

**SAN DIEGO CITY SCHOOLS**

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Department of Mathematics

**Instructional Module to Enhance the Teaching of**

**PRENTICE HALL PRE-ALGEBRA  
California Edition 2001**

***GRADE 7***

**Module 7**

**Solving Equations and  
Inequalities**

## THE BIG IDEAS:

By the end of grade seven, students will:

- Know the properties of, and compute with, rational numbers by manipulating numbers and equations. Know and use different representations of fractional numbers (fractions, decimals, and percents) and are proficient at changing from one to another. Understand and use factoring of numerators and denominators and properties of exponents.  
*Note: Negative fractions are formally introduced and studied for the first time.*
- Increase their facility with ratio and proportion, compute percents of increase and decrease, and **compute simple and compound interest**.
- Graph linear functions and understand the idea of slope and its relation to ratio. Solve simple linear equations and inequalities over the rational numbers.
- Know the Pythagorean Theorem and solve problems in which they compute the length of an unknown side.  
*Note: The Pythagorean Theorem is probably the first true theorem that the students will have seen.*
- Know how to compute the surface area and volume of basic three-dimensional objects and understand how area and volume change with a change in scale.
- Make conversions between different units of measurement. Know and use various forms of displays for data sets.

(Notes from Mathematics Framework for California Public Schools, Grade Seven, p149-152.)

### **Key Mathematical Concepts Addressed: Chapter 7, Solving Equations and Inequalities**

- AF 1.1 Write an equation.
- **\*AF 4.1 Solve multi-step equations with fractions and decimals; solve multi-step equations with variables on both sides; solve two-step inequalities.**
- **\*AF 4.2 Solve multi-step problems involving rate, time, and distance.**
- **\*NS 1.7 Find simple and compound interest.**
  
- **Key Standard**

## MODULE 7: Solving Equations and Inequalities

# DAY 1: Lesson 7 - 1; pp. 336-339

<b>LESSON FOCUS:</b>	Solving Two-Step Equations
<b>CA STANDARD:</b>	AF 4.1 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve and use two-step equations to solve problems.
<b>Warm-up/ Routine(s):</b>	Challenge the students to find different ways to express a certain number, such as 10. Give a few simple examples. Encourage students to use two or more operations. Discuss that each expression is a way of representing or writing a number. Notice that there are no equal signs.
<b>LAUNCH:</b> TE p. 336 Connecting to Students' Lives	TE p. 336; Connecting to Students' Lives. Ask students to discuss processes that are done with several steps in sequence, such as baking cookies, wrapping a present or building a fence.
<b>EXPLORE:</b> Van de Walle, John Elementary and Middle School Mathematics pp. 397-398	<p>Draw a simple two-pan balance. In each pan, write a numeric expression, and ask which pan will tilt, or whether the two will balance. Write the corresponding equation. Examples are given...more experiences are needed.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><math>(3 \times 9) + 5</math>      <math>6 \times 8</math></p> <p>Tilt!</p> <p><math>27 + 5 &lt; 48</math></p> </div> <div style="text-align: center;"> <p><math>(3 \times 4) + 2</math>      <math>2 \times 7</math></p> <p>Balance!</p> <p><math>12 + 2 = 14</math></p> </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><math>\square + 3</math>      <math>2 \times \square</math></p> <p>TRY: <math>\square = 5</math></p> <p>Tilt! <math>5 + 3 &lt; 2 \times 5</math></p> <p style="margin-left: 40px;"><math>8 &lt; 10</math></p> <p>TRY: <math>\square = 3</math></p> <p>Balance! <math>3 + 3 = 2 \times 3</math></p> <p style="margin-left: 40px;"><math>6 = 6</math></p> </div> <div style="text-align: center;"> <p><math>3 \times \square + \triangle</math>      <math>2 \times \triangle - 4</math></p> <p>TRY: <math>\square = 0; \triangle = 5</math></p> <p><math>3 \times 0 + 5 &lt; 2 \times 5 - 4</math></p> <p style="margin-left: 40px;"><math>0 + 5 &lt; 10 - 4</math></p> <p style="margin-left: 80px;"><math>5 &lt; 6</math></p> <p>Tilt!</p> <p>TRY: <math>\square = 1; \triangle = 7</math></p> <p><math>3 \times 1 + 7 = 2 \times 7 - 4</math></p> <p style="margin-left: 40px;"><math>3 + 7 = 14 - 4</math></p> <p style="margin-left: 80px;"><math>10 = 10</math></p> <p>Balance!</p> </div> </div> <p>*An algebra tile model is demonstrated on p. 336 of the student textbook.</p>
<b>Practice:</b>	p. 339; #32 Test Prep and #36 Error Analysis
<b>SUMMARIZE:</b>	<u>Pair - Share:</u> Talk with a partner about how you would solve the following: Maria bought 4 sodas and a \$15 pizza. She spent a total of \$20. Find the price $p$ of each soda. Share out thinking with the class.
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections. (p. 339 Reasoning: <i>Explain how to solve <math>2x - 5 = 19</math></i> )
<b>Homework:</b>	p. 338; Check Understanding #1-10

## MODULE 7: Solving Equations and Inequalities

### DAY 2: Lesson 7 - 2; pp. 340-344

<b>LESSON FOCUS:</b>	Solving Multi-Step Equations
<b>CA STANDARD:</b>	AF 4.1 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to combine like terms to simplify an equation in order to solve the equation
<b>Warm-up/ Routine(s):</b> p. 339	p. 339; #34: <i>Carmela wants to buy a digital camera for \$249. She has \$24 and is saving \$15 per week. How many weeks will she have to save to buy the camera? Talk with classmates at your table about how you might solve this problem situation. Can you write an equation to represent it? (<math>15w + 24 = 249</math>; 15 weeks)</i>
<b>LAUNCH:</b> p. 340 Introducing the Concept	p. 340; <i>Introducing the Concept</i> ; #1 and #2: Consider the equation $2x + 7 + x = 16$ . a) <i>How does this equation differ from others you have seen?</i> There are two variables instead of one. b) <i>Simplify the equation by combining like terms: <math>3x + 7 = 16</math></i> <i>Solve the equation: <math>x = 3</math></i>
<b>EXPLORE:</b> p. 341; #3  p. 341; Example 2 and #4  p. 341; Try This #5 Reference Books closed	p. 341; Try This #3. The basketball team scores. Ask students to solve the problem and to explain <i>how</i> the equation $p + p - 13 = 171$ is helpful and simplifies the work.  p. 341; Example 2 and Try This #4. Ask students to solve the problem and to explain <i>how</i> the equation simplifies the work.  <i>"How would you find consecutive even integers?"</i>
<b>Practice:</b>	p. 341; Try This #5
<b>SUMMARIZE:</b>	QUICKWRITE: Why are $m$ and $3m$ considered to be like terms? Use them in an equation and solve it. Share your thinking and equation with the people at your table.
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 343; Check Understanding #1-3, #7-10 and Number Sense #29

## MODULE 7: Solving Equations and Inequalities

### DAY 3: Lesson 7 - 2; pp. 340-344

<b>LESSON FOCUS:</b>	Solving Multi-Step Equations
<b>CA STANDARD:</b>	AF 4.1 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to combine like terms and use the distributive property to simplify an equation in order to solve the equation.
<b>Warm-up/ Routine(s):</b>  p. 343	p. 343; <i>Number Sense</i> #27 and #28 #27: Two consecutive integers with a sum of 33. (16, 17) #28: Four consecutive <u>even</u> integers with a sum of -92. (-20; -22; -24; -26)
<b>LAUNCH:</b>  p. 342; Example 3 Reference Books closed	<i>Ask students what steps you would have to follow to solve:</i> <ul style="list-style-type: none"> <li>▪ <math>x - 3 = 14</math></li> <li>▪ <math>5x - 3 = 14</math></li> <li>▪ <math>2(5x - 3) = 14</math></li> </ul> Chart their responses. Post charts to help them in the Explore.  <i>Ask students what steps they would follow to solve: (Example 3b)</i> $38 = -3(4y + 2) + y$ (Make a simpler problem if this one is too challenging.)
<b>EXPLORE:</b>  p. 342; Try This #6 or #7;	With a partner, choose one from p. 342; Try This #6 or #7 and p. 343; #4-6. (You may want to assign different table groups different problems.) Ask the students to solve the equation and to chart the steps they followed to solve the equation. Post charts around the room.
<b>Practice:</b>	p. 344; #30
<b>SUMMARIZE:</b>	<b>WHOLE CLASS SHARING:</b> Students share their lists of steps to solve multi-step equations,
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 343; #11-13, #17-19 and p. 344, Mixed Review #36-43

## MODULE 7: Solving Equations and Inequalities

### DAY 4: Lesson 7 - 3; pp. 345-349

<b>LESSON FOCUS:</b>	Multi-step Equations with Fractions and Decimals
<b>CA STANDARD:</b>	AF 4.1 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve multi-step equations with fractions.
<b>Warm-up/ Routine(s):</b>	Write on the overhead or board: <i>Find the error:</i> $6 + 3x = -12$ ; $x = 6$ (p. 344 ERROR ANALYSIS Reference) The correct value of $x$ is $-6$ : $-12 - 6 = -18$ ; $\frac{-18}{3} = -6$ . Substitute and Check: $6 + 3(-6) = 6 + -18 = -12$
<b>LAUNCH:</b> TE p. 345 Connecting to Students' Lives	TE p. 345; Connecting to Students' Lives Ask students if they have ever asked: " <i>What score do I need to get on the next test to raise my average to a(n) ____?</i> " Here is an example of a student in that very situation . . . (Move to Explore)
<b>EXPLORE:</b> p. 346; Example #2 Books closed  p. 349; #36a, 36b, 36c	Solve p. 346; Example 2; Real-World Connection  Here is another student asking the same questions . . . p. 349; #36a, 36b, 36c
<b>Practice:</b>	p. 348; Check Understanding #1-4 <i>or</i> TE p. 349 Enrichment worksheet #1-9
<b>SUMMARIZE:</b>	Class discussion: Turn to page 346; Example 2. (Reference TE 346, Example 2) <i>"How does multiplying the left side by 3 clear the denominator?"</i>
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 348; Check Understanding #5, #6, #10 <i>and</i> p. 348; Practice and Problem Solving #11, #14, #17, #20 as appropriate <i>or</i> TE p. 349 Enrichment worksheet #10-15

**MODULE 7: Solving Equations and Inequalities**

**DAY 5: Lesson 7 - 3; pp. 345-349**

<b>LESSON FOCUS:</b>	Multi-step Equations with Fractions and Decimals
<b>CA STANDARD:</b>	AF 4.1 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve multi-step equations with decimals.
<b>Warm-up/ Routine(s):</b> p. 349 #35 Books closed	_____ is taking a drawing class. The drawing pencils cost \$.97 apiece, and a sketchbook costs \$5.95. _____ spent a total of \$11.77. Write and solve an equation to find the number of pencils purchased. (6 pencils) The equation $0.97p + 5.95 = 11.77$ is given by the textbook; however, students may come up with a different equation that is equally as correct.
<b>LAUNCH:</b> p. 349 #35 Books closed	You can solve multi-step equations containing decimals by calculating with the decimals, or <i>more easily</i> by multiplying by a power of 10 to clear the equation of decimals. Such as in the LAUNCH equation: $0.97p + 5.95 = 11.77$ $100(0.97p + 5.95) = 100(11.77)$ (Whoa, what a concept!!) $97p + 595 = 1177$ $97p + 595 - 595 = 1177 - 595$ $97p = 582$ $\frac{97p}{97} = \frac{582}{97}$ $p = 6$ pencils <b>WHY DOES THIS WORK?</b>
<b>EXPLORE:</b> p. 347; Part 2 Example Books closed	For local telephone service, the _____ pay \$9.95 monthly plus \$0.35 per minute for local calls. Last month, they paid \$12.75 for local service. Ask students to write and solve an equation to find the total minutes of local calls placed during the month. (The _____ made 80 minutes of local calls.) Refer to p. 347; Part 2 Example for Different Ways to Solve the Problem. Students should justify their answer.
<b>Practice:</b>	p. 347; Choose a Method #1 and #2 or p. 348; #7, #8, #9
<b>SUMMARIZE:</b>	Partner Talk/Write: Which of the following equations is easier to solve: $0.07z = 0.21$ or $7z = 21$ Why? What has happened to change them but keep them equivalent? Share at tables and with the class.
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 348; Practice and Problem Solving #18, #19, #26-31 Extension: Ask students to investigate the cost of local phone service (remind them to note the provider of the service).

## MODULE 7: Solving Equations and Inequalities

### DAY 6: Lesson 7 - 4; pp. 350-353

<b>LESSON FOCUS:</b>	Reasoning Strategy: Write an Equation
<b>CA STANDARD:</b>	AF 1.1; AF 4.2 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve a problem to find an unknown quantity.
<b>Warm-up/ Routine(s):</b>  p. 349 #33 Books closed	<i>Six friends hire a raft and guide to go white-water rafting in Colorado. Each person also buys a souvenir photo of the trip for \$25.75. The total each person pays is \$90.30. What needs to be included in an equation to find the cost <math>c</math> of the raft and guide?</i> Ask students to generate an equation and solve the problem. (\$287.30) Students should justify that their solution is reasonable.  The equation $\frac{c}{6} + 25.75 = 90.3$ is given by the textbook; however, students may come up with a different equation that is equally correct.
<b>LAUNCH:</b>  p. 350; Math Strategies in Action Books closed  TE p. 350 Connecting to Students' Lives; pp. 350-351 Reference	<u>Math Strategies in Action:</u> You might recognize the name Albert Einstein and his famous formula $E = mc^2$ . Many scientists write and use equations and formulas every day. Banks use equations to calculate interest and loan information. Statisticians use equations to find sports and population statistics. Doctors use equations to calculate correct doses of medicine.  TE p. 350: Connecting to Students' Lives as reference for compiling and organizing information. <i>Ask students what steps are needed when trying to solve a complex problem?</i> (Read, Plan, Solve, Look Back or Check) Refer to pp. 350-351.
<b>EXPLORE:</b>  p. 350; Example Books closed  TE p. 351	<i>A moving van rents for \$29.95 a day plus \$.12 a mile. Ms. Smith's bill for a two-day rental was \$70.46. How many miles did she drive?</i> (88 miles) <u>Build Understanding:</u> If students are struggling suggest that they write all of the facts that they do know from the problem. <u>Error Prevention:</u> Suggest that students write words above the numbers to label the quantities in their equations.
<b>Practice:</b>  TE p. 351 Math Reasoning	TE. p. 351; Math Reasoning: <i>Suppose Mr. Ramirez rented the same moving van that Ms. Smith did, but his total bill was \$389.75. What can you conjecture about how many days he rented the van and how many miles he drove?</i> (Sample: He rented the van for more days or drove it more miles.)
<b>SUMMARIZE:</b>	Exit Slip: <i>What is a variable? What part does it play in an equation?</i>  Share thinking with table group and with class.
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 353; #1, 3, 5, 7, 9, 11

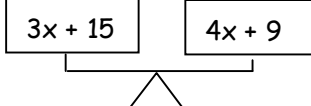
**MODULE 7: Solving Equations and Inequalities**

**DAY 7: Lesson 7 - 4; pp. 350-353**

<b>LESSON FOCUS:</b>	Mini-Assessment Reasoning Strategy: Write an Equation
<b>CA STANDARD:</b>	<b>AF 4.1 Key Standard; AF 4.2 Key Standard</b>
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to write an equation to solve a problem to find an unknown quantity.
<b>Warm-up/ Routine(s):</b>	Mini-Assessment: (Reference p. 353; Checkpoint 1) Solve each equation: $4n + 20 = 100$ $n =$ $-22 = 2x + 10$ $x =$
<b>LAUNCH:</b>	Help students write a story situation for the first equation above, i.e., "Leo received four checks of equal amounts in the mail plus he already had \$20, that gave him a total of \$100. How much was each check worth?"  Chart different story suggestions from students- identify variable - explain thinking.
<b>EXPLORE:</b>  pp. 352-353	Have different table groups work together to write an equation, chart and solve a practice problem from pages 352-353; #1-11. Post charts around the room.
<b>Practice:</b>	p. 353; #13 & 14
<b>SUMMARIZE:</b>	Have selected table groups present their charts and explain their thinking.
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	Have students select 3 problems that their table did not do from pp. 352-353 OR TE p. 353, Enrichment, students select 2 of the 5 to write an equation and solve. (Or Reteaching if more appropriate.)

## MODULE 7: Solving Equations and Inequalities

### DAY 8: Lesson 7 - 5; pp. 355-359

<b>LESSON FOCUS:</b>	Solving Equations with Variables on Both Sides
<b>CA STANDARD:</b>	AF 4.1 Key Standard; AF 4.2 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve and use equations with variables on both sides.
<b>Warm-up/ Routine(s):</b> p. 359 #44	p. 359 #44 <i>Choose a Strategy:</i> In a collection of dimes and quarters, there are seven more quarters than there are dimes. How many dimes and quarters are there if the collection is worth \$3.50? (5 dimes 12 quarters) <i>Explain the strategy that you used and why you chose that strategy.</i>
<b>LAUNCH:</b> CPM FFA 2; Chapter 5 (MC 70) Reference  CPM FFA 2; Chapter 5 (Math Club) Resource Page	Using a two-pan balance: Jason and Jasmine have an unknown amount of money. Jason has three envelopes labeled $x$ and an additional \$15; Jasmine has four envelopes labeled $x$ and an additional \$9. 1) How much money is in <u>each</u> envelope( $x$ )? In each pan, write a numeric expression, and ask which pan will tilt, or whether the two will balance. Write the corresponding equation and solve to see how much money is in each envelope: <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 20px;"><math>3x + 15</math></div> <div style="border: 1px solid black; padding: 5px; margin-right: 20px;"><math>4x + 9</math></div> <div style="margin-left: 20px;"><math>3x + 15 = 4x + 9</math> <math>x = 6</math> or \$6</div> </div> 
<b>EXPLORE:</b> CPM FFA 2; Chapter 5 (MC 72)	<i>The Mathematical Amusement Park is different from other amusement parks. Visitors encounter their first decision involving math when they pay their entrance fee. They have a choice between two plans. With Plan 1 they pay \$5 to enter the park and \$3 for each ride. With Plan 2 they pay \$12 to enter the park and \$2 for each ride.</i> a) Make a table to find the number of rides when the two plans cost the same. (This is optional.) b) Use $x$ for the number of rides and write algebraic expressions for the cost of each plan. (Plan 1 = $3x + 5$ ; Plan 2 = $2x + 12$ ) c) Write an equation that shows when the plans cost the same. ( $3x + 5 = 2x + 12$ ) d) Solve your equation. Optional: compare the result with the result from the table. (The cost is the same if you go on seven rides.) e) Determine which is the best plan and justify your choice.
<b>Practice:</b>	p. 356; Try This #5
<b>SUMMARIZE:</b>	QUICKWRITE: <i>Explain how to get the variable on only one side of this equation:</i> $3b + 4 + 2b = 8 - 7b + 4b$ Share your thinking with a partner at your table. Share out with class.
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 357; Check Understanding #1-6; and p. 359; Error Analysis #35

**MODULE 7: Solving Equations and Inequalities**

**DAY 9: Lesson 7 - 6; pp. 360-364**

<b>LESSON FOCUS:</b>	Solving Two-Step Inequalities
<b>CA STANDARD:</b>	<b>CA 4.1 Key Standard</b>
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve and use two-step inequalities.
<b>Warm-up/ Routine(s):</b>	TE p. 360 Daily Skills Warm-up transparency, which could make a quick quiz or p. 358 #28 (Cell Phone)
<b>LAUNCH:</b> p. 361; Example #3 Books closed	p. 361; Example #3; Real World Connection (Hiking Expedition) <i>An expedition leader estimates that a group of hikers can carry less than 550 lb of food and equipment. The group must carry 336 lb of equipment as well as 25 lb of food for each climber.</i> <i>What is the greatest possible number of people in the expedition?</i> <i>(336 lb equipment + 25 lb food/person <math>\times</math> number of people <math>p &lt; 550</math> lb)</i>
<b>EXPLORE:</b> p. 360 Books closed  TE p. 361	p. 360; Example #1: $2y - 3 \leq -5$ Walk students through solving the inequality; represent on number line <i>Have students do the same thing with <math>-2y - 3 \leq -5</math></i>  Students work with a partner to solve. TE p. 361; Additional Example 3 (Carnival problem) <i>Dave has \$25 to spend at a carnival. If admission is \$4 and the rides cost \$1.50 each, what is the greatest number of rides that Dave can go on?</i> <i>If some of the newer rides are \$2 each, and Dave wants to go on some of those also, what would be some possible ways that he could spend his \$25 dollars at the carnival? Explain your thinking &amp; reasoning.</i>  If time allows, p. 361; Try This #7 Commissions
<b>Practice:</b> p. 363	Assign groups <u>one</u> of the following problem numbers: p. 363; #32, 33, 34
<b>SUMMARIZE:</b>	Partnerships share their thinking with the other students at their table. Share out with the class. Chart the different ways students have found that Dave might spend his \$25 at the carnival.
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b> p. 362	p. 362; Practice and Problem Solving #9, #13, #17, #21, #25, and #29 (Error Analysis) and #30 (Test Prep)

**MODULE 7: Solving Equations and Inequalities**

**DAY 10: Lesson 7 - 7; pp. 365-368**

<b>LESSON FOCUS:</b>	Transforming Formulas
<b>CA STANDARD:</b>	AF 4.2 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve formulas for a given variable and to use formulas to solve problems.
<b>Warm-up/ Routine(s):</b> CPM FFA 2; Ch 5 Reference	<u>Target Game:</u> Using the digits 2, 3, 4, 7, and 8; can you solve, to equal the number 6? $\frac{\square * \square}{\square} - \square \square$ (Solution: $\frac{8 * 7}{4} - 2^3$ )
<b>LAUNCH:</b> p. 366; Example 3 Books closed	p. 366; Example 3: Real World Connection Solve the example problem (8.5 hours) and the problem in the margin of the student text, under the photograph, for the miles driven (325 miles). Solve the distance formula in Example 3 for $r$ .
<b>EXPLORE:</b> TE p. 366; Additional Example 4  p. 366; Example 4 Reference	<ul style="list-style-type: none"> <li>▪ <i>The high temperature for the day in San Diego will be 32° Celsius. Will you wear a sweater or a T-shirt? Solve using the formula on p. 366, Example 4. (The temperature would be 89.6°F; You can wear a T-shirt.)</i></li> <li>▪ <i>What would the temperature be in San Diego if it were 0° Celsius? Would you wear a T-shirt or a sweater? (The temperature would be 32°F; You would wear a sweater.)</i></li> <li>▪ <i>Would it be probable for the temperature to be -32° Celsius in San Diego? (No, it would be -25.6° Fahrenheit.) Where might this happen? (Alaska, northern US states with the wind-chill factor, Russia, etc)</i></li> </ul>
<b>Practice:</b>	p. 367; Check Understanding #1-5 and p. 367 Practice and Problem Solving #15
<b>SUMMARIZE:</b>	<u>QUICKWRITE:</u> (Reference: p. 367 Practice and Problem Solving #16) <i>The formula for the perimeter of a rectangle is <math>P = 2l + 2w</math>. Explain how you would find the width of the rectangle if you knew the perimeter of the length. Share thinking with the class.</i>
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 368; Checkpoint 2 (preferably even; or odd)

## MODULE 7: Solving Equations and Inequalities

### DAY 11: Lesson 7 - 8; pp. 369-373

<b>LESSON FOCUS:</b>	Simple Interest/ Students should have access to a calculator Mini Assessment (optional)
<b>CA STANDARD:</b>	NS 1.7 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve simple interest problems and to find interest paid on investments using simple interest.
<b>Warm-up/ Routine(s):</b>  TE p. 368	Mini Assessment: TE p. 368 Checkpoint, #5-8 or use 4 problems from homework-previous night (p. 368; Checkpoint 2)  (If a Mini Assessment was not given review ratio, proportion and percent.)
<b>LAUNCH:</b>  TE p. 369 Connecting to Students' Lives	TE p. 369; <i>Connecting to Students' Lives:</i> <i>Discuss saving money in an account where you earn interest compared to borrowing money where you have to pay interest.</i>
<b>EXPLORE:</b> p. 369; Example 1  <i>also</i> TE p. 369; Additional Example 1	<u>Vocabulary:</u> Interest, principal, interest rate, time in terms of years Simple Interest Formula: $I = prt$ (p. 369)  p. 369; Example 1 <i>or</i> use real-world examples from the newspaper, magazines or (fictional) bank statements.
<b>Practice:</b>	p. 372; Practice and Problem Solving #8, 9, 10 and p. 373 #18 Test Prep
<b>SUMMARIZE:</b>	<u>Exit Slip:</u> <i>Suppose your grandmother deposits \$200 in a savings account for you. The interest rate is 4% per year.</i> <i>Find the interest earned in 5 years. What would be the total of principal plus interest?</i>  Share your thinking at your table. Share out with the class.
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>  TE p. 370 Connecting to Economics	p. 373; Mixed Review #22-30 <i>and/ or</i>  <u>QUICKWRITE:</u> <i>Write a reflection on what the purpose of interest is.</i> TE p. 370 Connecting to Economics: Banks pay interest on savings accounts as a fee for letting the banks use this money. Banks use the money to make loans on which they charge interest. Banks collect interest on loans at a higher rate than they pay their savings customers. This difference forms part of the banks' profit.

## MODULE 7: Solving Equations and Inequalities

# DAY 12: Lesson 7 - 8; pp. 369-373

<b>LESSON FOCUS:</b>	Compound Interest/ Students should have access to a calculator
<b>CA STANDARD:</b>	NS 1.7 Key Standard
<b>Purpose of Lesson:</b>	At the end of the lesson, students will be able to solve compound interest problems and to find interest paid on investments using simple and compound interest. (May need 2 days of instruction.)
<b>Warm-up/ Routine(s):</b>	<p>_____ earns 5.3% simple interest for 5 years on \$3000. How much interest does he earn? What will be the value of his account in 5 years?</p> <p>CPM FFA 2 Parent Guide Reference</p> <p>Simple Interest Formula: <math>I = prt</math>  <math>I = 3000 \times 5.3\% \times 5</math>  <math>I = 3000 \times 0.053 \times 5</math>  <math>I = 795</math> Wayne would earn \$795 interest                      Account value = <math>3000 + 795 = \\$3795</math> after 5 years at 5.3% interest</p>
<b>LAUNCH:</b>	<p>How much interest would _____ have earned on his account of \$3000, if he had earned 5.3% interest compounded annually?</p> <p>CPM FFA 2 Parent Guide Reference</p> <p>Compound Interest Formula: <math>A = P(1 + r)^5</math>  <math>A = 3000(1 + 5.3\%)^5</math>  <math>A = 3000(1 + 0.053)^5</math>  <math>A = 3883.86</math> _____ would have earned \$3883.86 after 5 years compounded annually.                      Compare the difference in earnings when an amount is earning simple or compound interest. In this example, _____ would have earned \$88.86 more with compound interest than with simple interest.</p>
<b>EXPLORE:</b>	<p>p. 370; Example 2 Real-World Connection</p> <p>p. 370; Example 2 p. 370; Try This #3-4</p> <p>p. 370 Try This; #3 and #4</p>
<b>Practice:</b>	<p><u>QUICKWRITE</u>: p. 373 #20 Writing</p> <p>Explain the difference between simple and compound interest.</p>
<b>SUMMARIZE:</b>	<p>Partner Talk/Write:</p> <p>A balance of \$1,000 at 10% is compounded annually for 5 years at one bank and a balance of \$1,000 at 10% is compounded semi-annually for 5 years at another bank.</p> <p>Which would provide the greater balance at the end of the 5 year period? How do you know? Explain your thinking.</p>
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 372; Practice and Problem Solving #11-#15 or TE p. 373 Reteaching Worksheet

## MODULE 7: Solving Equations and Inequalities

### DAY 13: 7 - 8A or Review; p. 374

<b>LESSON FOCUS:</b>	<u>Optional:</u> Credit Card Interest/ Students should have access to a calculator May need to continue instruction on Compound Interest or Review
<b>CA STANDARD:</b>	<i>Teacher choice</i>
<b>Purpose of Lesson:</b>	<i>Teacher choice</i>
<b>Warm-up/ Routine(s):</b>	
<b>LAUNCH:</b>	
<b>EXPLORE:</b>	
<b>Practice:</b>	
<b>SUMMARIZE:</b>	
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	

**MODULE 7: Solving Equations and Inequalities**

**DAY 14: Chapter 7 Assessment**

<b>LESSON FOCUS:</b>	Assessment
<b>CA STANDARD:</b>	AF 4.1 Key Standard; AF 4.2 Key Standard
<b>Purpose of Lesson:</b>	Assess student understanding
<b>Warm-up/ Routine(s)</b>	TE p. 335 Transparency 61: Reasoning Strategy: Write an Equation
<b>LAUNCH:</b> Chapter 7 Student Support File	Chapter 7 Alternative Assessment from the Chapter 7 Student Support File
<b>EXPLORE:</b>	
<b>Practice:</b>	▼
<b>SUMMARIZE:</b>	<u>Journal Prompt:</u> <i>Suggestions: Reflect on what you learned in Chapter 7. What concepts do you need additional experience with? What would have helped you to have a better grasp of the material in the chapter? What, if any, changes will you make when starting off the next unit?</i>
<b>Closure:</b>	Time to reflect back on the <b>purpose</b> of the lesson, and help students make <b>meaningful</b> connections.
<b>Homework:</b>	p. 380; Cumulative Review; odd numbered problems. Students should show their work to justify their solution(s).