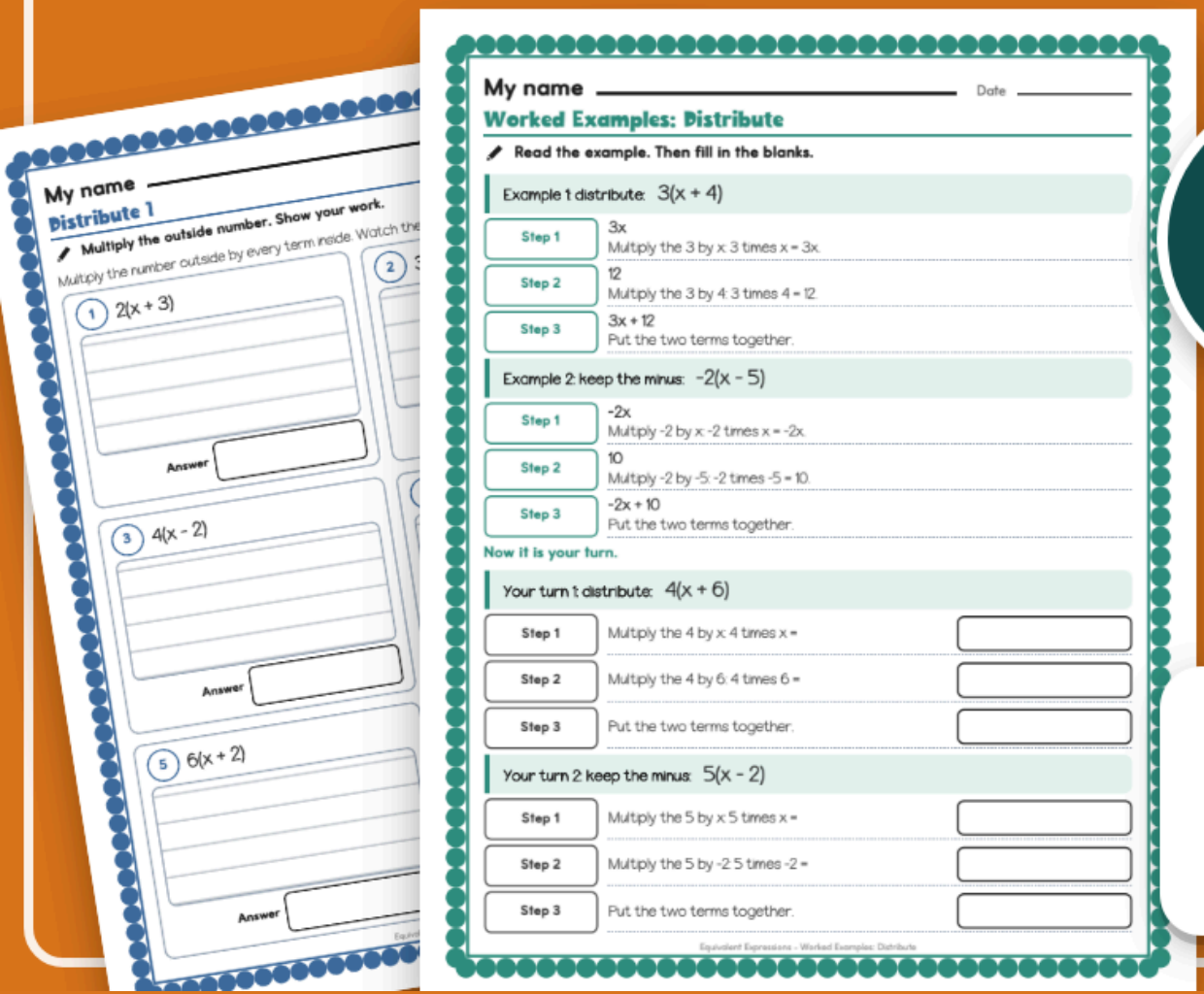
Bright Path Sped

EQUIVALENT EXPRESSIONS

WORKSHEETS + CUT AND PASTE SORTS



GRADES 6-8

3(x + 2)

▼

3x + 6

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One classroom license

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This is a fillable PDF

- Open it in a PDF reader (Adobe Acrobat Reader, Preview, or your browser), click into a line or a box, type, and Save As.
- The name line, every answer box, every ruled work box and every check box on the student pages are type-in fields, and so are the tracker, class grid, team note and family page. You can also print any page and write by hand.
- It works offline. No account, no subscription, no internet connection needed after you download it.

Print at 100 percent

Turn off fit to page and shrink to fit so the ruled lines stay 0.34 inch apart. Every student page is black and white inside a colored border, so it still reads when copied in black and white.

Student work

A filled-in tracker, class grid or team note carries a real student's name. Keep it in the data folder, and use a first name only on any page that leaves your hands.

Need help?

If a field will not behave or a page will not print the way you expect, use Ask a Question on the product page before leaving a review. Every question is read, and a fix to the file ships as a free update: re-download it any time from My Purchases.

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PREVIEW

How To Read a Page

The parts of a student page, then the page types in the order they come.

The parts of a page

- **The answer box.** A bordered box for the simplified answer. Click it to type, or print and write in it.
- **The ruled work box.** Lines 0.34 inch apart for showing work. One step to a line.
- **The check box.** Yes or not yet, or which move, or how sure: click or mark.
- **How the expressions are written.** A number outside parentheses multiplies every term inside. Exponents sit raised above the line, as in x squared.
- **The cut line.** Six pieces in a 3 by 2 grid, each 2.4 by 1.25 inches, edge to edge: one cut across and two down.

Page type	What it looks like	What the student does
Teach the move	2 reference + 3 worked pages	Distributive property with a blank for each rule, a look-for chart, worked examples with guided copies.
Name the move	2 pages, 12 problems	Write the number of the move that fits, then simplify.
Distribute and combine	4 pages, 24 problems	Two pages of each move, with numbers and with variables.
Mixed review and match	3 + 2 pages, 30 items	Two moves in one problem, then match each expression to its equal form.
Find the mistake	2 pages, 8 mistakes	An invented student's work has one mistake. Find it, fix it, then explain in one short answer page.
Quizzes, exits, sorts	12 + 6 items, 18 pieces	Two quizzes, two exit ticket sheets, three cut-and-paste sorts.

Untimed, unscored on the page

No student page has a timer or a score on it. The keys and the tracker are for you. The answer keys are on pages 35 to 39.

Checked by number

Every answer in the keys was reduced by program, then checked by putting numbers in for x in the problem and in the answer. Students can do the same to check their own work. Print at 100 percent.

Printing and the type-in fields

Every page prints clean in black and white. The name line, every answer box, every ruled box and every check box are type-in fields in any PDF reader: click one, type, then save. This is a fillable PDF, not a slideshow or a word-processor file.

Room to work

Work boxes hold three lines of steps. If a student needs more room, hand over one page a day, or let students work on scrap paper and copy the answer into the box.

PREVIEW

Divider Tabs

Print at 100 percent on card stock. Print, cut, and laminate the six tabs, then tape each one to a divider. The tab names match the binder cover.

Start Here pages 3 to 6	**Rules and Examples** pages 7 to 11	**Practice** pages 12 to 17
Mixed and Match pages 18 to 22	**Mistakes, Quizzes and Sorts** pages 23 to 34	**Keys and Records** pages 35 to 46

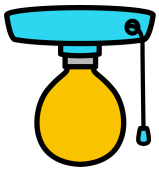
PREVIEW

Put the tabs together

- Cut along the dashed lines. Each tab is 2.4 by 3.2 inches.
- Laminate the tabs, or cover each with clear tape so it lasts all year.
- Tape each tab to the top of a divider, in the order of the binder cover.
- Slide the dividers into the binder in order, and keep the blank tracker and class grid in the back.

Preview - Bright Path Sped

My name _____ Date _____



The Distributive Property

Read each rule. Try the blank.

a, b and c stand for numbers. The x is the same letter everywhere in a problem. Keep this page next to you.

1. Distribute

Multiply the outside number by each term inside.

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

Try it: $3(x + 4) =$ ☐

2. Keep the signs

A minus inside stays a minus after you multiply.

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

Try it: $2(x - 5) =$ ☐

3. A minus outside

A minus in front flips the sign of every term inside.

$$-(b + c) = -b - c$$

Try it: $-(x + 4) =$ ☐

4. Combine like terms

Same letter, same exponent: add or subtract the numbers in front.

$$bx + cx = (b + c)x$$

Try it: $4x + 3x =$ ☐

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

Worked Examples: Combine

Read the example. Then fill in the blanks.

Example 1: combine the x terms: $4x + 3x + 2$

Step 1
$7x$
Add the x terms: $4x + 3x = 7x$.

Step 2
2
The 2 has no like term, so it stays.

Step 3
$7x + 2$
Put the x term and the number together.

Example 2: signs and numbers: $7 - 2x + 5x - 3$

Step 1
$3x$
Add the x terms: $-2x + 5x = 3x$.

Step 2
4
Add the numbers: $7 - 3 = 4$.

Step 3
$3x + 4$
Put the x term and the number together.

Now it is your turn.

Your turn 1: combine: $6x + 5x + 1$

Step 1 Add the x terms: $6x + 5x =$ _____

Step 2 The 1 has no like term, so it stays. _____

Step 3 Put them together. _____

Your turn 2: signs and numbers: $9 - 4x + 2x - 6$

Step 1 Add the x terms: $-4x + 2x =$ _____

Step 2 Add the numbers: $9 - 6 =$ _____

Step 3 Put them together. _____

PREVIEW

Preview - Bright Ezee Shop

My name _____ Date _____

Name the Move 1

Name the move. Then simplify.

1. Distribute 2. Combine like terms 3. Distribute, then combine

Write the number of the move. Then simplify.

1. $2(x + 5)$

Move ☐ Answer ☐

2. $4x + 3x$

Move ☐ Answer ☐

3. $3(x + 1) + 2x$

Move ☐ Answer ☐

4. $-(x - 4)$

Move ☐ Answer ☐

5. $x + 2 + 5x - 1$

Move ☐ Answer ☐

6. $6(x - 2) + x - 1$

Move ☐ Answer ☐

PREVIEW

Preview - Bright Path Shed

My name _____ Date _____

Distribute 2

Multiply the outside number. Show your work.

Multiply the number outside by every term inside. Watch the signs.

1. $-2(x + 4)$

Answer

2. $-3(x - 2)$

Answer

3. $4(2x + 1)$

Answer

4. $3(2x - 5)$

Answer

5. $5(3x + 2)$

Answer

6. $-4(x - 1)$

Answer

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

Combine Like Terms 2

Put the like terms together. Show your work.

Like terms have the same letter and the same exponent. Add or subtract their numbers in front.

1. $2x + 3 + 5x + 6$

Answer

2. $10 - 3x - 4 + x$

Answer

3. $3x^2 + x^2 + 4$

Answer

4. $6x - 2x + 1 - 9$

Answer

5. $-x + 7 + 3x - 2$

Answer

6. $5 + 2x - 5x$

Answer

PREVIEW

Preview - Bright Path Shop

My name _____ Date _____

Mixed Review 3

Use more than one move. Check each step.

Use more than one move. Work one step at a time, then check.

1. $2(x + 5) - (x - 1)$

Answer

2. $3(x - 4) - (2x - 1)$

Answer

3. $-(x + 2) + 4(x + 1)$

Answer

4. $5 - (3x - 2)$

Answer

5. $2(2x - 3) + 3(x + 4)$

Answer

6. $4x - (x + 6)$

Answer

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

Match the Equivalent 2

Write the letter that matches each one.

Each expression on the left equals exactly one form on the right. Write its letter in the box. Two forms match nothing.

1	$4(x + 1)$		A $3x + 3$
2	$2x + 3 + 2x$		B $6x - 2$
3	$7 - (x - 2)$		C $x - 6$
4	$3(2x - 1) + 1$		D $-x + 9$
5	$8x - 5x + 3$		E $4x + 4$
6	$2(x - 3) - x$		F $4x + 3$
			G $x + 6$
			H $6x + 1$

PREVIEW

My name _____ Date _____

Short Answer

Write your answer in the box.

Explain in your own words. Use a number to check.

1. Is 3(x + 2) the same as 3x + 2? Try x = 1 in both. Write what you get, then say which one is right.

2. Write two different expressions that are equal to 4x + 8. Check each one with x = 2.

3. Write the first step you would take to simplify 5x + 2 + 3x - 1, and say why.

PREVIEW

My name _____ Date _____

Quiz 1

Simplify each one. Show your work.

Take your time. Show your work in the box.

1. $3(x + 4)$

Answer

2. $5x + 2x - 1$

Answer

3. $2(x - 5) + 3$

Answer

4. $x + 8 - 3x$

Answer

5. $4(2x + 3)$

Answer

6. $-3(x - 1) + x$

Answer

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

Exit Tickets 1

Simplify. Tell how sure you are.

Exit ticket 1 $2(x + 6)$

Answer

How sure am I? ☐ **sure** ☐ **kind of sure** ☐ **not sure**

Exit ticket 2 $3x + 5 - x$

Answer

How sure am I? ☐ **sure** ☐ **kind of sure** ☐ **not sure**

Exit ticket 3 $4(x - 3) + 2$

Answer

How sure am I? ☐ **sure** ☐ **kind of sure** ☐ **not sure**

PREVIEW

Preview - Bright Path Sped

My name _____ Date _____

Cut and Paste 2: Which Move?

Cut out the six pieces. Paste each one in the right box.

Look for parentheses (distribute first) and for like terms (combine first).

Distribute first	Combine like terms first

PREVIEW

Cut on the dashed lines: six pieces, one cut across and two cuts down.

$5(x + 1)$	$4x + 3x$	$2(x - 6)$
$x + 9 + x$	$-3(x + 2)$	$7 - 2x + 5$

Which move did you use first? Why?

My name _____ Date _____

Check My Own Work

Check your own work. Mark yes or not yet.

1	I multiply the outside number by every term inside the parentheses.	☐ yes	☐ not yet
2	I keep the minus sign with the term it belongs to.	☐ yes	☐ not yet
3	I combine only like terms: the same letter with the same exponent.	☐ yes	☐ not yet
4	I can tell plain numbers apart from the x terms.	☐ yes	☐ not yet
5	I check two expressions by trying x = 2 in both.	☐ yes	☐ not yet
6	I can say when two expressions are not equal.	☐ yes	☐ not yet
7	I write the x term before the number in my answer.	☐ yes	☐ not yet
8	I can explain my steps to a partner.	☐ yes	☐ not yet

The kind of problem I can do now is...

The kind I still need help with is...

PREVIEW

Answer Key: Mixed Review and Matching

Pages 18 to 20 give the simplest form. Pages 21 and 22 give the letter of the equal form. Accept any correct method.

Item	Problem	Answer
p18 #1	2(x + 3) + 4x	6x + 6
p18 #2	3(x + 1) + 2x + 5	5x + 8
p18 #3	4(x - 2) + x	5x - 8
p18 #4	2(x - 4) + 3x + 1	5x - 7
p18 #5	5(x + 2) - 3x	2x + 10
p18 #6	6 - 2(x - 1) + x	-x + 8
p19 #1	3(2x + 1) - 4x	2x + 3
p19 #2	2(3x - 1) + 5x - 4	11x - 6
p19 #3	-2(x + 3) + 5x	3x - 6

Item	Problem	Answer
p19 #4	4(x + 2) - 2(x + 1)	2x + 6
p19 #5	3(x - 2) - x + 2	2x - 4
p19 #6	x - 3(x - 2)	-2x + 6
p20 #1	2(x + 5) - (x - 1)	x + 11
p20 #2	3(x - 4) - (2x - 1)	x - 11
p20 #3	-(x + 2) + 4(x + 1)	3x + 2
p20 #4	5 - (3x - 2)	-3x + 7
p20 #5	2(2x - 3) + 3(x + 4)	7x + 6
p20 #6	4x - (x + 6)	3x - 6

Item	Problem	Answer
p21 #1	2(x + 4)	A
p21 #2	3x + x + 5	D
p21 #3	5(x - 2)	C
p21 #4	x + 3(x + 1)	B
p21 #5	6x - 2x + 9	G
p21 #6	-(x - 7)	E

Item	Problem	Answer
p22 #1	4(x + 1)	E
p22 #2	2x + 3 + 2x	F
p22 #3	7 - (x - 2)	D
p22 #4	3(2x - 1) + 1	B
p22 #5	8x - 5x + 3	A
p22 #6	2(x - 3) - x	C

If an answer is almost right

Look at the sign first, then the number outside the parentheses. A wrong sign or a number multiplied by only the first term are the most common slips. Ask the student to try a test number in both forms before you say which one is off.

PREVIEW

Answer Key: Mistakes and Sorts

The student in each Find the Mistake problem is invented. Line numbers count the first thing Sam wrote as line 1. Sort pieces are named by their row and column in the cutting grid, left to right and top to bottom.

Item	Problem	Mistake	What went wrong	Right answer
p23 #1	2(x + 3)	Line 2	Sam multiplied only the first term. The 2 goes to both terms: 2 times 3 = 6, so the answer is 2x + 6.	2x + 6
p23 #2	-2(x - 4)	Line 2	Sam lost a sign. Negative 2 times negative 4 is positive 8, so the answer is -2x + 8.	-2x + 8
p23 #3	3x + 4x	Line 3	Sam multiplied the x terms. Like terms are added and the letter stays the same: 3x + 4x = 7x.	7x
p23 #4	x + 6 + 2x - 4	Line 2	Sam added the 4 instead of subtracting it: 6 - 4 = 2, so the answer is 3x + 2.	3x + 2
p24 #1	4(x + 2) - x	Line 2	Sam did not multiply the 2 by 4. Four times 2 is 8, so the answer is 3x + 8.	3x + 8
p24 #2	x - 3(x - 2)	Line 2	Sam made -3 times -2 negative. A negative times a negative is positive: -3 times -2 = 6, so the answer is -2x + 6.	-2x + 6
p24 #3	2(3x - 1) + 4x	Line 3	Sam stopped too soon. 6x and 4x are like terms: 6x + 4x = 10x, so the answer is 10x - 2.	10x - 2
p24 #4	5(x - 1) + 3x	Line 2	Sam multiplied the 5 by the 1 wrong. Five times negative 1 is -5, so the answer is 8x - 5.	8x - 5

Cut and Paste 1: True or False page 31

Piece	Statement or expression	Box
r1 c1	2(x + 4) = 2x + 8	TRUE
r1 c2	3(x + 2) = 3x + 2	FALSE
r1 c3	3x + x + 2 = 4x + 2	TRUE
r2 c1	4(x - 1) = 4x + 1	FALSE
r2 c2	-(x - 3) = -x + 3	TRUE
r2 c3	5x - 2x = 3x + 2	FALSE

Cut and Paste 2: Which Move? page 32

Piece	Statement or expression	Box
r1 c1	5(x + 1)	Distribute first
r1 c2	4x + 3x	Combine like terms first
r1 c3	2(x - 6)	Distribute first
r2 c1	x + 9 + x	Combine like terms first
r2 c2	-3(x + 2)	Distribute first
r2 c3	7 - 2x + 5	Combine like terms first

Cut and Paste 3: Simplest Form page 33

Piece	Statement or expression	Box
r1 c1	2x + 3x - 1	5x - 1
r1 c2	2(x + 2) - x	x + 4
r1 c3	x + 2x + 6	3x + 6
r2 c1	x + 9 - 5	x + 4
r2 c2	4x + x - 1	5x - 1
r2 c3	3(x + 2)	3x + 6

Make Your Own (page 26): a sample

- 2(x + 3) = 2x + 6. Trying x = 2 gives 10 in both.
- A problem that needs both moves: distribute first, then combine the like terms.
- Two expressions that are not equal: the numbers differ at the test value.

PREVIEW

Team Note

Use this page between team meetings or when a student moves classes, to hand off what changed without writing a note from scratch. Everything below is observable, with a blank for the number or the wording your team already uses.

Student _____ Team member _____ Date _____

Page type	Covered since last note (Y/N)	Items right	Still blank
Name the move			
Distribute			
Combine like terms			
Mixed review			
Match the equivalent			
Find the mistake			
Quizzes and exit tickets			
Sorts			

What I saw (observable, not a conclusion)

- Named ___ of ___ moves correctly without a prompt.
- Simplified ___ of ___ distribute and combine problems (pages 14 to 17).
- Simplified ___ of ___ mixed problems (pages 18 to 20).
- Checked an answer by trying a number: yes / no / with a reminder.

Next step

- Next page or set: ___, because ___ (what you saw).
- What to try in another class or at home: ___.
- What to keep doing because it is working: ___.
- Anything for the team meeting to decide: ___ (this page records what happened, never a label or a plan).

Summary, in one or two sentences, for whoever reads this next

A filled-in line, for reference

"Named 4 of 6 moves on 10/8. Next step: use the look-for chart on page 8 and circle the like terms first." That is the detail this page is built for. It matches the filled example on page 44.

PREVIEW

Maya's Tracker (Invented Student)

Maya R. is invented; nothing on this page describes a real student. The blank tracker is on page 40.

Student	Teacher	Month
Maya R. (an invented student)	Mr. Okafor (invented)	October

Page	Page type and set	Items	Right	Date	Notes
7	The Distributive Property	4	3	10/6	Left one try-it blank empty
9	Worked Examples: Distribute	2	2	10/7	-
10	Worked Examples: Combine	2	-	-	-
11	Worked Examples: Both	2	-	-	-
12	Name the Move 1	6	4	10/8	Called a combine a distribute
13	Name the Move 2	6	-	-	-
14	Distribute 1	6	5	10/9	Missed the 2 on the last term
15	Distribute 2	6	6	10/10	-
16	Combine Like Terms 1	6	4	10/13	Subtracted the x terms
17	Combine Like Terms 2	6	5	10/14	Added the numbers in front
18	Mixed Review 1	6	6	10/15	-
19	Mixed Review 2	6	3	10/16	Did not distribute the minus sign
20	Mixed Review 3	6	-	-	-
21	Match the Equivalent 1	6	5	10/17	Matched one form to the wrong letter
22	Match the Equivalent 2	6	-	-	-
23	Find the Mistake 1	4	2	10/22	Fixed one of the two mistakes
24	Find the Mistake 2	4	-	-	-
27	Quiz 1	6	5	10/24	Dropped the minus on the last term
28	Quiz 2	6	-	-	-
29	Exit Tickets 1	3	3	10/27	-
30	Exit Tickets 2	3	-	-	-
31	Cut and Paste 1: True or False	6	-	-	-
32	Cut and Paste 2: Which Move?	6	-	-	-
33	Cut and Paste 3: Simplest Form	6	-	-	-

How to read it

Maya R. has done **13 of 24** scored pages and got **53 of 67** items right with no prompt. **4** pages were all right and **9** carry a note. Every number comes from the table.

What the table points to

The lowest page is Mixed Review 2 (3 of 6) and Find the Mistake 1 (2 of 4). That is where the next practice goes. The 11 pages left blank are not tried yet, never wrong.

PREVIEW