



SAN DIEGO CITY SCHOOLS

Department of Mathematics

Instructional Module to Enhance the Teaching of

PRENTICE HALL

PRE-ALGEBRA

California Edition 2001

GRADE 7

Module 2

**Solving One-Step
Equations and Inequalities**

KEY MATHEMATICAL CONCEPTS FOR GRADE SEVEN - 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 2, Solving One-Step Equations & Inequalities

- AF 1.1 Use variables and appropriate operations to write an expression, equation, inequality, or a system of equations or inequalities that represent a verbal description.
- ***AF 1.3** Simplify numerical expressions by applying properties of rational numbers and justify the process used.
- AF 1.4 Use algebraic terminology correctly.
- ***AF 4.1 (Building toward)** Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution/s in the context from which they arose, and verify the reasonableness of the results.

MODULE 2: Solving One-Step Equations and Inequalities

DAY 1: LESSON 2-1, pp 64-68

LESSON FOCUS:	Identify and use properties of addition and multiplication.
CA STANDARD:	*AF 1.3, Key Standard: MR 2.6
Purpose of Lesson:	At the end of the lesson, students will be able to identify properties of addition and multiplication & use them to more quickly solve problems.
Warm-up/ Routine(s):	<u>Mental Math:</u> Use examples that might be easier solved when making combinations of ten or multiples of ten. Example: $2 + 6 + 8 + 14 =$; $94 + 108 =$; $27 + x + 63 =$; $4 \times (7 \times 5) =$ Additional examples: p 66, <i>Try This, #5-8</i> , (top of page).
LAUNCH: TE p64	TE p 64; <i>Connecting to Students' Lives</i> Pose a few situations that students might find to illustrate operations. Ex: Is there a difference in having a hamburger, fries & a Coke OR a Coke, fries and a hamburger? Does it make a significant difference if you make your bed, brush your teeth, and then get dressed OR get dressed, make your bed and then brush your teeth? Why learn properties of numbers? Properties of numbers allow you to group them & regroup them so that you can quickly & easily find an answer.
EXPLORE: Text pp64-66	Key Understanding: "Changing the order of the numbers and changing the grouping of the numbers does not change the <u>sum</u> or the <u>product</u> ." Review Part 1, Identifying Properties and Using Properties, p 64-66, with the students. Put words with the numbers to form number stories to help build understanding, i.e. Addition: $6 + 4$ <i>There were 6 ants on our picnic table and then there were 4 more.</i> OR <i>There were 4 ants on our picnic table and then there were six more.</i> Multiplication: $9 \cdot 5$ <i>There were 9 ants on our picnic table and then there were five times that many!</i> OR <i>There were 5 ants on our picnic table and then there were nine times that many!</i> (You may need to give additional examples where students give the "OR" portion of the example until they demonstrate a basic understanding.) Each group develops a chart with an example of each additive and multiplicative property. Each example should be written in words as a word story & algebraically.
Practice:	TRY THIS, p 65, # 2
SUMMARIZE:	<u>Mini-Assessment:</u> QUICK WRITE: <i>How do reordering & regrouping help you to add mentally? Include examples. Why is zero NOT a multiplicative property?</i>
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	Textbook: TRY THIS, bottom p 66, # 10 - 13; p67 #7-9 & #29,30,32,33

MODULE 2: Solving One-Step Equations and Inequalities

DAY 2: LESSON 2-1, pp 64-68

LESSON FOCUS:	Identify and use properties of addition and multiplication.
CA STANDARD:	*AF 1.3 - Key Standard, MR 2.6
Purpose of Lesson:	At the end of the lesson, students will be able to identify properties of addition and multiplication and use them to solve expressions.
Warm-up/ Routine(s):	<u>MENTAL MATH</u> : Number Sense - <i>Daily Skills Warm Up</i> , OH TE p64 Name each property used to compute more easily.
LAUNCH: Text p66	<i>Try This</i> , p 66, #9. Find cost of groceries. Have students solve and talk with partner about a time when they encountered this type of mathematical situation. Share with class.
EXPLORE: Text p68	<i>Mathematical Reasoning</i> , p68 (top), #44. In small groups have students discuss this question and come to a conclusion. <u>They must provide examples and justify their reasoning.</u> Share with class.
Practice:	Read article, p68, <i>A Fair Faire in Alaska</i> . Groups solve #47, 48 a & b
SUMMARIZE:	COLLABORATIVE CHECK FOR UNDERSTANDING: DURING THE LESSON, bottom of page TE 69-70, Additional Examples 1-5. Each table group turns in ONE piece of paper with their collaborative answers.
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	Text p67, #10-15; #18, 19, 21, 21,22

MODULE 2: Solving One-Step Equations and Inequalities

DAY 3: LESSON pgs. 82-83

LESSON FOCUS:	Use a model to show equations and to explain reasoning.
CA STANDARD:	MR 2.5
Purpose of Lesson:	At the end of the lesson, students will be able to provide concrete representation of the abstract ideas involved in solving equations.
Warm-up/ Routine(s):	<u>Mini-assessment/Review:</u> After the Lesson; Lesson Quiz, 1-1, p5, Teaching Transparencies Writing variable expressions
LAUNCH: Materials: Balance transparency(p8), color tiles - yellow = +1 & red = -1, green rectangles = variable Teaching Trans. Book (p16) Text pp82 & 83	Have students talk with one another about how one might balance a seesaw if on one side there was a 7 th grade student and on the other, a 350 lb. defensive linebacker? What might you need to know? (Take quick survey of 10-15 students to find average weight of a 7 th grader.) Share thoughts. <i>Would two 7th graders on one side of the seesaw balance with the linebacker? Two and a 3rd grader? Share suggestions.</i> Use the Balance Scale OH & OH tiles, Teaching Transparencies, p8 & p16, to model how you can demonstrate balancing an equation. Ref: p82, Example 1. DO SEVERAL EXAMPLES & have students draw a seesaw on their papers & make the models with you as well. Key understanding is to have the variable (green rectangle) sitting all by itself on one side of the balance so you know its value. Show students how to make the simpler model without drawing a complete seesaw balance, Ref: p83, top of page.
EXPLORE: Text pp82/83	Using whatever model they are most comfortable with, have students work with a partner to draw balance models of selected equations from pp82 & 83 (i.e., # 7, 11, 16, 20) (Note: green rectangle = variable; yellow tiles = positive integers; red tiles = negative integers).
Practice:	p. 82, #8, 10
SUMMARIZE:	<u>Exit Slip:</u> <i>How does making a model or picture of balancing an equation make it easier to understand the procedure? Give an example.</i>
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	p83, #17-19, 21-24; Critical Thinking, #25 (Answers may vary.)

MODULE 2: Solving One-Step Equations and Inequalities

DAY 4: LESSON 2-2, pp 69-73

LESSON FOCUS:	Simplify expressions using the Distributive Property.
CA STANDARD:	*AF 1.3, Key Standard
Purpose of Lesson:	At the end of the lesson, students will be able to use the Distributive Property with numerical and algebraic expressions in order to solve real-world multiplication problems.
Warm-up/ Routine(s):	<p><u>Number Sense:</u> "What Measurement Me?" "2 feet I be . . . In inches, what measurement me?" "18 inches I be . . . In yards, what measurement me?" "300 cm I be . . . In meters, what measurement me?" "0.5 meters I be . . . In centimeters, what measurement me?"</p> <p>OR Mystery Number; see Routines/Warm-Up Bank.</p>
LAUNCH: TE p63:69	<p>OH, <i>Properties of Numbers</i>, TE p63 - Quick Review Cover all of the OH with a piece of paper & work up from the bottom having students identify the property & then move the paper to show the property's name. See FOCUS, TE p69, <i>Introducing the Concept</i> - Ask students the question posed & use this conversation to move into the EXPLORATION.</p>
EXPLORE: Materials: Rulers, 4" x 3" rectangle, 4" x 5" rectangle Text, p69	<p><i>Introducing the Concept</i>, student text p 69, for exploration of Distributive Prop.</p> <p>In pairs, students find the area of the two rectangles in two ways (p69, Method #1 & Method #2) Do #3 on notebook paper. Share out with class.</p>
Practice:	p. 72, Check Understanding, #5-8
SUMMARIZE:	QUICK WRITE: <i>A carpenter needs to cut 3 pieces that are 13 inches long and 3 pieces that are 17 inches long from a single board. Explain how to use the Distributive Property to find the total length of the uncut board.</i>
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	Try This, p. 70, #7-10 and p. 71, #14-16

MODULE 2: Solving One-Step Equations and Inequalities

DAY 5: LESSON 2-2, pp 69-73

LESSON FOCUS:	Simplify expressions using the Distributive Property.
CA STANDARD:	*AF 1.3, Key Standard
Purpose of Lesson:	At the end of the lesson, students will be able to use the Distributive Property with numerical and algebraic expressions in order to solve real-world multiplication problems.
Warm-up/ Routine(s):	<u>Mini-assessment/Review:</u> Lesson Quiz, 2-2, p96, Teaching Transparencies Use distributive property to simplify
LAUNCH: <u>Materials:</u> Yellow/red OH tiles, green OH rectangles for modeling (Tch. Trans. Bk. p16) Text p71	On overhead demonstrate modeling Distributive Property with variable expressions. Reference p. 71, Example 4. Model Distributive Property with negative multiplier. (yellow tile = 1 and red tile = -1) Example: $-2(3x + 2) =$ $-2(3x - 2) =$
EXPLORE: Text 71	Students work with partners to draw models of "Try This", p. 71, #12-13 and #15-16.
Practice:	p. 72, #17, 18, 29-31 OR Reteaching page, TE, p. 73.
SUMMARIZE:	Lashawn had this mental math problem: $98(7)$ This was her thinking: $(100 - 2)7 = 700 - 14 = 686$ Explain how she used the Distributive Property of multiplication to make the problem easier to solve. COULD BE TABLE TALK w/ SHARE OUT or in written form.
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	Try This, p. 73, Error Analysis, #48, Mixed Review, #55-58.

MODULE 2: Solving One-Step Equations and Inequalities

DAY 6: LESSON 2-3, pp 74-77

LESSON FOCUS:	Identifying parts of a variable expression and simplifying variable expressions.
CA STANDARD:	*AF 1.3 Key Standard, AF 1.4; MR 2.4
Purpose of Lesson:	At the end of the lesson, students will be able to apply properties to simplify a variable expression.
Warm-up/ Routine(s):	<p><u>Mental Math</u>: Broken Calculator - Routine/Warm-Up Bank Given a value, students explore strategies for computing that value with a fictitious "broken calculator" (number or an operation) key. Ex: How would you compute for 66 if the 3 and x keys were broken? Find 425 with keys 2 and 5 broken!</p> <p>OR Lesson Quiz 1-3, Tch. Trans. Bk. p92 - Evaluate an expression (Review)</p>
LAUNCH: TE p74	<p>Partner Talk - Similar items are often "grouped together". Students talk with their partners about where they might see this and give examples, i.e. foods in a grocery store, styles of clothing in a dept. store, sports gear in a sporting goods store. Share with class. Introduce vocabulary - "like terms". Reference <i>Background for Lesson</i>, TE, p. 74, margin.</p>
EXPLORE: Text p75 Vocabulary: Term, constant, coefficient, like terms, simplify	<p>Teacher uses OH tile & rectangles to demonstrate models for simplifying. p. 75, Examples 2-4. Identify vocabulary as you model: term, constant, coefficient, like terms, simplify. Students work with a partner to draw models for #5-7. Share results with table group. Identify the parts of the variable expression p75, #9 - share results with table group.</p>
Practice:	p. 76, #7-10; #11 & #14
SUMMARIZE:	<u>Exit Slip</u> : Simplify $9 + 4f + 3 + 2f$. Identify the coefficients, the like terms & the constants in the expression.
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	p. 76, #13 & 16, #22 - 24 p. 77, #40, Error Analysis

MODULE 2: Solving One-Step Equations and Inequalities

DAY 7: LESSON 2-4, pp 78-81

LESSON FOCUS:	Classify and check equations using substitution.
CA STANDARD:	AF 1.1, 1.4
Purpose of Lesson:	At the end of the lesson, students will be able to classify types of equations and check solutions using substitution.
Warm-up/ Routine(s):	Share student responses for homework problem, p. 77, #40, <i>Error Analysis</i> . OR <u>Number Sense</u> : Number Patterns; Tch. Trans. Bk. p94. Lesson Quiz 1-7
LAUNCH: Vocabulary: Equation, open sentence, solution TE p79	"True, false or hmmm, I'm not sure?" Have students work as partners to try to classify the equations: Ex: $-5 + 7 = -12$; $6 - (-4) = 10$; $4(a + 1) = 12$ What would we have to know or do to make the last equation true or false? "Substitution" likened to an injured player in sports. See Part 2 <i>Teaching Notes</i> , TE p79, right margin.
EXPLORE: Text p79	Table groups read and discuss Part 2, Example 3, p79. <i>Is 30 a possible solution for the equation? (YES) How do you know?</i> Read & discuss Example 4. <i>Can the diver's weight be 200 lb? (NO) Why is this situation NOT possible?</i> Challenge groups to write their own problem situation that would be possible and a problem situation that would NOT be possible. Solve the problems and explain their reasoning. <i>What would have to CHANGE in the "NOT possible" problem situation for it to be TRUE??</i>
Practice:	p. 80, #5-7
SUMMARIZE:	EXPLAIN TO A PARTNER: <i>Is 2 a solution for $4 + d = 6$ How do you know?</i> PARTNER TO YOU: <i>Is 1 the solution for $-x - 5 = 6$? How do you know?</i>
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	p. 80, #8-10, #29-33 MIXED REVIEW, p81, #42-48 Even numbers only & #49

MODULE 2: Solving One-Step Equations and Inequalities

DAY 8: LESSON 2-5, pp 84-88

LESSON FOCUS:	Building toward solving two-step equations using addition and subtraction. Evaluate reasonableness of solutions.
CA STANDARD:	*AF 4.1 (Building toward this Key Standard - Two step equations) MR 2.8
Purpose of Lesson:	At the end of the lesson, students will be able to solve one-step equations using addition and subtraction.
Warm-up/ Routine(s):	<u>Number Sense</u> : Use number line transparency, Tch. Trans. Bk. p7 Place some integers along a line & have volunteers fill it in. (Review)
LAUNCH: Text p84 <u>Vocabulary</u> : Inverse operation, subtraction property of equality, addition property of equality	REAL LIFE CONNECTION: See p84, Part 1, balancing a barbell - <u>For lack of a barbell</u> , have a volunteer come forward & stretch out both arms (may need to bend arms some) with open palms faced upward. Begin by placing math texts on each palm. Demonstrate a balance & how you would have to subtract the same amount from each palm to achieve a balance OR you could add the same amount to each side to achieve a balance. DISCUSS inverse operation - this should be review!!?? See pp84 & 86 Remove Zero Pair -Example: Tch. Trans. Bk. p41
EXPLORE: Text p85	In addition to "balance", when solving equations that describe real-world situations, solutions need to be checked for "reasonableness". p. 85, EXAMPLE 2, Real World Connection. p. 85, photo caption on right, students find their target heart rate range and discuss what would be "reasonable" for a typical seventh grader. Students explain their thinking. <u>Extension</u> : If you know that someone's resting heart rate is 57 beats per minute, can you find their age? (Try it first with your resting heart rate. What strategy might you use?) [Work backward: resting rate divided by 0.6 then subtract from 220!!]
Practice:	p. 85, TRY THIS, #4 p86, TRY THIS, #5-7
SUMMARIZE:	<u>Exit Slip</u> : Write the equation with a variable & solve. <i>Larissa wants to increase the number of comic books in her collection to 345. She now has 250. How many books does she need to buy?</i>
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	p. 87, CHECK UNDERSTANDING, #3-8 p. 88, MIXED REVIEW, #48-54

MODULE 2: Solving One-Step Equations and Inequalities

DAY 10: LESSON 2-6, pp 89-92

LESSON FOCUS:	Building toward solving two-step equations using multiplication and division. Evaluate reasonableness of solutions
CA STANDARD:	*AF 4.1 (Building toward this Key Standard - Two step equations) MR 3.1
Purpose of Lesson:	At the end of the lesson, students will be able to solve one-step equations using multiplication and division.
Warm-up/ Routine(s):	ASSESSMENT: p. 92, Mixed Review, #50-55! If you are using math notebooks for Homework, allow students to use their notebooks on this assessment (Validates doing Homework!!).
LAUNCH: Vocabulary: "inverse operation"	Reflect upon seesaw and barbell balancing situations. What would be the first step for each equation? $x + 8 = 3$ (subtract 8 from each side) $5 = d + 1$ (subtract 1 from each side) $y - 5 = 8$ (add 5 to each side) Discuss how addition and subtraction are related. Vocabulary: "inverse operation"
EXPLORE: Ref: p 89-90	Ref: pp 89-90 Students work with a partner to investigate how multiplication and division are <i>related</i> . Using seesaw and barbell situations as spring board, have students represent on chart paper in some way (draw model of?) the following problems: A. $4n = 12$ (i.e., Show dividing both sides by 4) B. $\frac{t}{3} = 5$ (Multiplying both by 5) C. $32 = 3w$ (Divide both by 3) Share with small group/class.
Practice:	p. 89, #2 and p. 90, #5 and #8
SUMMARIZE:	QUICK WRITE: <i>How are the procedures to solve $3x = 9$ and $x + 3 = 9$ alike?</i> <i>How are they different?</i>
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	p91, #1-3, <i>Check for Understanding</i> p91, #10, <i>Critical Thinking</i> , #11-14, <i>Mental Math</i> , #31 & 32

MODULE 2: Solving One-Step Equations and Inequalities

DAY 11: LESSON 2-8, pp 100-103

LESSON FOCUS:	Inequalities and their graphs						
CA STANDARD:	AF 1.1, 1.4, 1.5						
Purpose of Lesson:	At the end of the lesson, students will be able to graph and write inequalities.						
Warm-up/ Routine(s):	<p><u>Mental Math: What's My Rule?</u> Students discover the rule from data in a "t" table.</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-right: 40px;">Ex: 4 -- 22</td> <td>15 -- 4</td> </tr> <tr> <td style="padding-right: 40px;">5 - 27</td> <td>21 -- 6</td> </tr> <tr> <td style="padding-right: 40px;">6 -- 32 (Rule: $n \times 5$ plus 2)</td> <td>30 -- 9 (Rule: Divide by 3; subtract 1)</td> </tr> </table>	Ex: 4 -- 22	15 -- 4	5 - 27	21 -- 6	6 -- 32 (Rule: $n \times 5$ plus 2)	30 -- 9 (Rule: Divide by 3; subtract 1)
Ex: 4 -- 22	15 -- 4						
5 - 27	21 -- 6						
6 -- 32 (Rule: $n \times 5$ plus 2)	30 -- 9 (Rule: Divide by 3; subtract 1)						
<p>LAUNCH:</p> <p>P 100</p> <p>Tch. Trans. Bk. p43</p>	<p>Use Human Number Line as described in Mod. 2, Lesson 1-4. Reflect with students upon how the number line was used to model adding and subtracting integers. For inequalities use a loop of string/yarn to represent the "open dot" (number that is NOT a solution, as in $y > 3$ (see p. 100, EXAMPLE 1, a).</p> <p>Students stand along line representing the integers that can be solutions. Use a piece of construction paper cut into a circle to indicate a number on the number line that IS a solution as in $a \leq -2$ (p. 100, Ex. 1,c).</p> <p>Again students stand along number line to show other numbers that ARE solutions. <u>Do several examples.</u></p> <p>Example: Tch. Trans. Bk., p43, Showing inequalities on a number line</p>						
<p>EXPLORE:</p> <p>TE p103, Practice</p>	<p>Students work with partner (checking representations with table group) to construct number lines to represent situations:</p> <p>A. $x > -4$ B. $x < -4$ C. $y \geq 2$ D. $y \leq 2$</p> <p>(Ref: TE p103. Practice, #13-14) <u>Write an inequality for each situation:</u></p> <p>13. Everyone in the class is under 13 years old. Let x be the age of a person in the class. ($x < 13$)</p> <p>14. The speed limit is 65 miles per hour. Let s be the speed of a car driving within the limit. ($s \leq 65$)</p>						
Practice:	If time allows, p. 103, #31-33, #39						
SUMMARIZE:	<p><u>Exit Slip:</u> Write an inequality for the situation: <i>You have \$4.50 to spend on lunch. Let c be the cost of your lunch.</i></p>						
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .						
Homework:	Reteaching, TE p. 103, margin, #1-10. (This concept can be very daunting.) OR p. 103, <i>Mixed Review</i> , #40-46						

MODULE 2: Solving One-Step Equations and Inequalities

DAY 12: LESSON 2-9, pp 104-107

LESSON FOCUS:	Solving one-step inequalities by adding or subtracting
CA STANDARD:	*AF 4.1 (<u>Building toward</u> this Key Standard - Two step equations)
Purpose of Lesson:	At the end of the lesson, students will be able to solve one-step inequalities using addition and subtraction.
Warm-up/ Routine(s):	<u>Mental Math:</u> PICO, FERME, BAGEL (Number Sense - Logic Game) See Routines/Warm-up Bank
LAUNCH: p 104	p. 104, Parts 1 & 2, demonstrate subtraction and addition properties of inequality using Human Number Line. Use examples from p. 104 & 105. <i>DISCUSS: How is this model like/dislike the balance scale model already explored? Share out.</i>
EXPLORE: P 107	p. 107, in small groups, have students explore #30, <i>Test Prep</i> . Suggest they give x and y values, i.e. $x = 6$ $y = 4$ and test each inequality to find which is true. "What if one variable was negative? If x were negative, how would that affect the inequality? Again use substitution and see what happens to the inequality. What if both variables were negative? Try it & find out! Share results.
Practice:	p. 107, #29, Writing
SUMMARIZE:	PAIR SHARE (1 minute): <i>What is meant by an inverse operation and how would you use it to solve an inequality?</i> PAIR WRITE (2 min.) Partners turn in one paper with their thoughts.
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	p. 106, #11-13, 25-28 p. 107, #32 (and #29 if not used for Practice) p. 107, MIXED REVIEW

MODULE 2: Solving One-Step Equations and Inequalities

DAY 13: LESSON 2-10, pp 108-112

LESSON FOCUS:	Solving one-step inequalities by multiplying or dividing
CA STANDARD:	*AF 4.1 (Building toward this Key Standard - Two step equations) MR 3.1
Purpose of Lesson:	At the end of the lesson, students will be able to solve one-step inequalities using multiplication and division
Warm-up/ Routine(s):	<u>Number Sense:</u> Mystery Number See Routines/Warm-up Bank OR Daily Skills Warm-Up transparency, Lesson 2-9 as a mini-assessment
LAUNCH: TE p108 Text p 108 TE p 109	TE p. 108, left margin, <i>Introducing the Concept</i> . Then move on to student text, p. 108, <i>Introducing the Concept</i> . Do #1. Discuss #2, <i>Patterns</i> . See TE p. 108, margin, <i>Background for the Lesson</i> . Note: Use TE p109, margin, <i>Reading/Writing Math</i> to provide clarification .
EXPLORE: TE p 109 P 108-109	Based upon what they know about inequalities using addition and subtraction, have students in small groups write rules for dividing and multiplying inequalities on chart paper. Have them include examples of how to change the direction of the equality. (See TE p. 109, <i>Error Prevention</i> .) As a class look over their rules & then read and discuss Division Properties of Inequality and Multiplication Properties of Inequality, pp108-109.
Practice:	TRY THIS, p 110, #6-8
SUMMARIZE:	Discuss: <i>How were our rules the same as those in the text? Different?</i> <i>How does the inverse operation play a part in solving these inequalities?</i>
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	p. 111, #1-11, #12, <i>Critical Thinking</i> , #31 <i>Error Analysis</i> , #32, a-d

MODULE 2: Solving One-Step Equations and Inequalities

DAY 14: LESSON 2 - 9 & 10

LESSON FOCUS:	Continued exploration of solving one-step inequalities
CA STANDARD:	*AF 4.1 (Building toward this Key Standard)
Purpose of Lesson:	At the end of the lesson, students will be able to solve one-step inequalities using addition, subtraction, multiplication & division.
Warm-up/ Routine(s):	<u>Mini-Assessment:</u> Use p. 111, #31 & 32 as mini-assessment. If Homework is in Math Notebook, allow students to use for assessment!
LAUNCH:	Build Understanding: (Ref: TE 110, margin) Ask: Why does $\frac{t}{-4}$ multiplied by -4 equal t ? Because $\frac{-4}{-4} = 1$ & $1 \times t = t$ What would happen to an inequality if both sides were multiplied by zero? The value of each would be zero; the new inequality would not be equivalent to the original. What if both sides were divided by zero? Not defined - can't divide by zero!
EXPLORE: Text p110	p. 110, <i>Different Ways to Solve a Problem</i> , #1 and 2. Have students read with a partner & then begin to work on #1 & 2 individually. Check work with partner & table group.
Practice:	Choose a Method and solve for this inequality: $\frac{r}{-4} > 2$
SUMMARIZE:	PAIR SHARE: Use <i>Error Analysis</i> , p 111, #31, to stimulate conversation.
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	Write a letter to "your friend" from p 111, #31. Explain what error they made and show how the inequality should be solved. OR p 112, Writing, #39

MODULE 2: Solving One-Step Equations and Inequalities

DAY 15: CHAPTER 2

LESSON FOCUS:	REVIEW, REFLECTION, ENRICHMENT, RETEACHING (as needed)
CA STANDARD:	*AF 4.1 (Building toward this Key Standard) *Solving Two-Step Equations
Purpose of Lesson:	At the end of the lesson, students will have been provided additional opportunities to explore solving one-step equations and inequalities and be better able to write and solve one-step equations & inequalities.
Warm-up/ Routine(s):	<u>Mental Math</u> : Negatives Score Game board and directions attached. (Whole class divided into two teams) <u>NOTE</u> - Materials needed: 6 number cubes (1-6), transparency of game board
LAUNCH:	Teacher designs lesson according to the needs of students.
EXPLORE:	
Practice:	
SUMMARIZE:	<u>QUICK WRITE</u> : Your friend does not understand why, when solving the inequality $\frac{n}{4} > 3$, the solution is $n = 12$. Please explain your thinking and reasoning.
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	

MODULE 2: Solving One-Step Equations and Inequalities

DAY 16: Chapter 2 Assessment

LESSON FOCUS:	Chapter Assessment
CA STANDARD:	Chapter 2 standards
Purpose of Lesson:	Students demonstrate their understanding(s) of the content of the chapter of study.
Warm-up/ Routine(s):	p. 112, #38, Test Prep <u>In small groups</u> , have students share their thinking. Share out with whole class.
LAUNCH:	Chapter 2 Alternative Assessment, p 36, Chap. 2 Support File
EXPLORE:	Chapter Assessment
Practice:	TE p112 Enrichment Worksheet for "early finishers"
SUMMARIZE:	<u>REFLECTION:</u> "During the course of this chapter on solving equations and working with inequalities, we explored the mathematics by using a number of models. How did constructing, using, drawing, thinking about . . . a model, help you to gain a better understanding of the math? Give an example."
Closure:	Time to reflect back on the purpose of the lesson, and help students make meaningful connections .
Homework:	TE p112 Enrichment Worksheet

