>Students will be able to:</b>	<ul style="list-style-type: none"> <li>Identify unit rates including ratios of lengths, areas and other quantities.</li> <li>Recognize and represent ratios and proportional relationships between quantities in real-world problems.</li> <li>Solve multi-step problems with ratios, proportions and percents in a wide variety of contexts.</li> </ul>	<ul style="list-style-type: none"> <li>Apply prior knowledge of addition, subtraction, multiplication and division to rational numbers (positive and negative numbers that can be written as fractions).</li> <li>Convert fractions to decimals.</li> <li>Understand that there are irrational numbers, approximate them as fractions, and compare their size.</li> </ul>	<ul style="list-style-type: none"> <li>Extend understanding of operations of numbers, such as the distributive property, to create expressions that represent relationships to solve problems.</li> <li>Use variables in algebraic expressions, equations and inequalities to model real-world problems.</li> <li>Solve complex real-world problems involving rational numbers in a variety of ways; use estimation to verify whether the result is reasonable.</li> </ul>	<ul style="list-style-type: none"> <li>Use appropriate tools to draw geometric shapes with given conditions (such as number of sides, specific angle sizes, etc.); describe cross sections of 3-dimensional figures.</li> <li>Write and solve equations involving angle relationships in various figures.</li> <li>Use scale to reproduce drawings at a different size.</li> <li>Solve real-world problems involving area, surface area and volume of 2- and 3-dimensional figures.</li> <li>Use formulas for area and circumference of a circle.</li> </ul>	<ul style="list-style-type: none"> <li>Understand principles of population sampling, and its use in making generalizations and inferences about the population.</li> <li>Compare two distinct populations by extending their understanding of measures of central tendency -mean, median, and range- to concepts of variability and degree of overlap between two data sets.</li> <li>The concept of median is extended to the concept of interquartile range, and mean is extended to use of the mean absolute deviation to more accurately interpret data. Informal use of measures of center in appropriate situations.</li> <li>Probability of events are expressed as numbers between 0 and 1 to indicate the likelihood of an event's occurrence (near 0, highly unlikely, near 1, highly likely)</li> </ul>
<b>Schools will support by providing opportunities to:</b>	<ul style="list-style-type: none"> <li>Calculate unit rates to solve real-world problems.</li> <li>Examine proportional relationships in real-world problems and represent solutions as tape diagrams, drawings, number lines, equations and coordinate graphs.</li> <li>Solve diverse problems using concepts such as the scale factor as a ratio in geometry, the proportional relationship as it applies to random population samples in statistics, and the use of percents in real-world money problems.</li> </ul>	<ul style="list-style-type: none"> <li>Understand that opposites combine to make zero (<math>-7 + 7 = 0</math>).</li> <li>Express sums and differences of rational numbers using number lines.</li> <li>Understand that addition and subtraction can be seen as equivalent operations with rational numbers (<math>7 - 3 = 7 + (-3)</math>).</li> <li>Use properties of operations to justify the results of multiplication and division problems involving rational numbers.</li> <li>Solve real-world problems using rational numbers.</li> <li>Find fractional approximations of irrational numbers and compare them on a number line.</li> </ul>	<ul style="list-style-type: none"> <li>Write equations and inequalities including variables to model and solve problem situations.</li> <li>Solve real world multi-step problems, converting between different forms of positive and negative rational numbers (e.g. fractions, per cents, decimals) as needed.</li> <li>Communicate results with increasing precision and in multiple formats.</li> <li>Demonstrate thinking using a variety of strategies including: tape diagrams, graphs, drawings, and number lines.</li> </ul>	<ul style="list-style-type: none"> <li>Draw geometric shapes freehand, with ruler and protractor, and using technology.</li> <li>Use and understand vocabulary of angles such as supplementary, vertical, and adjacent in context of solving problems.</li> <li>Understand scale by using models to calculate the size of larger (or smaller) objects.</li> <li>Understand formulas for area and volume of standard geometric figures, such as triangles, quadrilaterals, polygons, circles, prisms, cones and spheres by deriving them.</li> </ul>	<ul style="list-style-type: none"> <li>Design probability models and compare them to observed events.</li> <li>Conduct inquiry using methods such as surveys, observation, raw data, interviews, about real world topics to draw conclusions about a population characteristic (e.g. the number of seventh grade students who prefer a particular lunch menu item).</li> <li>Look for trends in data that support or refute initial estimations to come to accurate conclusions.</li> <li>Collect data to observe frequencies and predict the probability based on future trials.</li> <li>Explain and justify the reasonableness of their conclusions based on the data.</li> <li>Provide proof of probabilities supported by lists, tables, tree diagrams and simulations.</li> </ul>
<b>Parents can support by:</b>	<ul style="list-style-type: none"> <li>Find the cost per bottle (unit rate) of water in a 6-pack or 24-pack.</li> <li>Ask your child to help compute the sales tax, discounts, markups, or fees when shopping</li> </ul>	<ul style="list-style-type: none"> <li>Ask your child to calculate the percent increase or decrease of the local temperature.</li> </ul>	<ul style="list-style-type: none"> <li>Ask your child to calculate the tip that should be left at a restaurant, or the percentage of your income that goes to taxes.</li> </ul>	<ul style="list-style-type: none"> <li>Ask your child to use a map to calculate the distance to be traveled on a trip.</li> <li>Ask them draw a scale model of your home.</li> </ul>	<ul style="list-style-type: none"> <li>Ask your child to keep track of results of rolling the dice during board and card games and compute probabilities to improve their chances of winning.</li> </ul>

### Seventh grade students:

- Deepen their understanding of proportional relationships to solve complicated problems.
- Extend their understanding of rational numbers to include computation (add, subtract multiply and divide).
- Irrational numbers are introduced.
- Algebraic foundations are practiced and extended.
- Students continue to extend their understanding of probability and statistics by describing populations based on sampling, and investigate chance to develop, use, and evaluate probability models.

### Resources:

*Sacramento City Unified School District*

<http://www.scusd.edu/commoncoredept>

- ✓ Links to documents for California (CCS) Common Core Standards, including videos for the Standards for Mathematical Practice

*Parent-Teacher Association*

<http://www.pta.org/446.htm>

- ✓ Parent Guides including key items that children should be learning in mathematics in each grade.

*California Department of Education*

<http://www.cde.ca.gov/re/cc/index.asp>

- ✓ Informational flyers provide overviews and highlights of the Math CCS
- ✓ Handouts for parents on transitioning to CCS
- ✓ Link to *Council of Great City Schools Parent Roadmaps*
- ✓ Links to *Smarter Balanced Assessments*

### How Parents Can Support:

- Go shopping! Calculate new sales prices given percentage discounts and taxes with your child.
- Help your child make a savings plan for the item of their desire. Plan how much money to save out of their weekly allowance/wages. Have your child determine how long it will take to reach the goal amount.
- Work with your child to design their dream bedroom by building a scale model or drawing.
- With your child, find the mean, median and mode for the cost of downloading one song on their electronic device.
- Share how you use math in your daily life.
- Encourage your child to be persistent if a problem seems difficult.
- When your child gets stuck on their homework, some questions to ask are:
  - 1) Can you tell me what you know now?
  - 2) What do you need to find out?
  - 3) Can you make a drawing or picture to get started?
  - 4) Can you show me what you did that didn't work?

### How Things Have Changed:

Expectations of students have changed a great deal with the adoption of the Common Core State Standards in Mathematics. While getting the right answer is still a great achievement, students are now required to think mathematically, communicate their thinking, and justify their reasoning while continuing to develop a greater level of understanding of how math works.

### Previous California Standards Assessment:

Roberto paid \$39.75 for 15 cans of cat food. How much did each can cost?

- A) \$5.25
- B) \$2.65
- C) \$1.45
- D) \$2.15

*Answer:* B

### Common Core Standards Assessment:

Bob's Best Buys is selling 15 cans of PuppyGourmet dog food for \$18. Maria's Pet Emporium is having a sale on the same brand of dog food, 24 cans for \$20. Which store has the better deal? How do you know?

*Possible Answer:*

The price for 120 cans at Bob's Best Buy is \$144. The price for 120 cans at Maria's Pet emporium is \$100. Maria's Pet emporium has the better deal.