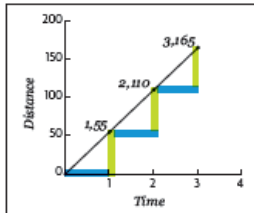*Students interpret and compare linear relationships represented in different ways, making the connection between equations, tables of values, and graphs.*

Problem: Two cars are traveling from point A to point B. Their speeds are represented on a graph and in a table. Which car is traveling faster?

Car # 1
y=55x + 4

Time (x)	Distance (y)
1	59
2	114
3	169

Car # 2
y=55x

Solution: Even though car #1 starts out ahead by 4 miles, students identify the rate of change—or slope—of the equations presented in the table and graph as equal (55 miles per hour), meaning that both cars are traveling at the same speed.

This table shows the height of a tree, in inches, in the months after it was planted.

Month	Height, in inches
3	51
5	54
9	60
11	63

Given these sets of values, students determine that the rate of change is constant: a tree replanted as a sapling grows 3 inches every 2 months, which is 3/2—or 1.5—inches each month. Therefore, students can compute the tree's height when it was replanted by taking its height at month 3 (51 inches) and subtracting 3 months of growth: $51 - 3/2 \cdot 3 = 51 - 4.5 = 46.5$ inches.

Grade 8 Mathematics

- Understand that a function is a rule that assigns to each input exactly one output, and the graph of a function is the set of ordered pairs consisting of an input and the corresponding output

- Compare the properties of two functions each represented in a different way (for example, in a table, graph, equation, or description)

- Determine the rate of change and initial value of a function based on a description of a proportional relationship or at least two given (x,y) values

Helping your child learn outside of school

1. Ask your child to do an Internet search to determine how mathematics is used in specific careers. This could lead to a good discussion and allow students to begin thinking about their future aspirations.

2. Have your child use magazines, clip art, and other pictures to find and describe examples of *similar* and *congruent* figures

3. 3. Using different objects or containers (such as a can of soup or a shoebox), ask your child to estimate surface area and volume, and check the answer together.

4. Encourage your child to stick with it whenever a problem seems difficult. This will help your child see that everyone can learn math.

5. Prompt your child to face challenges positively and to see mathematics as a subject that is important. Avoid statements like "*I wasn't good at math*" or "*Math is too hard.*"

6. 6. Praise your child when he or she makes an effort, and share in the excitement when he or she solves a problem or understands something for the first time.

Parent ROADMAP
to
California Common Core Standards

8th Grade

START HERE

The way we taught students in the past simply does not prepare them for the higher demands of college and careers today and in the future. Your school and schools throughout the country are working to improve teaching and learning to ensure that all children will graduate high school with the skills they need to be successful.

ENGLISH LANGUAGE ARTS

In grade eight, students will read major works of fiction and nonfiction from all over the world and from different time periods. They will continue to learn how to understand what they read and evaluate an author's assumptions and claims. They will also conduct research that will require the analysis of resources and accurate interpretation of literary and informational text.

Activities in these areas will include:

- Identifying what a reading selection explicitly says and drawing inferences based on evidence from the text
- Analyzing the impact of specific word choices on meaning and tone, including analogies or allusions to other texts
- Evaluating the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient
- Connecting information and ideas efficiently and effectively in writing
- Analyzing the purpose of information presented in diverse media formats, such as video clips or interactive maps
- Participating in class discussions on various topics, texts, and issues by expressing ideas and building on the ideas of others
- Developing a large vocabulary of multi-use academic words and phrases
- Interpreting figures of speech, such as puns or verbal irony, in context

READING LITERATURE

Grade 8 Reading

- Students determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot. Students also provide an objective summary of the text.
- Students analyze how differences in the points of view of the characters and the audience or reader create such effects as suspense or humor.

READING FOR INFORMATION

Grade 8 Reading

- Students cite evidence from the text that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
- Students evaluate the advantages and disadvantages of using different mediums (such as print or digital text, video, or multimedia) to present a particular topic or idea.

Grade 8 Writing

- Students introduce a topic clearly, previewing what is to follow, and develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information.
- Students provide a concluding statement or section that follows from and supports the information or explanation presented.
- Students organize ideas, concepts, and information into broader categories.
- Students use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.

Helping your child learn outside of school

1. Provide time and space for your child to read independently. This time should be free from distractions such as television.

2. Ask your child what topics, events, or activities he or she likes. Then subscribe to magazines or look for books or other materials about those topics that would motivate your child to read.

3. It is also helpful when your child sees other people reading at home. You could share what you have read.

4. Make time for conversation at home. Discuss current events, shared interests, and future aspirations for education and career.

5. Visit museums, zoos, theaters, historical sites, aquariums, and other educational places to help increase your child's exposure to new knowledge and vocabulary.

6. Use technology to help build your child's interest in reading. There are several websites where students can read books or articles online. The computer will help with words the student cannot read independently. Libraries also have computers students can use to access those sites. Feel free to ask a librarian or teacher for suggestions.

MATHEMATICS

In grade eight, students take their understanding of unit rates and proportional relationships to a new level, connecting these concepts to points on a line and ultimately using them to solve linear equations that require them to apply algebraic reasoning as well as knowledge of the properties of operations. Students will also expand their understanding of numbers beyond rational numbers to include numbers that are irrational—meaning that they cannot be written as a simple fraction, such as the square root of 2 or $\sqrt{2}$. Activities in these areas will include:

- Understanding that every *rational* number (such as ½, 0.3, 2, or -2) can be written as a decimal, but that the decimal form of an *irrational* number (such as $\sqrt{2}$) is both non-repeating and infinite
- Applying the properties of exponents to generate equivalent numerical expressions
- Determining the value of square roots of small perfect squares (such as $\sqrt{49}= 7$) and cube roots of small perfect cubes (such as $\sqrt[3]{64}=4$)
- Graphing proportional relationships and interpreting the unit rate as the *slope* (how steep or flat a line is)
- Solving and graphing one- and two-variable linear equations
- Understanding that a *function* is a rule that assigns to each value of x exactly one value of y, such as y=2x, a rule that would yield such ordered pairs as (-2,-4), (3,6), and (4,8)
- Comparing the properties of two functions represented in different ways (in a table, graph, equation, or description)
- Determining *congruence* (when shapes are of equal size and shape) and *similarity* (same shape but different sizes)
- Learning and applying the Pythagorean Theorem (an equation relating the lengths of the sides of a right triangle: $a^2 + b^2 = c^2$)
- Solving problems involving the volume of cylinders, cones, and spheres

Grade 8 Mathematics

- Understand the connections between proportional relationships, lines, and linear equations
- Use linear equations to graph proportional relationships, interpreting the unit rate as the slope of the graph
- Know and apply the properties of integer exponents (positive numbers, negative numbers,
- or 0) to write equivalent expressions (such as $4^2 \cdot 4^3 = 4^5$)