Unit 7: Equations & Inequalities — Mystery Receipts, Roller Coaster Height Bars & Bike Drives

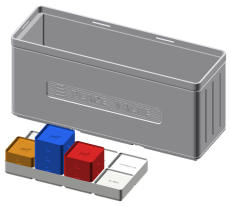
Writing Equations, Solving One-Step Equations, Writing & Graphing Inequalities, and Two-Variable Relationships

In most math worksheets, you are given the starting numbers and asked for the final total. In real life, Maya noticed, it almost always happens backward: you already know the final total on a smudged receipt or the remaining plastic on a 3D-printer spool, and you have to figure out what you started with. When Maya saw 12 robotics shirts billed for $168 total, or Leo saw 185.2 grams left on a spool after a 64.8-gram print, they initially tried random guess-and-check and kept getting frustrated.

Other rules don't even have a single answer. At the amusement park, Leo stood beside a sign reading 'Riders must be at least 54 inches tall,' while a freight elevator plaque warned 'At most 12 passengers.' Leo always mixed up which way the $<$ and $>$ symbols pointed and whether the boundary number itself counted.

Meanwhile, Devon wanted to write a rule connecting how many times he pedals his bike (the input x) to how many times the rear wheel spins (the output y), and see why a bike gear rule always passes through (0, 0) while a store order with a flat $7 shipping fee does not.

When Maya, Leo, and Devon start picturing every equation as a balanced two-pan scale—where doing the inverse operation to both pans unwraps the unknown number—and plugging their solution back into the SC-6 to verify that both sides balance, the guesswork disappears.



Real-World Mathematical Context & Two-Method Mastery • Hands-On Models: Place Value Blocks & Fraction Strips

UNIT 7 LESSONS — LEARN TWO TEXTBOOK WAYS FIRST, THEN CHECK YOUR WORK ON THE SC-6 CALCULATOR

SEC 7.1 (pp.66-67) Writing Equations in One Variable & Testing Solutions

Textbook Ways: Way 1: Substitute Candidates to Test Equality | Way 2: Balance Scale / Mental Unwrapping

Learn by Hand: An equation is a mathematical sentence that uses an equal sign (=) to state that two expressions have the exact same value—just like the two pans of a balanced scale. A value of the variable that makes the equation true is called a solution of the equation.

Check Your Work on the SC-6 Calculator:

4 1 ENTER 4 ENTER 9 × 5 + ≠

Load target 41 [ENTER], evaluate 4 [ENTER] 9 [×] 5 [+], and press [≠]—it flashes NO (zero difference: Left = Right = 41)!

SEC 7.2 (pp.68-69) Solving Equations Using Addition or Subtraction

Textbook Ways: Way 1: Properties of Equality (Inverse Operations) | Way 2: Balance Scale / Part-Part-Whole Bar Model

Learn by Hand: Addition and subtraction are inverse operations—they undo each other. To solve an addition equation like $x + 14 = 39$, use the Subtraction Property of Equality to subtract 14 from BOTH sides so x is isolated on one pan of the balance scale. To solve a subtraction equation like $x - 18 = 45$, use the Addition Property of Equality to add 18 to both sides.

Check Your Work on the SC-6 Calculator:

7 3 ENTER 2 8 - 7 3 ↑↓ 2 8 + ≠

Press 73 [ENTER] 28 [-] to get 45, then load 73 [ENTER] 45 [ENTER] 28 [+] [≠]—it flashes NO to prove 45 + 28 = 73!

SEC 7.3 (pp.70-71) Solving Equations Using Multiplication or Division

Textbook Ways: Way 1: Divide/Multiply by Coefficient | Way 2: Multiply by the Reciprocal | Way 3: Equal-Groups Tape Diagram

Learn by Hand: Multiplication and division are inverse operations. To solve a multiplication equation like $6x = 84$, use the Division Property of Equality to divide both sides by 6. To solve a division equation like $k \div 7 = 14.5$, use the Multiplication Property of Equality to multiply both sides by 7. When the coefficient is a fraction (such as $2/5\ n = 16$), multiply both sides by the reciprocal (5/2).

Check Your Work on the SC-6 Calculator:

1 3 6 ENTER 8 ÷ 1 3 6 ↑↓ 8 × ≠

Press 136 [ENTER] 8 [÷] (17), then test 136 [ENTER] 8 [ENTER] 17 [×] [≠]—it flashes NO to confirm 8(17) = 136!

SEC 7.4 (pp.72-73) Writing and Graphing Inequalities

Textbook Ways: Way 1: Inverse Property of Inequality & Number Line Graph | Way 2: Boundary & Test-Point Substitution

Learn by Hand: An inequality compares two expressions using $<$, $>$, $\leq$ (at most / no more than), or $\geq$ (at least / no less than) and has infinitely many solutions. On a number line graph, use an OPEN circle (o) for $<$ or $>$ (boundary not included) and a SOLID dot (•) for $\leq$ or $\geq$ (boundary included), then shade the arrow in the direction of the true solutions.

Check Your Work on the SC-6 Calculator:

1 2 ENTER 7 + 2 0 f ≥

Solve $x - 7 \geq 12$ on paper first (boundary 19, test x = 20). On your SC-6, press 12 [ENTER] 7 [+] (19) 20 [f][≥]—it flashes YES for $20 \geq 19$ (and use [f][LINE] to see the boundary on the number line)!

SEC 7.5 (pp.74-75) Writing Equations in Two Variables ($y = kx$ and $y = x + b$)

Textbook Ways: Way 1: Test Constant Ratio y/x vs. Constant Difference y - x | Way 2: Input-Output Table & Coordinate Graph

Learn by Hand: In a two-variable equation such as $y = 6x$ or $y = x + 6$, the input variable x is the independent variable (you choose its value freely) and the output variable y is the dependent variable (its value depends on x). In a table of values, if y - x is constant, the rule is additive ($y = x + b$); if $y \div x$ is constant, the rule is multiplicative ($y = kx$).

Check Your Work on the SC-6 Calculator:

1 4 ENTER 2 ÷ 3 5 ENTER 5 ÷ ≠

Press 14 [ENTER] 2 [÷] (7) and 35 [ENTER] 5 [÷] (7), then press [≠] (flashes NO!) to confirm a constant rate $y = 7x$.

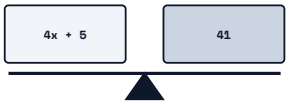
HANDS-ON MODEL: PLACE VALUE BLOCKS

Section 7.1 — Practice A: Writing Equations in One Variable & Testing Solutions

Key Vocabulary: equation • solution of an equation • defining a variable • balance scale • turnaround words ('less than') Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & HANDS-ON MODEL (PLACE VALUE BLOCKS)

Balance Scale Model: $4x + 5 = 41$



At $x = 9$: $4(9) + 5 = 41$ (Balanced!)

Equation Translation Keywords

'is/equals' → = | '12 less than k' → k - 12

Inverse Operations Undo Each Other:

+ = - and × = ÷ (or × b/a)

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept: An equation states that two expressions are equal. To test a value, substitute it for the variable and check if Left Side = Right Side.

Textbook Translation: Translate key words ('is/equals' → =, 'less than' → turnaround subtraction, 'quotient' → ÷) into a one-variable equation.

WATCH OUT: '12 less than k' translates to k - 12 (NOT 12 - k)! Always test your value by substituting it back into the original equation.

WORKED EXAMPLE — 2 TEXTBOOK WAYS FOR DOUBLE POINTS (+20)

Problem: Tell whether $x = 7$ or $x = 9$ is a solution of $4x + 5 = 41$.

WAY 1: Substitute Each Value to Test Equality

Test $x = 7$: $4(7) + 5 = 33 \neq 41$ (not a solution). Test $x = 9$: $4(9) + 5 = 36 + 5 = 41 = 41$ ($x = 9$ is the solution!).

WAY 2: Balance Scale / Mental Math Unwrapping

Ask: 'What number plus 5 equals 41?' → $4x = 36$. Then: '4 times what number equals 36?' → $x = 9$.

Answer: x = 9 is the solution (41 = 41)

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.1 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

4 1 ENTER 4 ENTER 9 × 5 + ≠

Test $x = 9$ in $4x + 5 = 41$ on paper first. Then use the SC-6 Equality Test:
Load target 41 [ENTER], evaluate 4 [ENTER] 9 [×] 5 [+], and press [≠]—it flashes NO (zero difference: Left = Right = 41)!

SECTION 7.1 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Tell whether $x = 6$ or $x = 8$ is a solution of $5x - 7 = 33$.**

Starter Step 1: Substitute each candidate value from {6, 8, 10} for x in 5x - 7 until the left side equals 33.

Way 1 (Paper Work):

Sub Value: LHS = _____ = ___

Compare: LHS ___ ?=? RHS ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

2 **Tell whether $y = 12$ or $y = 15$ is a solution of $y \div 3 + 4 = 9$.**

Starter Step 1: Substitute each candidate value from {12, 15, 18} for y in (y ÷ 3) + 4 until the left side equals 9.

Way 1 (Paper Work):

Sub Value: LHS = _____ = ___

Compare: LHS ___ ?=? RHS ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

3 **Write the word sentence as an equation and solve: 'The sum of a number x and 14 is 52.'**

Way 1 (Paper Work):

Sub Value: LHS = _____ = ___

Compare: LHS ___ ?=? RHS ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

4 **Write the word sentence as an equation and solve: '6 times a number k equals 84.'**

Way 1 (Paper Work):

Sub Value: LHS = _____ = ___

Compare: LHS ___ ?=? RHS ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

5 **Write the word sentence as an equation and solve: '9 less than a number w is 17.'**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

6 **Write the word sentence as an equation and solve: 'The quotient of a number m and 5 is 13.'**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

7 **Four identical pizzas (costing p dollars each) plus a $6 delivery fee total $54. Write an equation to represent the order, and test whether $p = 12$ is the solution.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

8 **Error Analysis: For the sentence '12 less than x is 20', Sam wrote $12 - x = 20$. Explain his error, write the correct equation, and find x.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

9 **Movie Streaming Pass: A streaming service charges a $10 monthly membership plus $3 per movie rental. This month your bill is $28. Write an equation and find how many movies m you rented.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

10 **Restaurant Bill Split: Three friends split a restaurant bill b equally, and each friend pays $14.50. Write an equation and find the total bill b.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

HANDS-ON MODEL: PLACE VALUE BLOCKS

Section 7.1 — Practice B: Modeling Real Life (Writing Equations in One Variable & Testing Solutions)

Textbook Ways: Substitute Candidates to Test Equality | Balance Scale / Mental Unwrapping Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — WRITING & SOLVING A TURNAROUND EQUATION (2 TEXTBOOK WAYS = +20 PTS DOUBLE)

Problem: After 8 drones are eliminated in a qualifying round, 25 drones remain in the race. Write and solve an equation to find the starting number of drones n.

WAY 1: Translate Words to an Equation & Use Mental Math

Starting drones (n) minus 8 equals 25: n - 8 = 25. Since 33 - 8 = 25, n = 33 drones.

WAY 2: Part-Part-Whole Bar Model

The total bar (n) splits into 8 eliminated drones and 25 remaining drones → Total n = 25 + 8 = 33 drones.

Watch-Out: '8 less than n' is written n - 8, never 8 - n!

WATCH OUT: '12 less than k' translates to k - 12 (NOT 12 - k)! Always test your value by substituting it back into the original equation.

Answer: n - 8 = 25; n = 33 drones

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.1 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

2 5 ENTER 8 + 2 5 ⇅ 8 - ≠

Write n - 8 = 25 and solve for n = 33 on paper first. Check with the SC-6 Equality Test:
Load 25 [ENTER], evaluate 33 [ENTER] 8 [-], and press [≠]—it flashes NO to confirm both sides equal 25!

Maya used to read an equals sign (=) as 'and the answer is,' which made equations with variables on the left like 15t + 5 = 65 feel backward and confusing. When she looked at her $65 receipt for concert tickets ($15 per ticket t plus a $5 order fee), she realized the equals sign actually works like the center pivot of a balanced two-pan scale: the expression 15t + 5 on the left weighs the exact same as $65 on the right. And to check if t = 4 tickets is right, she didn't have to guess—she could plug 4 in (15 × 4 + 5 = 65) and see both sides balance.

SECTION 7.1 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Tell which value of x from {6, 8, 10} is the solution of 5x - 7 = 33.**

Starter Step 1: Test x = 6, x = 8, and x = 10 in 5x - 7 to see which value makes the equation a true statement.

Way 1 (Paper Work):

Sub Value: LHS = _____ = ___

Compare: LHS ___ ?=? RHS ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

2 **Concert Tickets: Tickets cost $15 each plus a $5 order fee, for a total of $65. Write an equation for t tickets and check whether t = 4 is a solution.**

Starter Step 1: Write the equation (cost of t tickets + $5 fee = $65), then substitute t = 4 to check if both sides match.

Way 1 (Paper Work):

Sub Value: LHS = _____ = ___

Compare: LHS ___ ?=? RHS ___

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

3 **Write the word sentence '12 less than a number k equals 29' as an equation, and find the value of k.**

Way 1 (Paper Work):

Sub Value: LHS = _____ = ___

Compare: LHS ___ ?=? RHS ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

4 **Write the word sentence 'The quotient of a number n and 6 is 14' as an equation, and find the value of n.**

Way 1 (Paper Work):

Sub Value: LHS = _____ = ___

Compare: LHS ___ ?=? RHS ___

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

5 **Equilateral Triangle Perimeter: An equilateral triangle has 3 equal sides of length s and a perimeter of 54 cm. Write an equation and find s.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

6 **Tell whether m = 12 or m = 15 is a solution of 100 - 4m = 40.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

7 **Team Pizza Slices: Dividing p pizza slices equally among 8 players gives each player 3 slices. Write and solve an equation to find p.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

8 **Savings Goal: You have $45 saved and add d dollars to reach $120. Write and solve an equation to find d.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

9 **Test whether x = 6 is a solution of 3x + 10 = 5x - 2 by substituting x = 6 into both sides.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

10 **Sibling Ages: Maya is 13 years old, which is 4 years younger than her brother Leo. Write an equation for Leo's age b and find how old Leo is.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

HANDS-ON MODEL: PLACE VALUE BLOCKS

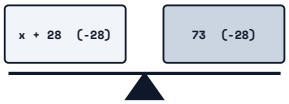
Section 7.2 — Practice A: Solving Equations Using Addition or Subtraction

Key Vocabulary: inverse operations • Addition Property of Equality • Subtraction Property of Equality • isolate the variable

Name: _____ Date: _____ Score: ____ / 100

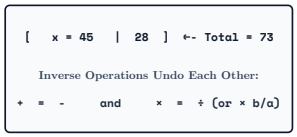
TEXTBOOK CONCEPT & HANDS-ON MODEL (PLACE VALUE BLOCKS)

Balance Scale Model: x + 28 (-28) = 73 (-28)



Remove 28 from BOTH pans → x = 45

Part-Whole Bar Model (x + 28 = 73)



Inverse Operations Undo Each Other:

+ = - and × = ÷ (or × b/a)

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept (Inverse Operations): Addition and subtraction are inverse operations. Undo '+ a' by subtracting a from both sides; undo '- a' by adding a.

Textbook Properties of Equality: Subtracting or adding the same number on both sides keeps the equation balanced. Always substitute back to check!

WATCH OUT: Use the INVERSE operation on BOTH sides of the '=' sign (+ undoes -, and - undoes +) to keep the equation balanced!

WORKED EXAMPLE — 2 TEXTBOOK WAYS FOR DOUBLE POINTS (+20)

Problem: Solve x + 28 = 73 and check your solution.

WAY 1: Subtraction Property of Equality (Undo + 28)

Subtract 28 from both sides of x + 28 = 73: (x + 28) - 28 = 73 - 28 → x = 45.

WAY 2: Balance Scale / Part-Whole Bar Model

A whole bar of 73 is made of part x and part 28. Removing 28 from both pans leaves x = 73 - 28 = 45. (Check: 45+28 = 73.)

Answer: x = 45 1 Way = +10 | 2 Ways = +20!

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.2 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

7 3 ENTER 2 8 - 7 3 ⇅ 2 8 + ≠

Undo + 28 by subtracting 28 on paper first (x = 45). Check on your SC-6:

Press 73 [ENTER] 28 [-] to get 45, then load 73 [ENTER] 45 [ENTER] 28 [+] [≠]—it flashes NO to prove 45 + 28 = 73!

SECTION 7.2 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Solve x + 28 = 73 and check your solution.**

Starter Step 1: Use the inverse operation of + 28 by subtracting 28 from BOTH sides of the equation.

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Solve y - 34 = 58 and check your solution.**

Starter Step 1: Use the inverse operation of - 34 by adding 34 to BOTH sides of the equation.

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Solve 19 + n = 64.**

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Solve k - 47 = 29.**

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Solve w - 19.6 = 34.8.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Solve p + 8.75 = 25.4.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Solve m + 3/8 = 5/6.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Solve a - 1 1/4 = 3 1/2.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Game Controller Purchase: After spending $18.50 on a custom controller skin, you have $26.75 left in your wallet. Write and solve an equation to find how much money m you had before the purchase.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Drone Altitude Climb: A quadcopter climbs 42.5 feet to reach a hovering altitude of 110 feet. Write and solve an equation to find its starting altitude h.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

HANDS-ON MODEL: PLACE VALUE BLOCKS

Section 7.2 — Practice B: Modeling Real Life (Solving Equations Using Addition or Subtraction)

Textbook Ways: Properties of Equality (Inverse Operations) | Balance Scale / Part-Part-Whole Bar Model Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — SOLVING DECIMAL & FRACTION EQUATIONS (2 TEXTBOOK WAYS = +20 PTS DOUBLE)

Problem: After a 3D print uses 19.6 grams of filament, 34.8 grams remain on the spool. Also solve m + 3/8 = 5/6.

WAY 1: Addition & Subtraction Properties of Equality

1. For w - 19.6 = 34.8, add 19.6 to both sides: w = 34.8 + 19.6 = 54.4 g. 2. For m + 3/8 = 5/6, subtract 3/8: m = 20/24 - 9/24 = 11/24.

WAY 2: Bar Model & Fraction Strip Comparison

1. Whole spool w = used (19.6) + left (34.8) = 54.4 g. 2. On twenty-fourths strips, 5/6 (20/24) is 11/24 longer than 3/8 (9/24).

Check: 54.4 - 19.6 = 34.8 and 11/24 + 9/24 = 20/24 = 5/6.

WATCH OUT: Use the INVERSE operation on BOTH sides of the '=' sign (+ undoes -, and - undoes +) to keep the equation balanced!

Answer: w = 54.4 g; m = 11/24

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.2 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

3 4 • 8 ENTER 1 9 • 6 + • 5 • 6 ENTER • 3 • 8 -

Solve both equations by hand first. Check on your SC-6:
Press 34.8 [ENTER] 19.6 [+] (54.4 g) and Two-Dot fractions [.] 5 [.] 6 [ENTER] [.] 3 [.] 8 [-] (11/24), then test each in the original equation with [≠] (flashes NO!).

When Leo saw the equation f - 64.8 = 185.2 for his 3D-printer spool (after a print used 64.8 grams of filament and left 185.2 grams on the scale), his knee-jerk reaction was to subtract 185.2 - 64.8 because he saw a minus sign in the problem. Looking at his answer of 120.4 grams, he stopped—how could the spool start with LESS plastic than was still sitting on the scale?! Picturing the print job like a video playing in reverse, he realized that to undo taking 64.8 grams away, you have to add the 64.8 grams back to both sides (185.2 + 64.8 = 250.0 grams).

SECTION 7.2 PRACTICE B — MODELING REAL LIFE & APPLICATIONS 100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Video Game High Score: After scoring 45 bonus points, your total score is 210. Write and solve an equation to find your score s before the bonus.**

Starter Step 1: Write an equation showing score s plus the 45-point bonus equals 210, then undo the addition.

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

2 **Skateboard Coupon: After using an $18 coupon, a skateboard costs $67. Write and solve an equation to find the regular price p.**

Starter Step 1: Write an equation showing regular price p minus the $18 coupon equals $67, then undo the subtraction.

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

3 **Mountain Summit Climb: From Base Camp, a climber ascends 1,450 feet to reach a 5,200-foot peak. Write and solve an equation to find the Base Camp elevation h.**

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

4 **3D Filament Remaining: After a print uses 64.8 grams of PLA, 185.2 grams remain on the spool. Write and solve an equation to find how many grams f were on the spool before the print.**

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

5 **Stopwatch Improvement: Leo shaved 0.48 seconds off his previous 100-meter dash time t to run 12.65 seconds. Write and solve an equation to find his previous time t.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

6 **Recipe Measuring Cup: You have 3/8 cup of milk and need 7/8 cup in all. Write and solve an equation to find how much more milk m you need.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

7 **Trail Hike Remaining: A hiking trail is 4 1/2 miles long, and you have already hiked 2 3/4 miles. Write and solve an equation to find the remaining distance d.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

8 **Homing Pigeon Compass Direction: Homing pigeons can sense Earth's magnetic field like a built-in compass! A pigeon turns +38° clockwise so its new compass direction is 125°. Write and solve an equation to find its starting compass direction b.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

9 **Submarine Depth Change: A submarine starts at -40 meters and changes elevation by d meters to reach -115 meters. Write and solve an equation for d.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

10 **Rectangle Perimeter: A rectangle has a perimeter of 64 cm, and its two widths have a combined length of 20 cm. What is the combined length L of the two longer sides, and what is the length of one longer side?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

HANDS-ON MODEL: FRACTION STRIPS

Section 7.3 — Practice A: Solving Equations Using Multiplication or Division

Key Vocabulary: Multiplication Property of Equality • Division Property of Equality • reciprocal coefficient Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & HANDS-ON MODEL (FRACTION STRIPS)

Balance Scale Model: 8 x-boxes (÷8) = 136 units (÷8)



Divide both sides by 8 → x = 17

Equal-Box Tape Model (8x = 136)

8 boxes = 136 → 1 box = 136 ÷ 8 = 17

Inverse Operations Undo Each Other:

+ = − and × = ÷ (or × b/a)

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept: Multiplication and division are inverse operations. Undo 'a · x' by dividing both sides by a; undo 'x ÷ a' by multiplying both sides by a.

Textbook Fractional Coefficients: To solve (a/b)x = c in one step, multiply both sides by the reciprocal (b/a).

WATCH OUT: To solve (3/4)x = 18, multiply both sides by the RECIPROCAL (4/3); to solve k ÷ 7 = 14.5, multiply both sides by 7!

WORKED EXAMPLE — 2 TEXTBOOK WAYS FOR DOUBLE POINTS (+20)

Problem: Solve 8x = 136 and k ÷ 7 = 14.5, and check each solution.

WAY 1: Division & Multiplication Properties of Equality

In 8x = 136, divide both sides by 8 → x = 17. In k ÷ 7 = 14.5, multiply both sides by 7 → k = 101.5.

WAY 2: Equal-Groups Balance Scale / Bar Model (With Blocks)

Split 136 equally across 8 x-boxes (80÷8 + 56÷8 = 10 + 7 = 17); combine 7 equal boxes of 14.5 → 101.5.

Answer: x = 17; k = 101.5 1 Way = +10 | 2 Ways = +20!

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.3 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

1 3 6 ENTER 8 ÷ 1 3 6 ⇅ 8 × ≠

Undo multiplication or division on paper first (x = 17, k = 101.5). Check on your SC-6:
Press 136 [ENTER] 8 [÷] (17), then test 136 [ENTER] 8 [ENTER] 17 [×] [≠]—it flashes NO to confirm 8(17) = 136!

SECTION 7.3 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Solve 8x = 136 and check your solution.**

Starter Step 1: Undo multiplication (8x) by dividing BOTH sides of the equation by 8.

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Solve 12y = 180 and check your solution.**

Starter Step 1: Undo multiplication (12y) by dividing BOTH sides of the equation by 12.

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Solve m ÷ 6 = 19 and check your solution.**

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Solve k ÷ 7 = 14.5.**

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Solve 4.5w = 63.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Solve 3/4 x = 18.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Solve 2/5 n = 16.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Solve 5/6 p = 2/3.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **3D Tower Print Time: A 3D printer builds a vertical tower at a steady rate of 1.5 cm per minute. Write and solve an equation to find how many minutes t it takes to print a 27 cm tower.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Robotics Club Roster: Exactly 3/5 of the students in the STEM club are 6th graders. If there are 27 sixth graders in the club, write and solve an equation to find the total number of students s in the club.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

HANDS-ON MODEL: FRACTION STRIPS

Section 7.3 — Practice B: Modeling Real Life (Solving Equations Using Multiplication or Division)

Textbook Ways: Divide/Multiply by Coefficient | Multiply by the Reciprocal | Equal-Groups Tape Diagram Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — FRACTIONAL COEFFICIENT EQUATION (3 TEXTBOOK WAYS • ANY 2 = +20 PTS)

Problem: Two-fifths of the songs on a playlist are rock songs. There are 16 rock songs. How many songs are on the playlist in all?

WAY 1: Multiply Both Sides by the Reciprocal (5/2)
Write (2/5)n = 16. Multiply both sides by 5/2: n = 16 × (5/2) = (16 ÷ 2) × 5 = 8 × 5 = 40 songs.

WAY 2: 5-Box Tape Diagram (Find 1/5 First, Then 5/5)
Draw 5 equal fifth-boxes. Since 2 boxes = 16 songs, 1 box = 16 ÷ 2 = 8 songs. All 5 boxes = 5 × 8 = 40 songs.

WAY 3: Convert 2/5 to a Decimal (0.4n = 16)
Write 2/5 as 0.4: 0.4n = 16. Divide both sides by 0.4: n = 16 ÷ 0.4 = 160 ÷ 4 = 40 songs.

WATCH OUT: To solve (3/4)x = 18, multiply both sides by the RECIPROCAL (4/3); to solve k ÷ 7 = 14.5, multiply both sides by 7!

Answer: 40 songs

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.3 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

[1] [6] [ENTER] [•] [2] [•] [5] [f] [1/x] [×]

Multiply both sides of (2/5)s = 16 by the reciprocal 5/2 on paper first. Check on your SC-6 with Two-Dot fractions: Press 16 [ENTER] [.] 2 [.] 5 [f][1/x] [×] (40), then verify 16 [ENTER] [.] 2 [.] 5 [ENTER] 40 [×] [≠] (flashes NO!).

Maya knew that 12 identical robotics shirts cost $168 (12s = 168), which meant dividing both sides by 12 to find $14 per shirt. But when she hit a fraction equation—a bike on sale for 5/6 of its original price costs $150, or (5/6)p = 150—she froze. Dividing by a fraction inside an equation looked scary until she connected it to what she learned in Unit 2: if 5 fifths of the price is $150, then 1 fifth is $150 ÷ 5 = $30, and all 6 sixths (the full price) is 6 × $30 = $180! Multiplying both sides by the reciprocal (6/5) did both steps at once.

SECTION 7.3 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Robotics Club T-Shirts: A team paid $168 for 12 identical team shirts. Write and solve an equation to find the price s of each shirt.**

Starter Step 1: Write an equation for 12 shirts at s dollars each totaling $168, then divide both sides by 12.

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

2 **Party Pizza Slices: A giant party pizza is cut into equal slices for 9 friends, and each friend gets 3 slices. Write and solve an equation to find the total number of slices p.**

Starter Step 1: Write an equation for p slices divided among 9 friends equaling 3 slices each, then multiply both sides by 9.

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

3 **Train Travel Time: A train travels at 65 miles per hour and covers 325 miles. Write and solve an equation to find the travel time t in hours.**

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

4 **Bulk Almonds: You buy 2.5 pounds of roasted almonds for $16.25. Write and solve an equation to find the price p per pound.**

Way 1 (Paper Work):

Inverse Op Both Sides: _____

Solution = _____ (Check: _____)

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

5 **Comic Book Allowance: You spend one-fourth of your savings s on a $9 comic book. Write and solve an equation to find your total savings s.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

6 **Water Bottle Survey: Three-fourths of the students in a class brought a water bottle. If 21 students brought a water bottle, how many students c are in the class?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

7 **Sale Price Equation: A bike is on sale for 5/6 of its original price p. If the sale price is $150, what was the original price p?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

8 **Banner Width: A rectangular banner has an area of 108 square feet and a length of 13.5 feet. Write and solve an equation to find its width w.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

9 **Scale Model Rocket: A model rocket is 1/15 the height of the real rocket. If the model is 3.2 feet tall, how tall is the real rocket?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

10 **Mystery Number: Forty percent of a number n is 56. Write and solve an equation to find n.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans: _____**

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 7.4 — Practice A: Writing and Graphing Inequalities

Key Vocabulary: inequality • solution set • graph of an inequality • open circle (◯ for <, >) • closed circle (● for ≤, ≥) Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & VISUAL DIAGRAM

Graphing Inequalities on a Number Line: Open Circle (◯) vs. Solid Dot (●)

Strict (< or >): OPEN Circle (◯)

19 (Not included)

x > 19 ('more than' / 'fewer than')

Inclusive (≤ or ≥): SOLID Dot (●)

19 (IS a solution!)

x ≥ 19 ('at least' ≥ | 'at most' ≤)

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept: Solve one-step inequalities using the same inverse operations as equations. Graph < or > with an OPEN circle (◯), and ≤ or ≥ with a SOLID dot (●).

Textbook Shading Check: Substitute one test number from your shaded arrow into the original inequality to verify it makes the statement TRUE.

WATCH OUT: Use an OPEN circle (◯) for < or >, and a SOLID dot (●) for ≤ ('at most') or ≥ ('at least')!

WORKED EXAMPLE — 2 TEXTBOOK WAYS FOR DOUBLE POINTS (+20)

Problem: Solve x - 7 ≥ 12 and describe its graph on a number line.

WAY 1: Addition Property of Inequality & Boundary Graph

In x - 7 ≥ 12, add 7 to both sides → x ≥ 19. Draw a CLOSED dot (●) at 19 and shade the arrow to the right.

WAY 2: Boundary Equation + Test Value Method

Solve x - 7 = 12 to find the boundary 19 (included because of ≥). Test x = 20: 20 - 7 = 13 ≥ 12 (True → shade right).

Answer: x ≥ 19 (Solid dot at 19, arrow right)

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.4 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

1 2 ENTER 7 + 2 0 f ≥

Solve x - 7 ≥ 12 on paper first (boundary 19, test x = 20). On your SC-6, press 12 [ENTER] 7 [+] (19) 20 [f][≥]—it flashes YES for 20 ≥ 19 (and use [f][LINE] to see the boundary on the number line)!

SECTION 7.4 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 Solve x + 8 > 21. Then state whether the boundary point uses an open circle or solid dot, and which way the arrow points.

Starter Step 1: Subtract 8 from both sides to isolate x; remember that > uses an OPEN circle and shades to the RIGHT.

Way 1 (Paper Work):

◯ or ●

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 Solve y - 9 ≤ 15. Then state whether the boundary point uses an open circle or solid dot, and which way the arrow points.

Starter Step 1: Add 9 to both sides to isolate y; remember that ≤ uses a SOLID dot and shades to the LEFT.

Way 1 (Paper Work):

◯ or ●

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 Solve 6n ≥ 78. Then state whether the boundary point uses an open circle or solid dot, and which way the arrow points.

Way 1 (Paper Work):

◯ or ●

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 Solve m ÷ 4 < 9. Then state whether the boundary point uses an open circle or solid dot, and which way the arrow points.

Way 1 (Paper Work):

◯ or ●

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 Write an inequality for the statement: 'You must be at least 48 inches tall (h) to ride the roller coaster.'

Way 1 (Paper Work):

◯ or ●

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 Write an inequality for the statement: 'A freight elevator holds at most 2,000 pounds (w).'

Way 1 (Paper Work):

◯ or ●

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 Which values from the set {4, 5, 6} are solutions of the inequality 4n + 3 > 23?

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 Which values from the set {4, 5, 6} are solutions of the inequality 4x - 3 ≥ 17?

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 Book Fair Budget: You have $50 to spend on paperback books that cost $8 each. Write and solve an inequality to find the maximum number of whole books b you can buy, and state how much money is left over.

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 Next-Level Score Target: A player needs at least 500 total points to advance to the next level and currently has 340 points. Write and solve an inequality to find how many more points p the player needs.

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 7.4 — Practice B: Modeling Real Life (Writing and Graphing Inequalities)

Textbook Ways: Inverse Property of Inequality & Number Line Graph | Boundary & Test-Point Substitution Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — WEIGHT LIMIT INEQUALITY (2 TEXTBOOK WAYS = +20 PTS DOUBLE)

Problem: An adventure pack holds a 15-pound shield plus gold bars weighing 3 pounds each. The pack can hold at most 60 pounds. What is the maximum number of gold bars it can hold?

WAY 1: Write & Solve the Inequality ($3g + 15 \le 60$)

Subtract 15 from both sides: $3g \le 45$. Divide both sides by 3: $g \le 15$ (closed dot at 15, at most 15 bars).

WAY 2: Remaining Capacity Bar Model

Available weight for gold bars = 60 lb - 15 lb = 45 lb. At 3 lb per bar, 45 ÷ 3 = 15 bars maximum.

Check: 15 bars → 3(15)+15 = 60 lb ≤ 60 lb (True); 16 bars → 63 lb (Too heavy!).

WATCH OUT: Use an OPEN circle (◯) for < or >, and a SOLID dot (●) for ≤ ('at most') or ≥ ('at least')!

Answer: g ≤ 15 (at most 15 gold bars)

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.4 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

[6] [0] [ENTER] [1] [5] [-] [3] [÷] [1] [5] [g] [≤]

Solve $3g + 15 \le 60$ on paper first ($g \le 15$). Check the boundary on your SC-6:
Press 60 [ENTER] 15 [-] 3 [÷] (15), then test 60 [ENTER] 3 [ENTER] 15 [×] 15 [+] [g][≤]—it flashes YES (and view on [f][LINE])!

Standing by the roller coaster entrance ('Riders must be at least 54 inches tall') and the freight elevator ('At most 12 passengers'), Leo admitted he always mixed up 'at least' and 'at most' because the word 'least' made him think of the < sign! Then he tested his own height against the 54-inch bar: 'at least 54 inches' means 54 inches is the lowest height allowed, so you must be 54 inches OR TALLER (h ≥ 54). Asking 'Am I allowed to be EQUAL to 54?' also told him when to color in a solid dot (≥ or ≤) versus leaving an open circle (> or <) on the number line.

SECTION 7.4 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Roller Coaster Height Requirement: Riders must be at least 54 inches tall to ride a coaster. Write an inequality for the allowed heights h and describe its number line graph. If Leo is 49 inches tall, how many more inches must he grow?**

Starter Step 1: 'At least 54' means ≥ 54 (solid dot at 54, arrow right); subtract 49 from 54 to find how much Leo must grow.

Way 1 (Paper Work):



WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **Elevator Capacity: An elevator holds at most 12 passengers. There are already 5 passengers inside. Write and solve an inequality to find how many more passengers p can board.**

Starter Step 1: 'At most 12' means 5 + p ≤ 12; subtract 5 from both sides to find the maximum number of passengers p.

Way 1 (Paper Work):



WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Free Shipping Threshold: Online orders of $35 or more receive free shipping. You currently have $22.50 in your cart. Write and solve an inequality to find how much more x you must add to get free shipping.**

Way 1 (Paper Work):



CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Arcade Budget: You have $28 to spend on VR games that cost $3.50 each. Write and solve an inequality to find the number of games g you can play.**

Way 1 (Paper Work):



CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Theater Seating: An auditorium needs more than 240 chairs arranged in equal rows of 15 chairs. Write and solve an inequality for the number of rows r. What is the least whole number of rows needed?**

Way 1 (Paper Work):



CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **Drone Battery Warning: A drone uses 25% of its battery during a flight and triggers a low-battery warning because its remaining charge drops below 15%. Write and solve an inequality for the starting battery percent b.**

Way 1 (Paper Work):



CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Tell which values from {6, 8, 10} are solutions of the inequality $5x - 10 \ge 30$.**

Way 1 (Show Paper Steps): Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Bake Sale Profit Goal: Your club spends $30 on supplies and sells cupcakes for $2 each. How many cupcakes c must the club sell to make a profit of at least $70?**

Way 1 (Show Paper Steps): Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **School Zone Speed Limit: The speed limit in a school zone is 20 miles per hour. Write an inequality for legal speeds s, give two solutions, and describe the number line graph.**

Way 1 (Show Paper Steps): Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Cargo Van Weight Limit: A delivery van can carry at most 800 pounds. The driver weighs 170 pounds and each crate weighs 45 pounds. What is the maximum number of crates c the van can carry?**

Way 1 (Show Paper Steps): Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 7.5 — Practice A: Writing Equations in Two Variables (y = kx and y = x + b)

Key Vocabulary: independent variable (input x) • dependent variable (output y) • multiplicative (y = kx) • additive (y = x + b)

Name: _____ Date: _____ Score: ____ / 100

TEXTBOOK CONCEPT & VISUAL DIAGRAM

Two-Variable Equations: Independent Input (x) → Dependent Output (y)

Multiplicative: y = kx (e.g., y = 7x)

Constant Ratio: y ÷ x = 7

(1, 7), (2, 14), (3, 21), (4, 28)

Graph is a line through origin (0, 0)!

Additive: y = x + b (e.g., y = x - 4)

Constant Difference: y - x = -4

(10, 6), (12, 8), (15, 11), (20, 16)

Graph crosses y-axis at (0, b)!

HOW THE TEXTBOOK & VISUAL MODEL WORK TOGETHER:

Textbook Concept: In two-variable equations, x is the independent variable (input) and y is the dependent variable (output).

Textbook Rule Comparison: Multiplicative relationships (y = kx) have a constant ratio y/x and pass through (0, 0); Additive (y = x + b) have a constant difference y - x.

WATCH OUT: Check ALL rows of the table! Multiplicative y = kx passes through (0, 0); additive y = x + b has a constant difference y - x.

WORKED EXAMPLE — 2 TEXTBOOK WAYS FOR DOUBLE POINTS (+20)

Problem: Table A contains (2, 14), (5, 35), (8, 56). Table B contains (10, 6), (15, 11), (22, 18). Write the equation for each table.

WAY 1: Compare Ratio (y ÷ x) vs. Difference (y - x)

Table A ((2,14), (5,35), (8,56)): 14÷2 = 35÷5 = 56÷8 = 7 → y = 7x. Table B ((10,6), (15,11), (22,18)): y - x = -4 → y = x - 4.

WAY 2: Graph Ordered Pairs & Check the Origin (0, 0)

Plotting Table A gives a line through (0, 0) with steepness 7 (y = 7x). Table B shifts every x down by 4 units (y = x - 4).

Answer: Table A: y = 7x; Table B: y = x - 4

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.5 PRACTICE A (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

1 4 ENTER 2 ÷ 3 5 ENTER 5 ÷ ≠

Test whether y ÷ x or y - x is constant in each table on paper first. Check on your SC-6:
Press 14 [ENTER] 2 [÷] (7) and 35 [ENTER] 5 [÷] (7), then press [≠] (flashes NO!) to confirm a constant rate y = 7x.

SECTION 7.5 PRACTICE A — KEY IDEAS & MULTI-METHOD PRACTICE

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **A table contains the ordered pairs (1, 8), (2, 16), and (3, 24). Write the equation relating x and y, and find y when x = 10.**

Starter Step 1: Divide each output y by its input x (y ÷ x) to find the constant multiplicative rate k in y = kx.

Way 1 (Paper Work):

x			
y			

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **A table contains the ordered pairs (1, 9), (2, 10), and (5, 13). Write the equation relating x and y, and find y when x = 20.**

Starter Step 1: Subtract each input x from its output y (y - x) to find the constant amount b added in y = x + b.

Way 1 (Paper Work):

x			
y			

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **A table contains the ordered pairs (2, 14), (5, 35), and (8, 56). Write the equation relating x and y, and find y when x = 12.**

Way 1 (Paper Work):

x			
y			

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **A table contains the ordered pairs (10, 6), (15, 11), and (22, 18). Write the equation relating x and y, and find y when x = 30.**

Way 1 (Paper Work):

x			
y			

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Complete a table of ordered pairs (x, y) for the equation y = 6x using x = 1, 2, 3, and 4.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **In the formula d = 65t (representing the distance d in miles a train travels in t hours), which variable is independent and which variable is dependent?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Using the train formula d = 65t, how far does the train travel in 4.5 hours?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Does the graph of the multiplicative equation y = 4x pass through the origin (0, 0)? Where does the additive equation y = x + 4 cross the y-axis?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Summer Lawn Care: You earn $12.50 per hour according to p = 12.50h. How many hours h must you work to earn $100?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Climbing Gym Membership: A climbing gym charges a one-time $25 registration fee plus $15 per month m. Write a two-variable equation for the total cost c, and find the total cost for 12 months.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

TEXTBOOK MODEL: PAPER / GRAPH / FORMULA

Section 7.5 — Practice B: Modeling Real Life (Writing Equations in Two Variables (y = kx and y = x + b))

Textbook Ways: Test Constant Ratio y/x vs. Constant Difference y - x | Input-Output Table & Coordinate Graph Name: _____ Date: _____ Score: ____ / 100

WORKED EXAMPLE — TWO-VARIABLE EARNINGS EQUATION (2 TEXTBOOK WAYS = +20 PTS DOUBLE)

Problem: You earn $12.50 per hour mowing lawns. Write an equation relating total pay p and hours worked h, and find your pay for 6.5 hours.

WAY 1: Write Multiplicative Equation p = 12.50h & Substitute

Hours h is independent; pay p is dependent: p = 12.50h. For h = 6.5: p = 12.50 × 6.5 = $81.25.

WAY 2: Input-Output Ratio Table (6 Hours + 0.5 Hour)

In a table: 1 hr = $12.50, 6 hr = 6 × $12.50 = $75.00, and 0.5 hr = $6.25. Total = $75.00 + $6.25 = $81.25.

Check: $81.25 ÷ 6.5 hr = $12.50 per hour.

WATCH OUT: Check ALL rows of the table! Multiplicative y = kx passes through (0, 0); additive y = x + b has a constant difference y - x.

Answer: p = 12.50h; $81.25

CHECK YOUR WORK ON THE SC-6 CALCULATOR — SECTION 7.5 PRACTICE B (SOLVE BY HAND FIRST, THEN VERIFY!)

Worked Example SC-6 Check Keystrokes:

1 2 • 5 0 ENTER 6 • 5 ×

Write p = 12.50h and multiply on paper first. Then check on your SC-6:
Press 12.50 [ENTER] 6.5 [×] to confirm $81.25.

Devon always mixed up which variable was 'independent' and which was 'dependent,' and couldn't tell when a table followed a multiplying rule (y = kx) versus an adding rule (y = x + b). Looking at his bike, he asked a simple cause-and-effect question: do my feet make the back wheel spin, or does the back wheel force my feet to move? Since his pedal turns (x) come first and cause the wheel turns (y = 3.5x), x is independent and y depends on x. And testing x = 0 gave him an instant shortcut: 0 pedal turns means 0 wheel turns (0, 0), whereas an order with a $7 shipping fee (c = x + 7) never passes through (0, 0)!

SECTION 7.5 PRACTICE B — MODELING REAL LIFE & APPLICATIONS

100-PT GOAL: Any 5 in 2 Ways (+20) OR All 10 in 1 Way (+10)!

1 **Additive vs. Multiplicative Plans: Plan A adds a $5 fee to a base price x (y = x + 5). Plan B charges $8 per month m (y = 8m). Tell which equation represents an additive relationship and which represents a multiplicative relationship.**

Starter Step 1: Compare the two equations: adding a fixed constant (+ b) is Additive, while multiplying by a rate (kx) is Multiplicative.

Way 1 (Paper Work):

x			
y			

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

2 **3D Printer Filament Rate: A printer uses 18 grams of PLA per hour h. Write an equation for the total grams g used, identify the independent and dependent variables, and find g for 4.5 hours.**

Starter Step 1: Hours h is the independent input and grams g is the dependent output; multiply the hourly rate by 4.5 hours.

Way 1 (Paper Work):

x			
y			

WARM-UP • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

3 **Sibling Age Rule: Maya is always 4 years older than her sister Zoe. Write an equation relating Maya's age m and Zoe's age z, and find m when z = 8, 12, and 15.**

Way 1 (Paper Work):

x			
y			

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

4 **Custom Sticker Sheets: Each printed sheet holds 15 stickers. Write an equation for the total stickers s on p sheets, and find how many sheets are needed for 180 stickers.**

Way 1 (Paper Work):

x			
y			

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

5 **Sale Table Rule: Every item on a clearance table is $6 off its original tag price x. Write an equation for the sale price y and find y when x = $24, $35, and $50.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

6 **How High Gear Works on a Bike: Because the front pedal gear is larger than the back wheel gear, 1 pedal turn (x) spins the back wheel 3.5 times. Write an equation for wheel turns y, and find y for 40 pedal turns.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

7 **Input-Output Table: An input-output table has pairs (3, 27), (6, 54), (9, 81), and (12, 108). Write an equation relating x and y, and find y when x = 20.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

8 **Board Game Shipping: Each board game costs $20 plus a flat $7 shipping fee for the order. Write an equation for the total cost c of g games, and find the cost of 6 games.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CORE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

9 **Which type of relationship always passes through the origin (0, 0) when graphed: a multiplicative relationship (y = kx) or an additive relationship (y = x + b)? Explain why.**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

10 **Thunder & Lightning: Sound travels about 0.2 miles per second. Write an equation for the distance d (in miles) sound travels in s seconds. If you hear thunder 15 seconds after seeing lightning, how far away is the storm?**

Way 1 (Show Paper Steps):

Way 2 (2nd Method / Check):

CHALLENGE • [ ] +10 (1 Way) [ ] +20 (2 Ways) **Ans:** _____

SUMMATIVE QUIZ: 10 ITEMS × 10 PTS = 100

Unit 7 Mastery Quiz: Equations & Inequalities

Directions: Show all paper steps in each box (+6 pts work, +4 pts answer). Name: _____ Date: _____ Score: ____ / 100

ASSESSMENT BREAKDOWN: #1–#6 CORE FLUENCY (60 PTS) • #7–#9 REAL-LIFE APPLICATIONS (30 PTS) • #10 ERROR ANALYSIS (10 PTS)

Standards Assessed: CCSS 6.EE.B.5–8, 6.EE.C.9 • TEKS 6.9A–C, 6.10A • FL MA.6.AR.2.1–4 • MathCounts & TMSCA Equations & Inequalities

1 CORE FLUENCY (SEC 7.1) • 10 PTS

Write an equation and solve: 'A number x decreased by 17 equals 29.'

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

2 CORE FLUENCY (SEC 7.2) • 10 PTS

Solve the addition equation: $x + 18.5 = 42$.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

3 CORE FLUENCY (SEC 7.3) • 10 PTS

Solve the multiplication equation: $8x = 136$.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

4 CORE FLUENCY (SEC 7.3) • 10 PTS

Solve the division equation: $x / 6 = 14$.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

5 CORE FLUENCY (SEC 7.4) • 10 PTS

A train travels at 65 mph for t hours, covering d miles. Write an equation relating d and t, and find d when $t = 4$.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

6 CORE FLUENCY (SEC 7.5) • 10 PTS

Tell whether $x = 6$ is a solution of $3x - 4 \geq 14$, and state whether the number line graph of $x \geq 6$ has an open or closed circle.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

7 REAL LIFE (SEC 7.2) • 10 PTS

After spending $28 on a hoodie, Elena has $37 left. Write and solve an equation to find how much money m she had at first.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

8 REAL LIFE (SEC 7.3) • 10 PTS

Three-fourths of the students in a band play wind instruments. If 27 play wind instruments, how many students n are in the band?

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

9 REAL LIFE (SEC 7.5) • 10 PTS

An elevator has a maximum weight limit of 1,800 lb. Write an inequality for the allowed weight w and tell whether $w = 1{,}800$ lb is allowed.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

10 ERROR ANALYSIS (SEC 7.3) • 10 PTS

To solve $x / 4 = 12$, Jordan divided 12 by 4 and wrote $x = 3$. Explain the inverse-operation mistake and find the true solution.

[ ] Work (+6) [ ] Ans (+4) **Ans:** _____

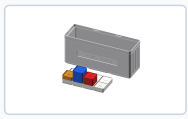
Unit 7: Equations & Inequalities — Practice A & B Complete Key

Big Ideas Math Grade 6 — Chapter 7 • Concept → Blocks (When Applicable: Place Value Blocks & Fraction Strips) → Calculator

1. **Concept (Stack Approach): An equation is a balanced two-register comparison (Y = X). Solving isolates the unknown by applying inverse operations in reverse order.**

2. Blocks (Place Value & Fraction): Model both sides of an equation on the Place Value tray or with Fraction Strips so removing/dividing equal amounts preserves balance.

3. **Calculator (SC-6): Solve with inverse operations on the stack, then push the left and right sides into Y and X and press |≠| (flashes NO when both sides are equal).**



SEC 7.1 (pp.66-67): WRITING EQUATIONS IN ONE VARIABLE & TESTING SOLUTIONS

Methods: W1: Substitute Candidates to Test Equality | W2: Balance Scale / Mental Unwrapping

PRACTICE A (p.66): KEY IDEAS (#1-#10) — ExA: x = 9 is the solution (41 = 41)		PRACTICE B (p.67): REAL LIFE (#1-#10) — ExB: n - 8 = 25; n = 33 drones	
A1: x = 8 (5(8)-7 = 33) ((5 × 8) - 7) Check: 33 [ENT] 5 [ENT] 8 [×] 7 [-] [≠]	**A2: y = 15 (15÷3 + 4 = 9) ((15 ÷ 3) + 4)** Check: 9 [ENT] 15 [ENT] 3 [÷] 4 [+] [≠]	**B1: x = 8 (5·8 - 7 = 33) ((5 × 8) - 7)** Check: 33 [ENT] 5 [ENT] 8 [×] 7 [-] [≠]	**B2: 15t + 5 = 65; yes, t = 4 is a solution ((15 × 4) + 5)** Check: 65 [ENT] 15 [ENT] 4 [×] 5 [+] [≠]
A3: x + 14 = 52; x = 38 (x + 14 = 52) Check: Mental / Table Check	**A4: 6k = 84; k = 14 (6k = 84)** Check: Mental / Table Check	**B3: k - 12 = 29; k = 41 (29 + 12)** Check: 29 [ENT] 12 [+]	**B4: n ÷ 6 = 14; n = 84 (14 × 6)** Check: 14 [ENT] 6 [×]
A5: w - 9 = 17; w = 26 (w - 9 = 17) Check: Mental / Table Check	**A6: m / 5 = 13; m = 65 (m / 5 = 13)** Check: Mental / Table Check	**B5: 3s = 54; s = 18 cm (54 ÷ 3)** Check: 54 [ENT] 3 [÷]	**B6: m = 15 (100 - 60 = 40) (100 - (4 × 15))** Check: 40 [ENT] 100 [ENT] 4 [ENT] 15 [×] [-] [≠]
A7: 4p + 6 = 54; p = $12 ((4 × 12) + 6) Check: 54 [ENT] 4 [ENT] 12 [×] 6 [+] [≠]	**A8: x - 12 = 20; x = 32 (x - 12 = 20)** Check: Mental / Table Check	**B7: p ÷ 8 = 3; p = 24 slices (24 ÷ 8)** Check: 24 [ENT] 8 [÷]	**B8: 45 + d = 120; d = $75 (120 - 45)** Check: 120 [ENT] 45 [-]
A9: 10 + 3m = 28; m = 6 movies ((28 - 10) ÷ 3) Check: 28 [ENT] 10 [-] 3 [÷]	**A10: b / 3 = 14.50; b = $43.50 (14.50 × 3)** Check: 14.50 [ENT] 3 [×]	**B9: Yes (both sides equal 28) ((5 × 6) - 2)** Check: 3 [ENT] 6 [×] 10 [+] 5 [ENT] 6 [×] 2 [-] [≠]	**B10: b - 4 = 13; b = 17 years old (13 + 4)** Check: 13 [ENT] 4 [+]

SEC 7.2 (pp.68-69): SOLVING EQUATIONS USING ADDITION OR SUBTRACTION

Methods: W1: Properties of Equality (Inverse Operations) | W2: Balance Scale / Part-Part-Whole Bar Model

PRACTICE A (p.68): KEY IDEAS (#1-#10) — ExA: x = 45		PRACTICE B (p.69): REAL LIFE (#1-#10) — ExB: w = 54.4 g; m = 11/24	
A1: x = 45 (73 - 28) Check: 73 [ENT] 28 [-]	**A2: y = 92 (58 + 34)** Check: 58 [ENT] 34 [+]	**B1: s + 45 = 210; s = 165 points (210 - 45)** Check: 210 [ENT] 45 [-]	**B2: p - 18 = 67; p = $85 (67 + 18)** Check: 67 [ENT] 18 [+]
A3: n = 45 (64 - 19) Check: 64 [ENT] 19 [-]	**A4: k = 76 (29 + 47)** Check: 29 [ENT] 47 [+]	**B3: h + 1450 = 5200; h = 3,750 feet (5200 - 1450)** Check: 5200 [ENT] 1450 [-]	**B4: f - 64.8 = 185.2; f = 250.0 grams (185.2 + 64.8)** Check: 185.2 [ENT] 64.8 [+]
A5: w = 54.4 (34.8 + 19.6) Check: 34.8 [ENT] 19.6 [+]	**A6: p = 16.65 (25.4 - 8.75)** Check: 25.4 [ENT] 8.75 [-]	**B5: t - 0.48 = 12.65; t = 13.13 seconds (12.65 + 0.48)** Check: 12.65 [ENT] 0.48 [+]	**B6: m + 3/8 = 7/8; m = 1/2 cup (7/8 - 3/8)** Check: [.] 7 [.] 8 [ENT] [.] 3 [.] 8 [-]
A7: m = 11/24 (5/6 - 3/8) Check: [.] 5 [.] 6 [ENT] [.] 3 [.] 8 [-]	**A8: a = 4 3/4 (3 1/2 + 1 1/4)** Check: 3 [.] 1 [.] 2 [ENT] 1 [.] 1 [.] 4 [+]	**B7: 2 3/4 + d = 4 1/2; d = 1 3/4 miles (4 1/2 - 2 3/4)** Check: 4 [.] 1 [.] 2 [ENT] 2 [.] 3 [.] 4 [-]	**B8: b + 38 = 125; b = 87° (125 - 38)** Check: 125 [ENT] 38 [-]
A9: m - 18.50 = 26.75; m = $45.25 (26.75 + 18.50) Check: 26.75 [ENT] 18.50 [+]	**A10: h + 42.5 = 110; h = 67.5 ft (110 - 42.5)** Check: 110 [ENT] 42.5 [-]	**B9: -40 + d = -115; d = -75 meters (-115 - -40)** Check: 115 [+/-] [ENT] 40 [+/-] [-]	**B10: L = 44 cm; 1 length = 22 cm ((64 - 20) ÷ 2)** Check: 64 [ENT] 20 [-] 2 [÷]

SEC 7.3 (pp.70-71): SOLVING EQUATIONS USING MULTIPLICATION OR DIVISION

Methods: W1: Divide/Multiply by Coefficient | W2: Multiply by the Reciprocal | W3: Equal-Groups Tape Diagram

PRACTICE A (p.70): KEY IDEAS (#1-#10) — ExA: x = 17; k = 101.5		PRACTICE B (p.71): REAL LIFE (#1-#10) — ExB: 40 songs	
A1: x = 17 (136 ÷ 8) Check: 136 [ENT] 8 [÷]	**A2: y = 15 (180 ÷ 12)** Check: 180 [ENT] 12 [÷]	**B1: 12s = 168; s = $14 per shirt (168 ÷ 12)** Check: 168 [ENT] 12 [÷]	**B2: p ÷ 9 = 3; p = 27 slices (3 × 9)** Check: 3 [ENT] 9 [×]
A3: m = 114 (19 × 6) Check: 19 [ENT] 6 [×]	**A4: k = 101.5 (14.5 × 7)** Check: 14.5 [ENT] 7 [×]	**B3: 65t = 325; t = 5 hours (325 ÷ 65)** Check: 325 [ENT] 65 [÷]	**B4: 2.5p = 16.25; p = $6.50 per pound (16.25 ÷ 2.5)** Check: 16.25 [ENT] 2.5 [÷]
A5: w = 14 (63 ÷ 4.5) Check: 63 [ENT] 4.5 [÷]	**A6: x = 24 (18 ÷ 3/4)** Check: 18 [ENT] [.] 3 [.] 4 [÷]	**B5: s ÷ 4 = 9; s = $36 (9 × 4)** Check: 9 [ENT] 4 [×]	**B6: (3/4)c = 21; c = 28 students (21 ÷ 3/4)** Check: 21 [ENT] [.] 3 [.] 4 [÷]
A7: n = 40 (16 ÷ 2/5) Check: 16 [ENT] [.] 2 [.] 5 [÷]	**A8: p = 4/5 (0.8) (2/3 ÷ 5/6)** Check: [.] 2 [.] 3 [ENT] [.] 5 [.] 6 [÷]	**B7: (5/6)p = 150; p = $180 (150 ÷ 5/6)** Check: 150 [ENT] [.] 5 [.] 6 [÷]	**B8: 13.5w = 108; w = 8 feet (108 ÷ 13.5)** Check: 108 [ENT] 13.5 [÷]
A9: 1.5t = 27; t = 18 minutes (27 ÷ 1.5) Check: 27 [ENT] 1.5 [÷]	**A10: 3/5 s = 27; s = 45 students (27 ÷ 3/5)** Check: 27 [ENT] [.] 3 [.] 5 [÷]	**B9: h ÷ 15 = 3.2; h = 48 feet (3.2 × 15)** Check: 3.2 [ENT] 15 [×]	**B10: 0.40n = 56; n = 140 (56 ÷ 0.40)** Check: 56 [ENT] 0.40 [÷]

SEC 7.4 (pp.72-73): WRITING AND GRAPHING INEQUALITIES

Methods: W1: Inverse Property of Inequality & Number Line Graph | W2: Boundary & Test-Point Substitution

PRACTICE A (p.72): KEY IDEAS (#1-#10) — ExA: x ≥ 19 (Solid dot at 19, arrow right)		PRACTICE B (p.73): REAL LIFE (#1-#10) — ExB: g ≤ 15 (at most 15 gold bars)	
A1: x > 13 (Open circle at 13, arrow right) (21 - 8) Check: 21 [ENT] 8 [-]	**A2: y ≤ 24 (Solid dot at 24, arrow left) (15 + 9)** Check: 15 [ENT] 9 [+]	**B1: h ≥ 54 (solid dot at 54, shade right); at least 5 in** Check: 54 [ENT] 49 [-]	**B2: p + 5 ≤ 12 → p ≤ 7 passengers (12 - 5)** Check: 12 [ENT] 5 [-]
A3: n ≥ 13 (Solid dot at 13, arrow right) (78 ÷ 6) Check: 78 [ENT] 6 [÷]	**A4: m < 36 (Open circle at 36, arrow left) (9 × 4)** Check: 9 [ENT] 4 [×]	**B3: 22.50 + x ≥ 35 → x ≥ $12.50 (35 - 22.50)** Check: 35 [ENT] 22.50 [-]	**B4: 3.50g ≤ 28 → g ≤ 8 games (28 ÷ 3.50)** Check: 28 [ENT] 3.50 [÷]
A5: h ≥ 48 ('At least' = ≥) Check: Mental / Table Check	**A6: w ≤ 2,000 ('At most' = ≤)** Check: Mental / Table Check	**B5: 15r > 240 → r > 16 (at least 17 rows) (240 ÷ 15)** Check: 240 [ENT] 15 [÷]	**B6: b - 25 < 15 → b < 40% (15 + 25)** Check: 15 [ENT] 25 [+]
A7: Only 6 (At n = 5, 23 > 23 is false) Check: 23 [ENT] 4 [ENT] 6 [×] 3 [+] [f][>]	**A8: 5 and 6 ((4 × 5) - 3)** Check: 17 [ENT] 4 [ENT] 5 [×] 3 [-] [f][≥]	**B7: 8 and 10 ((5 × 8) - 10)** Check: 30 [ENT] 5 [ENT] 8 [×] 10 [-] [f][≥]	**B8: 2c - 30 ≥ 70 → c ≥ 50 cupcakes ((70 + 30) ÷ 2)** Check: 70 [ENT] 30 [+] 2 [÷]
A9: 8b ≤ 50; at most 6 books ($2 left over) (50 ÷ 8 (Q & R)) Check: 50 [ENT] 8 [g][÷R]	**A10: p + 340 ≥ 500; p ≥ 160 points (500 - 340)** Check: 500 [ENT] 340 [-]	**B9: s ≤ 20 (solid dot at 20, shade left down to 0)** Check: 20 [ENT] 20 [g][≤]	**B10: 45c + 170 ≤ 800 → c ≤ 14 crates ((800 - 170) ÷ 45)** Check: 800 [ENT] 170 [-] 45 [÷]

SEC 7.5 (pp.74-75): WRITING EQUATIONS IN TWO VARIABLES (Y = KX AND Y = X + B)

Methods: W1: Test Constant Ratio y/x vs. Constant Difference y - x | W2: Input-Output Table & Coordinate Graph

PRACTICE A (p.74): KEY IDEAS (#1-#10) — ExA: Table A: y = 7x; Table B: y = x - 4		PRACTICE B (p.75): REAL LIFE (#1-#10) — ExB: p = 12.50h; $81.25	
A1: y = 8x; y = 80 (16 ÷ 2; 8×10) Check: 16 [ENT] 2 [÷] → 8; 8×10	**A2: y = x + 8; y = 28 (9 - 1; 20+8)** Check: 9 [ENT] 1 [-] → +8; 20+8	B1: y = x + 5 is additive; y = 8m is multiplicative (8 × 1) Check: 8 [ENT] 1 [×]	**B2: g = 18h (h = indep, g = dep); 81 grams (18 × 4.5)** Check: 18 [ENT] 4.5 [×]
A3: y = 7x; y = 84 (14 ÷ 2; 7×12) Check: 14 [ENT] 2 [÷] → 7; 7×12	**A4: y = x - 4; y = 26 (30 - 4)** Check: 30 [ENT] 4 [-]	**B3: m = z + 4; m = 12, 16, 19 (8 + 4)** Check: 8 [ENT] 4 [+]	**B4: s = 15p; p = 12 sheets (180 ÷ 15)** Check: 180 [ENT] 15 [÷]
A5: (1, 6), (2, 12), (3, 18), (4, 24) (Repeat(+6)) Check: 6 [g][REP] [+] [+] [+]	**A6: Independent: t; Dependent: d (d depends on t)** Check: Mental / Table Check	**B5: y = x - 6; $18, $29, and $44 (24 - 6)** Check: 24 [ENT] 6 [-]	**B6: y = 3.5x; 140 wheel turns (3.5 × 40)** Check: 3.5 [ENT] 40 [×]
A7: 292.5 miles (65 × 4.5) Check: 65 [ENT] 4.5 [×]	A8: y = 4x passes through (0, 0); y = x + 4 crosses at (0, 4) Check: Mental / Table Check	**B7: y = 9x; at x = 20, y = 180 ((27 ÷ 3) × 20)** Check: 27 [ENT] 3 [÷] 20 [×]	**B8: c = 20g + 7; $127 ((20 × 6) + 7)** Check: 20 [ENT] 6 [×] 7 [+]
A9: 8 hours (100 ÷ 12.50) Check: 100 [ENT] 12.50 [÷]	**A10: c = 15m + 25; $205 ((15 × 12) + 25)** Check: 15 [ENT] 12 [×] 25 [+]	B9: Multiplicative y = kx (when x = 0, y = k·0 = 0) (0 × 7) Check: 0 [ENT] 7 [×]	**B10: d = 0.2s; 3 miles away (0.2 × 15)** Check: 0.2 [ENT] 15 [×]

UNIT 07 MASTERY QUIZ KEY (p.118 • TEKS 6.9A-C, 6.10A): Q1: x - 17 = 29; x = 46 Q2: x = 23.5 Q3: x = 17 Q4: x = 84 Q5: d = 65t; 260 mi

Quiz Q6-Q10 Answers: Q6: Yes (14≥14); closed circle Q7: m - 28 = 37; $65 Q8: (3/4)n = 27; 36 Q9: w ≤ 1,800; Yes Q10: Multiply 12 × 4: x = 48