



GRADE 7 · INTERACTIVE NOTEBOOK · DOODLE-STYLE

Equations & Inequalities

A Doodle-Style Interactive Notebook

10 two-page spreads covering multi-step equations and inequalities with rational numbers. Includes doodle-prompt visuals, vocabulary foldable, tab dividers, answer key, self-assessment tracker, and a complete teacher guide for setting up an interactive notebook.

CCSS 7.EE.B.3

CCSS 7.EE.B.4

WHAT'S INSIDE

- 10 two-page spreads (20 pages of guided notes + practice)
- Printable table of contents + unit tab dividers
- Vocabulary foldable: coefficient, constant, term, like terms, inequality, solution set
- Complete answer key with fully-worked exemplars
- CCSS alignment chart + student self-assessment tracker
- "How to Set Up an Interactive Notebook" teacher guide

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Mark each box as you complete that section.

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Tip: Use the page numbers above to find your place. Check off each box as you complete that section!



1

SPREAD 1 · NOTES

Solving Multi-Step Equations with Rational Numbers

CCSS: 7.EE.B.3

I CAN ...

I can solve multi-step equations with fractions and decimals by isolating the variable using inverse operations.

KEY VOCAB:

equation

solution

inverse operation

isolate

KEY IDEA

A multi-step equation requires more than one operation to solve. The secret is to work backwards through the order of operations: first undo addition or subtraction, then undo multiplication or division. Always keep the equation balanced by doing the same operation to both sides.

Worked Example:

Solve: $3.2x - 4.8 = 11.2$

1 $3.2x - 4.8 + 4.8 = 11.2 + 4.8$

2 $3.2x = 16$

3 $3.2x \div 3.2 = 16 \div 3.2$

4 $x = 5$

Check: $3.2(5) - 4.8 = 16 - 4.8 = 11.2$ ✓

Add 4.8 to both sides (undo subtraction).

Simplify both sides.

Divide both sides by 3.2 (undo multiplication).

The variable is now isolated. $x = 5$ is the solution.

Substitute back into the original equation.

Solve with a fraction: $(2/3)x + 5 = 11$

1 $(2/3)x + 5 - 5 = 11 - 5$

2 $(2/3)x = 6$

3 $(3/2) \cdot (2/3)x = (3/2) \cdot 6$

4 $x = 9$

Subtract 5 from both sides.

Simplify.

Multiply both sides by $3/2$ (the reciprocal of $2/3$).

The reciprocals cancel. $x = 9$ is the solution.

Doodle Prompts



- Color the **coefficient** (3.2) one color and the **constant** (−4.8) another color.
- Sketch a **balance scale** under the equation. Both sides must stay equal!
- Draw a **blue arrow** over the operation you should undo FIRST.

Margin Notes

Remember: the variable is the "unknown" letter.

Inverse operation = the opposite operation.

Add $\leftrightarrow$ subtract, multiply $\leftrightarrow$ divide.

Decimals work the same as whole numbers!

Self-Rating Rubric — Spread 1 Notes

Today I rate myself:

- | | Just starting — I need help. | Getting it — with support I can do this. | Got it — I can do this on my own. | Expert — I can teach someone else! |
|---|------------------------------|--|-----------------------------------|------------------------------------|
| 1 | ★ ★ ★ ★ | | | |
| 2 | | ★ ★ ★ ★ | | |
| 3 | | | ★ ★ ★ ★ | |
| 4 | | | | ★ ★ ★ ★ |



Two-Step Inequalities: Graphing

CCSS: 7.EE.B.4b

I CAN ...

I can graph the solution set of a two-step inequality on a number line using open and closed circles.

KEY VOCAB:

open circle

closed circle

shading

number line

KEY IDEA

A solution set on a number line uses two visual elements: the **circle** (open or closed) shows whether the endpoint is included, and the **shading** (left or right) shows the direction of all solutions. **Open circle** = endpoint NOT included ($<$ or $>$). **Closed circle** = endpoint IS included ($\leq$ or $\geq$).

Worked Example:

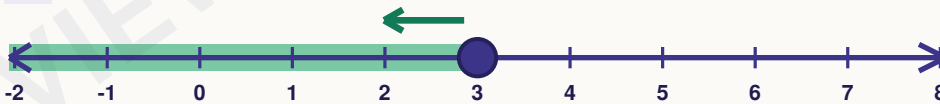
Solve and graph: $2x + 1 \leq 7$

1 $2x + 1 - 1 \leq 7 - 1$

2 $2x \leq 6$

3 $x \leq 3$

4 Closed circle at 3, shade LEFT.

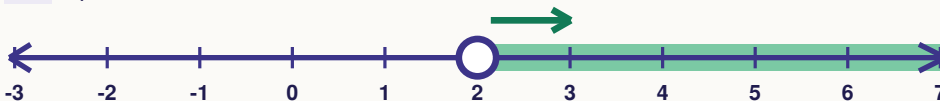
*Subtract 1 from both sides.**Simplify.**Divide by 2 (positive, no flip).* *$\leq$ means "less than OR equal to", so 3 IS included.*Solve and graph: $3x - 2 > 4$

1 $3x - 2 + 2 > 4 + 2$

2 $3x > 6$

3 $x > 2$

4 Open circle at 2, shade RIGHT.

*Add 2 to both sides.**Simplify.**Divide by 3 (positive, no flip).* *$>$ means "greater than", so 2 is NOT included.*

Doodle Prompts



- Color **open circles** in one color and **closed circles** in another.
- Draw a **bold arrow** in the shading direction. Make it long!
- Label the endpoint number clearly below each circle.

Margin Notes

Open circle ○ = endpoint **EXCLUDED** ($<$, $>$).

Closed circle ● = endpoint **INCLUDED** ($\leq$, $\geq$).

Shade **LEFT** for $<$ and $\leq$.

Shade **RIGHT** for $>$ and $\geq$.

Self-Rating Rubric — Spread 6 Notes

Today I rate myself:

- | | | |
|---|--|---------|
| 1 | Just starting — I need help. | ★ ★ ★ ★ |
| 2 | Getting it — with support I can do this. | ★ ★ ★ ★ |
| 3 | Got it — I can do this on my own. | ★ ★ ★ ★ |
| 4 | Expert — I can teach someone else! | ★ ★ ★ ★ |





1

SPREAD 1 · YOUR TURN

Solving Multi-Step Equations with Rational Numbers

Show all your work. Don't forget to check your answer!

Directions: Solve each problem on the lines provided. Use the hint (if given) to get started. Circle your final answer.

1 Solve: $2.5x + 3.5 = 16.0$

2 Solve: $-1.4(x + 3) = 7$

Hint: Distribute first, then isolate.

3 Marcus buys 4 packs of gum at \$1.75 each and a drink. The total cost is \$9.50. Write and solve an equation to find the cost of the drink.

4 Solve: $(\frac{1}{4})x - 2 = 4$

Hint: Multiply both sides by 4 to clear the fraction.

5 CHALLENGE: Solve $0.6(2x - 5) - 1.5 = 6.9$

Hint: Two steps of distribution and isolation.

Self-Rating Rubric — Spread 1 Practice		Today I rate myself:	
1	Just starting — I need help.	★ ★ ★ ★	
2	Getting it — with support I can do this.	★ ★ ★ ★	
3	Got it — I can do this on my own.	★ ★ ★ ★	
4	Expert — I can teach someone else!	★ ★ ★ ★	

Foldable: Outside Flaps (Cut & Fold)

HOW TO MAKE THIS FOLDABLE

Directions: Cut along the **solid green lines** to separate the six vocabulary flaps. Fold along the **dashed purple lines** so the term shows on the outside and the definition tucks inside. Glue the back of the foldable onto your notebook page. Lift each flap to study the definition and example underneath.

coefficient

(lift flap to see definition)

constant

(lift flap to see definition)

term

(lift flap to see definition)

like terms

(lift flap to see definition)

inequality

(lift flap to see definition)

solution set

(lift flap to see definition)

Legend: ■■■ Solid green = CUT here | - - - Dashed purple = FOLD here



ANSWER KEY · FULLY WORKED EXEMPLAR



Spread 1: Solving Multi-Step Equations with Rational Numbers

Each problem below shows the complete step-by-step solution. Use this to model the thinking for students or to check work.

Problem 1 $2.5x + 3.5 = 16.0$

- $2.5x + 3.5 - 3.5 = 16.0 - 3.5$
- $2.5x = 12.5$
- $x = 12.5 \div 2.5$
- $x = 5$**
- Check: $2.5(5) + 3.5 = 12.5 + 3.5 = 16.0$ ✓

Problem 2 $-1.4(x + 3) = 7$

- Distribute: $-1.4x + (-1.4)(3) = 7$
- $-1.4x - 4.2 = 7$
- $-1.4x = 7 + 4.2 = 11.2$
- $x = 11.2 \div (-1.4)$
- $x = -8$**
- Check: $-1.4(-8 + 3) = -1.4(-5) = 7$ ✓

Problem 3 Marcus: $4(\$1.75) + d = \$9.50$

- Let d = cost of the drink.
- $4(1.75) + d = 9.50$
- $7 + d = 9.50$
- $d = 9.50 - 7$
- $d = \$2.50$**
- The drink cost \$2.50. ✓

Problem 4 $(1/4)x - 2 = 4$

- $(1/4)x = 4 + 2$
- $(1/4)x = 6$
- $x = 6 \times 4$ (multiply both sides by 4)
- $x = 24$**
- Check: $(1/4)(24) - 2 = 6 - 2 = 4$ ✓

Problem 5 $0.6(2x - 5) - 1.5 = 6.9$

- $0.6(2x - 5) = 6.9 + 1.5 = 8.4$
- Divide both sides by 0.6: $2x - 5 = 14$
- $2x = 14 + 5 = 19$
- $x = 19 \div 2$
- $x = 9.5$**
- Check: $0.6(2(9.5) - 5) - 1.5 = 0.6(14) - 1.5 = 8.4 - 1.5 = 6.9$ ✓

COMMON CORE STATE STANDARDS

CCSS Alignment Chart

Every spread in this interactive notebook is anchored to one or more sub-standards within **CCSS.MATH.CONTENT.7.EE.B.3** and **CCSS.MATH.CONTENT.7.EE.B.4**. The chart below shows which standard each spread addresses, the standard's full text, and a student-friendly learning target.

STANDARDS 7.EE.B.3 & 7.EE.B.4

7.EE.B.3: Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations; convert between forms; and assess the reasonableness of answers using mental computation and estimation.

7.EE.B.4: Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

SUB-STANDARDS 7.EE.B.4a & 7.EE.B.4b

7.EE.B.4a: Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ (rational p , q , r). Compare algebraic vs. arithmetic solutions. **7.EE.B.4b:** Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$. Graph the solution set and interpret it in context.

Spread-by-Spread Alignment

#	Spread Title	Standard	Learning Target
1	Solving Multi-Step Equations with Rational Numbers	7.EE.B.3	I can solve multi-step equations with fractions and decimals.
2	Writing Equations: $px + q = r$	7.EE.B.4, 7.EE.B.4a	I can write and solve equations of the form $px + q = r$ from word problems.
3	Writing Equations: $p(x + q) = r$	7.EE.B.4, 7.EE.B.4a	I can write and solve equations of the form $p(x + q) = r$ from word problems.
4	Comparing Algebraic vs. Arithmetic Solutions	7.EE.B.4a	I can compare an algebraic solution to an arithmetic solution.
5	Two-Step Inequalities: Solving	7.EE.B.4b	I can solve two-step inequalities with rational numbers.
6	Two-Step Inequalities: Graphing	7.EE.B.4b	I can graph the solution set of a two-step inequality on a number line.
7	Real-World Inequality Word Problems	7.EE.B.4b	I can write and solve inequalities from real-world word problems and interpret the solution.
8	Estimation & Reasonableness Checks	7.EE.B.3	I can use estimation to check the reasonableness of my answers.
9	Error Analysis	7.EE.B.3, 7.EE.B.4	I can identify and correct common errors in equation and inequality solving.
10	Concept Review & Self-Assessment	7.EE.B.3, 7.EE.B.4	I can synthesize my understanding of equations and inequalities.



THE COMPLETE RESOURCE INCLUDES

WHAT'S INSIDE

1 FRONT MATTER Cover, TOC, teacher overview, 3-page INB setup guide, CCSS chart, tracker, vocabulary foldable, and tab dividers	2 10 TWO-PAGE SPREADS 20 pages of guided notes + student practice on equations, inequalities, reasonableness, error analysis, and review	3 10 WORKED-KEY PAGES One fully worked answer-key page for each of the 10 instructional spreads	4 ASSESSMENTS 5-question pre-unit diagnostic + key; end-of-unit summative assessment + answer key and rubric
5 TEACHER SUPPORT Common misconceptions tip sheet plus classroom-use guidance embedded in the teacher materials	6 EXTENSION ACTIVITIES 4 extension/bonus activities for early finishers, homework choice, or enrichment	7 VOCAB + REFLECTION 12-term master vocabulary list plus a final student reflection page	8 FINAL REVIEW PAGE Branded review/thank-you page directing users to UMPrintables.com

50

TOTAL PAGES

10

TWO-PAGE SPREADS

10

WORKED-KEY PAGES

12

MASTER VOCAB TERMS

CCSS 7.EE.B.3

CCSS 7.EE.B.4

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