

Equivalent Expressions Distributive Property

Color by Number Bundle

Grade 7

6 Themed Pictures

Aligned to CCSS 7.EE.A.1 & 7.EE.A.2

What's Inside:

6 Seasonal Color-by-Number Pictures (144 Problems Total: 72 Basic + 72 Advanced)

Basic & Advanced Versions for Built-in Differentiation

Complete Answer Key with Detailed Step-by-Step Solutions

Colored Finished Pictures for Easy Checking

CCSS Alignment Chart (7.EE.A.1 & 7.EE.A.2)

Rewriting Expressions Anchor Chart

Blank Color-by-Number Template

Picture 1: Combining Like Terms (Back-to-School) | Picture 2: Distributive Property (Halloween) | Picture 3: Factoring (Thanksgiving) | Picture 4: Mixed Expressions (Winter) | Picture 5: Rewriting in Context (Valentine's) | Picture 6: Real-World (Spring)

Teacher Notes

Purpose: This resource provides engaging, differentiated practice with equivalent expressions for Grade 7 students. Each color-by-number picture combines mathematical rigor with creative expression, motivating students through seasonal themes while reinforcing critical algebraic concepts aligned to CCSS 7.EE.A.1 and 7.EE.A.2.

Differentiation: Every picture includes two versions. The **Basic** version features integer coefficients and straightforward problems, ideal for students building foundational skills. The **Advanced** version incorporates rational coefficients (decimals, fractions), multi-step reasoning, and contextual applications, challenging students who have mastered the basics.

How to Use: Assign either the Basic or Advanced version based on student readiness. Students solve each problem, find their answer in the color key, and color the corresponding region on the picture. This self-checking format provides immediate feedback: if a student's answer doesn't appear in the color key, they know to recheck their work before coloring.

Interactive Features: Encourage students to (1) highlight like terms in different colors before combining, (2) draw arrows showing distribution, (3) write the GCF above each term before factoring, and (4) annotate percent meanings next to rewritten expressions. These metacognitive strategies deepen understanding and make the invisible steps of algebra visible.

Assessment Tip: Use the colored finished pictures as quick formative assessments. A correctly colored picture indicates mastery, while mismatched colors reveal specific misconceptions that can be addressed in small-group instruction.

CCSS Alignment Chart

Picture	Theme	Skill Focus	7.EE.A.1	7.EE.A.2
1	Back-to-School	Combining Like Terms	Yes	-
2	Halloween	Distributive Property	Yes	-
3	Thanksgiving	Factoring Linear Expressions	Yes	-
4	Winter	Mixed Equivalent Expressions	Yes	Yes
5	Valentine's	Rewriting in Context	-	Yes
6	Spring	Real-World Expressions	Yes	Yes

7.EE.A.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

Rewriting Expressions Anchor Chart

The 5 Most Common Equivalent-Form Patterns

1. Percent Increase

$$x + 0.05x = 1.05x$$

"increase by 5%" = "multiply by 1.05"

Adding the percent of increase to the original is the same as multiplying by (1 + percent). This pattern appears whenever quantities grow: tax, tip, interest, raises.

2. Percent Decrease

$$x - 0.20x = 0.80x$$

"20% discount" = "multiply by 0.80"

Subtracting the percent of decrease from the original is the same as multiplying by (1 - percent). This pattern appears in sales, depreciation, and markdowns.

3. Distributive Property

$$a(b + c) = ab + ac$$

Expand by multiplying each term inside by the factor outside.

The distributive property allows us to rewrite products as sums and vice versa. It is the foundation for both expanding ($a(b+c)$ to $ab+ac$) and factoring ($ab+ac$ to $a(b+c)$).

4. Factoring (GCF)

$$6x + 12 = 6(x + 2)$$

Factor by finding the Greatest Common Factor of all terms.

Factoring is the reverse of distributing. Find the GCF of all coefficients and the smallest power of each common variable, then write it as a product.

5. Combining Like Terms

$$3x + 5x = 8x$$

Add or subtract coefficients of terms with the same variable part.

Like terms have identical variable parts (same variables, same exponents). Only the coefficients change when combining; the variable part stays the same.

Picture 1: Combining Like Terms

Apple | Back-to-School Theme | Basic Version

CCSS: 7.EE.A.1

Directions: Simplify each expression. Find your answer in the color key. Color each region of the picture with the matching color.

1. $3x + 5x = \underline{\hspace{2cm}}$

2. $9y - 4y = \underline{\hspace{2cm}}$

3. $4a + 6a = \underline{\hspace{2cm}}$

4. $8m - 4m = \underline{\hspace{2cm}}$

5. $2b + 4b = \underline{\hspace{2cm}}$

6. $9p - 2p = \underline{\hspace{2cm}}$

7. $5k - 2k = \underline{\hspace{2cm}}$

8. $4n + 5n = \underline{\hspace{2cm}}$

9. $7t - 5t = \underline{\hspace{2cm}}$

10. $5r + 6r = \underline{\hspace{2cm}}$

11. $8s + 4s = \underline{\hspace{2cm}}$

12. $4w - 3w = \underline{\hspace{2cm}}$

Color Key:

■ $1=8x$

■ $5=6b$

■ $9=2t$

■ $2=5y$

■ $6=7p$

■ $10=11r$

■ $3=10a$

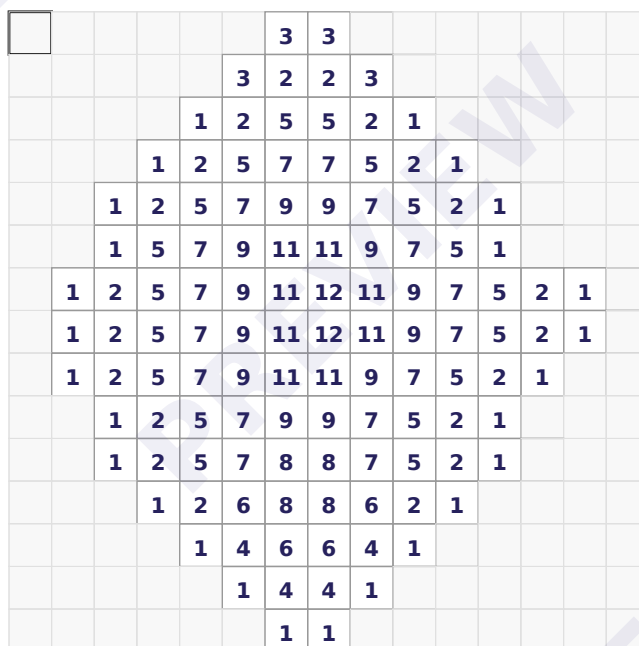
■ $7=3k$

■ $11=12s$

■ $4=4m$

■ $8=9n$

■ $12=1w$



Picture 1: Combining Like Terms

Apple | Back-to-School Theme | Advanced Version

CCSS: 7.EE.A.1

Directions: Simplify each expression. Find your answer in the color key. Color each region of the picture with the matching color.

1. $3.5x + 4.5x = \underline{\hspace{2cm}}$

2. $7.2y - 2.2y = \underline{\hspace{2cm}}$

3. $2.4a + 7.6a = \underline{\hspace{2cm}}$

4. $6.5m - 2.5m = \underline{\hspace{2cm}}$

5. $1.8b + 4.2b = \underline{\hspace{2cm}}$

6. $9.4p - 2.4p = \underline{\hspace{2cm}}$

7. $5.5k - 2.5k = \underline{\hspace{2cm}}$

8. $3.8n + 5.2n = \underline{\hspace{2cm}}$

9. $6.7t - 4.7t = \underline{\hspace{2cm}}$

10. $4.1r + 6.9r = \underline{\hspace{2cm}}$

11. $7.2s + 4.8s = \underline{\hspace{2cm}}$

12. $3.5w - 2.5w = \underline{\hspace{2cm}}$

Color Key:

1=8x

5=6b

9=2t

2=5y

6=7p

10=11r

3=10a

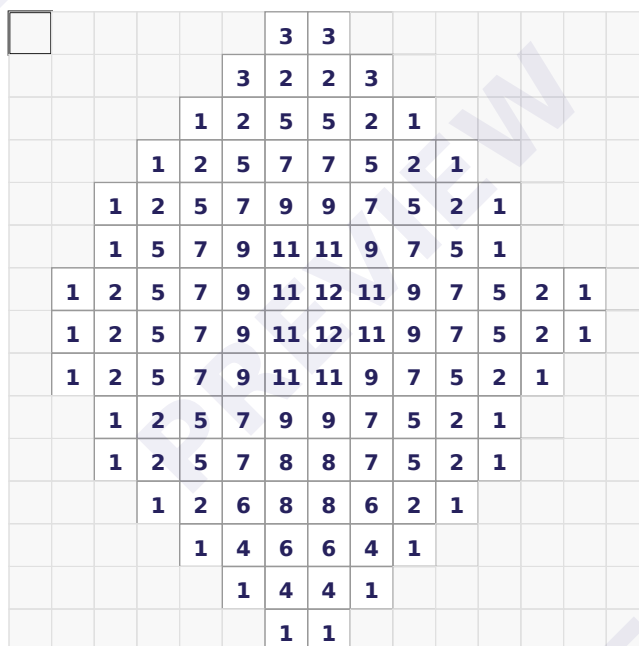
7=3k

11=12s

4=4m

8=9n

12=1w



Complete Answer Key

Detailed Step-by-Step Solutions

Picture 1: Back-to-School - Basic Answer Key

Problem 1: Simplify $3x + 5x$

Step: $3x + 5x$

Step: Identify like terms: both have variable x

Step: Add coefficients: $3 + 5 = 8$

Step: Answer: $8x$

Answer: $8x$ | Color: 1

Problem 2: Simplify $9y - 4y$

Step: $9y - 4y$

Step: Identify like terms: both have variable y

Step: Subtract coefficients: $9 - 4 = 5$

Step: Answer: $5y$

Answer: $5y$ | Color: 2

Problem 3: Simplify $4a + 6a$

Step: $4a + 6a$

Step: Identify like terms: both have variable a

Step: Add coefficients: $4 + 6 = 10$

Step: Answer: $10a$

Answer: $10a$ | Color: 3

Problem 4: Simplify $8m - 4m$

Step: $8m - 4m$

Step: Identify like terms: both have variable m

Step: Subtract coefficients: $8 - 4 = 4$

Step: Answer: $4m$

Answer: $4m$ | Color: 4

Problem 5: Simplify $2b + 4b$

Step: $2b + 4b$

Step: Identify like terms: both have variable b

Step: Add coefficients: $2 + 4 = 6$

Step: Answer: $6b$

Answer: $6b$ | Color: 5

Problem 6: Simplify $9p - 2p$

Step: $9p - 2p$

Step: Identify like terms: both have variable p

Step: Subtract coefficients: $9 - 2 = 7$

Step: Answer: $7p$

Picture 1: Back-to-School - Advanced Answer Key

Problem 1: Simplify $3.5x + 4.5x$

Step: $3.5x + 4.5x$

Step: Like terms: both have x

Step: Add: $3.5 + 4.5 = 8$

Step: Answer: $8x$

Answer: $8x$ | Color: 1

Problem 2: Simplify $7.2y - 2.2y$

Step: $7.2y - 2.2y$

Step: Like terms: both have y

Step: Subtract: $7.2 - 2.2 = 5$

Step: Answer: $5y$

Answer: $5y$ | Color: 2

Problem 3: Simplify $2.4a + 7.6a$

Step: $2.4a + 7.6a$

Step: Like terms: both have a

Step: Add: $2.4 + 7.6 = 10$

Step: Answer: $10a$

Answer: $10a$ | Color: 3

Problem 4: Simplify $6.5m - 2.5m$

Step: $6.5m - 2.5m$

Step: Like terms: both have m

Step: Subtract: $6.5 - 2.5 = 4$

Step: Answer: $4m$

Answer: $4m$ | Color: 4

Problem 5: Simplify $1.8b + 4.2b$

Step: $1.8b + 4.2b$

Step: Like terms: both have b

Step: Add: $1.8 + 4.2 = 6$

Step: Answer: $6b$

Answer: $6b$ | Color: 5

Problem 6: Simplify $9.4p - 2.4p$

Step: $9.4p - 2.4p$

Step: Like terms: both have p

Step: Subtract: $9.4 - 2.4 = 7$

Step: Answer: $7p$

Answer: $7p$ | Color: 6

Problem 7: Simplify $5.5k - 2.5k$

Step: $5.5k - 2.5k$

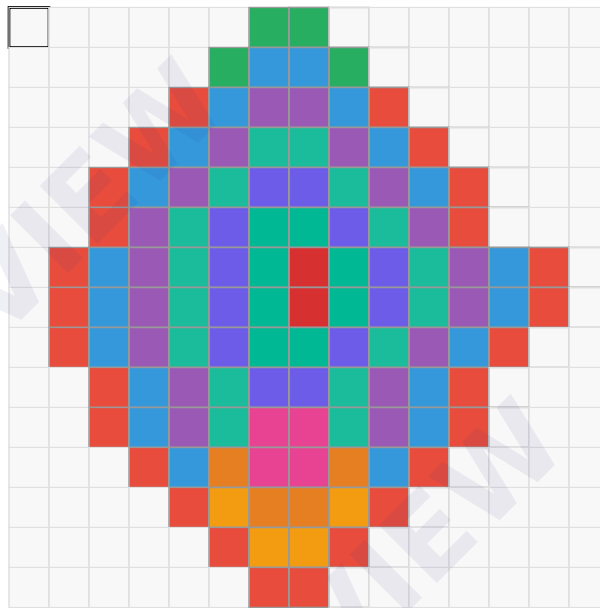
Step: Like terms: both have k

Colored Finished Pictures

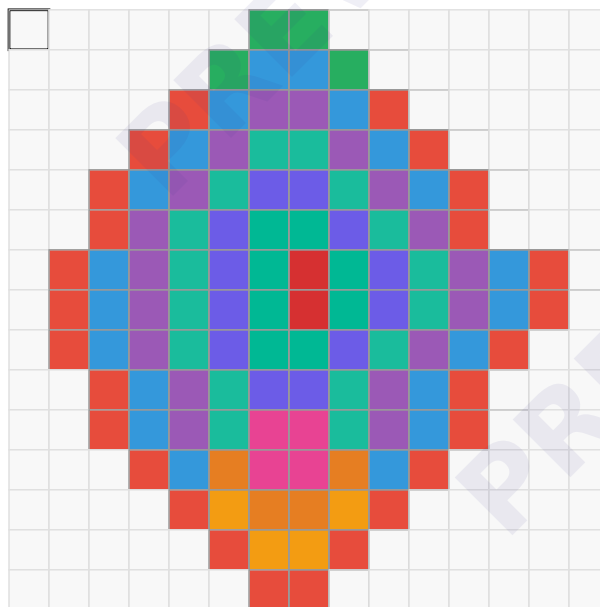
Reference for Teachers and Self-Checking

Picture 1: Apple (Back-to-School)

Basic Version - Colored



Advanced Version - Colored



Picture 2: Pumpkin (Halloween)

Basic Version - Colored



Advanced Version - Colored



Blank Color-by-Number Template

Use this template to create your own color-by-number pictures! Fill in the grid with numbers 1-12, write your problems below, and create a color key. This is perfect for creating custom review activities, homework assignments, or enrichment tasks tailored to your students' needs.

How to Use This Template:

1. Decide on your theme and draw the outline of your picture in the grid below.
2. Number each region of the picture with numbers 1 through 12.
3. Write 12 problems in the problem section that correspond to each number.
4. Create a color key mapping each answer to a specific color.
5. Make copies for your students and let them solve and color!

Problems:

1. _____ = _____
2. _____ = _____
3. _____ = _____
4. _____ = _____
5. _____ = _____
6. _____ = _____
7. _____ = _____
8. _____ = _____
9. _____ = _____
10. _____ = _____
11. _____ = _____
12. _____ = _____

Color Key:

1 = ____	2 = ____	3 = ____	4 = ____
5 = ____	6 = ____	7 = ____	8 = ____
9 = ____	10 = ____	11 = ____	12 = ____

WHAT'S INSIDE

COMPLETE 48-PAGE RESOURCE OVERVIEW

● 6 THEMED COLOR-BY-NUMBER PICTURES

Back-to-School • Combining Like Terms Halloween • Distributive Property Expansion
Thanksgiving • Factoring Linear Expressions Winter • Mixed Equivalent Expressions
Valentine's Day • Rewriting in Context Spring • Real-World Equivalent Expressions

● PRACTICE

12 worksheet pages: 2 versions for each theme
72 Basic problems + 72 Advanced problems
144 problems total across the full resource

● ANSWER KEYS

Detailed step-by-step solutions for all 144 problems
Basic + Advanced answer keys included
Color assignments are matched to each problem

● REFERENCE & SUPPORT

Teacher Notes + CCSS Alignment Chart
Rewriting Expressions Anchor Chart
Colored finished pictures for checking

● BONUS / EXTRA MATERIALS

Blank Color-by-Number Template (2-page spread)
Review Request page
Designed around CCSS 7.EE.A.1 & 7.EE.A.2

LEVELING & CONTENT

Basic versions use mostly straightforward expressions and simpler coefficients; Advanced versions increase complexity with decimal rational coefficients, multi-step reasoning, and contextual applications.

48 PAGES | 144 PROBLEMS | 6 THEMES | 2 LEVELS