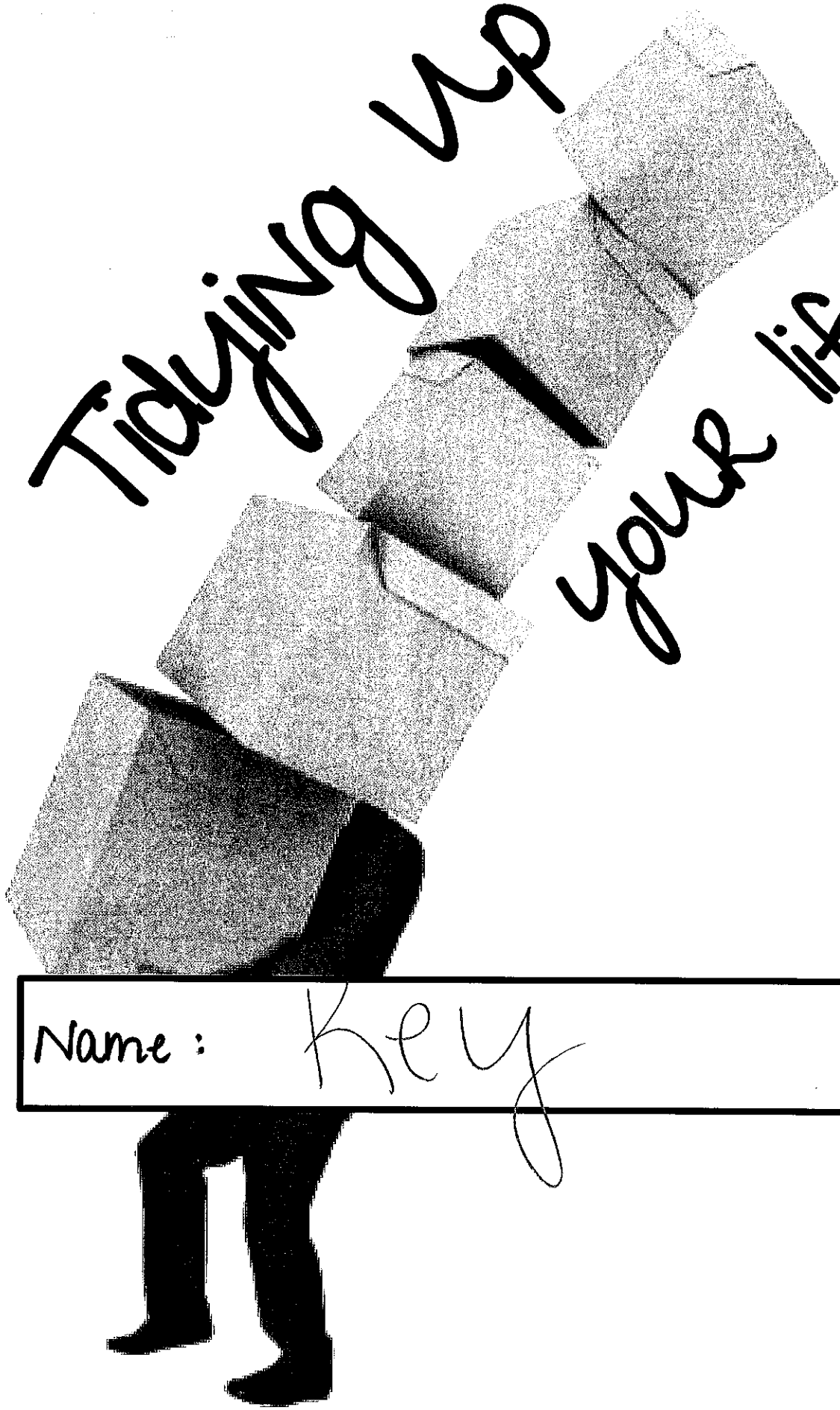
Tidying up your life!



Name : Key

1a Properties of Operation: Practice

1. Use the properties of operations to **create an equivalent expression.**
2. **Tell what property** you used to make the equivalent expression.

Expression	Equivalent Expression	Property
$5 + m$	$m + 5$	Commutative of +
$(8 + 3) + 5$	$(8+5) + 3$	Associative of +
$n + 0$	n	Identity of +
$6 \cdot (7 \cdot 2)$	$7 \cdot (6 \cdot 2)$	Associative of ×
ab	ba	Commutative of ×
$1x$	x	Identity of ×
$j + k$	$k + j$	Commutative of +
$y \cdot 2$	$2 \cdot y$	Commutative of ×

3. What property allows the value of a number to not change when multiplied by one?

Identity Prop. of Multiplication

4. In your own words, explain the Identity Property of Addition.

Teacher Signature: ____

1B Distributive Property

Definition: Multiplying a number by a sum or difference, is the same as multiplying by each number in the sum or difference and then adding or subtracting.

Examples: $5(2 + 6) = 10 + 30$ $4(x - 7) = 4x - 28$ $2x + 6 = 2(x + 3)$

Use the distributive property to write an equivalent expression.

$4(5 + y) = 20 + 4y$ $\frac{1}{2}(x - 10) = \frac{1}{2}x - 5$ $n(8 + 3) = 8n + 3n$

Use the distributive property to write an equivalent expression.

Steps

1. Find the GCF of the two numbers.
2. Write each number as a product of the GCF and another number.
3. Use the distributive property to rewrite the sum or difference.

Examples

$36 + 45$

$9(4 + 5)$

$15x - 25$

$5(3x - 5)$

$4y - 9y$

$y(4 - 9)$

Use the properties of operations to determine if the expressions are equivalent. What properties did you use?

$5(x + 7)$ and $35 + 5x$

$5x + 35$

yes, distributive & commutative

$8(4 - b)$ and $32 - b$

$32 - 8b$

no, distributive

1B Distributive Property: Practice

1) Use the distributive property to write an equivalent expression. **Choose 3 to do.**

$3(b + 9) =$ 3b+27

$15a - 10 =$ 5(3a-2).

$4x(3 + 8) =$ 12x+32x= 44x

$12(x^2 - 5) =$ $12x^2-60$

$7a + 7b =$ 7(a+b)

$12 - 2c^2 =$ $2(6-c^2)$

2) Use the properties of operations to determine if the two expressions are equivalent. Tell what properties make the expressions equivalent or explain why they are not equivalent. **Choose 2 to do.**

$6x - 10$ and $2(3x - 5)$ Equivalent: (Yes) or No

6x-10 Properties: distributive

$(4 - 10x)$ and $2 - 10x$ Equivalent: Yes or (No)

4-10x Properties: distributive

$y(8 + 12)$ and $12y + 8y$ Equivalent: (Yes) or No

8y+12y Properties: distributive * commutative

Teacher Signature: ____

1C Basic Combining Like Terms: Practice

Combine the like terms in the following expressions. Choose 5 to do.

1) $18z - 3z$

$15z$

2) $14k + 19k - 11$

$33k - 11$

3) $z + 15z$

$16z$

4) $19k - 14k - 11$

$5k - 11$

5) $11 + 5b + 9b - 2$

$9 + 14b$

6) $16y + 10 - 3y$

$13y + 10$

7) $6 + 19z - 11z - 4 + 8y$

$6 + 18z - 4 + 8y$

$2 + 18z + 8y$

8) $z^2 + z + 4z^3 + 4z^2$

$5z^2 + z + 4z^3$

9) $7b^2 - 3b^2 + 16 + 4b - 8$

$4b^2 + 4b + 8$

Check with the answer key and get a peer signature BEFORE moving on.

Peer Signature: _____

1D Complex Combining Like Terms

Notes

$8a + 4(3 - a)$

$10(3 + m) + 6b$

$8xy + 13p^2w^2 - 5xy + 6 + 4p^2w^2$

$r + r - jjj$

Practice

1) $4(8x + 5) - 12$

$32x + 20 - 12$

$32x + 8$

2) $2u - u + dddd$

$u + d^3$

3) $t + t + t - 4 + 7s - s$

$3t - 4 + 6s$

Check with the answer key then get a quick check from your teacher.

2E Evaluating Equivalent Expressions

Notes

Steps to determine if expressions are equivalent through **evaluating**:

1. Simplify each expression using _____ and _____ terms
2. Decide if equivalent or not!

★ $6(2x + 2y) = 6y + 6y + 12x$ Equivalent Not Equivalent

★ $a + b \bullet b \bullet b = b^2 + 1a$ Equivalent Not Equivalent

Practice:

Determine if each set of expressions are equivalent or not.

★ $7(3p + m) = 21p + m$ Equivalent Not Equivalent

$21p + 7m$

★ $1(23x + 2y) = 2y + 23x$ Equivalent Not Equivalent

$23x + 2y = 2y + 23x$

★ $c \bullet c + 4d = c^2 + 2d + d$ Equivalent Not Equivalent

$c^2 + 4d = c^2 + 3d$

Check with the answer key and get a peer signature BEFORE moving on.

Peer Signature: ____

2F Challenge

Use **substitution** to prove that the following sets of expressions are equivalent.

1. $3(a + 4b) = 2a + a + 12b$ a= 2 b= 1

$3(2+4\cdot1) = 2(2)+(2)+12(1)$

$6+12 = 4+2+12$

$18 = 18$ ✓

2. $1(4c - 8d) = 4c - 8d$ c= 2 d= 1

$1(4(2)-8(1)) = 4(2)-8(1)$

$1(8-8) = 8-8$

$8-8 = 8-8$

$0 = 0$ ✓

3. $4x + 28y + 3x = 7(1x + 4y)$ x= 2 y= 1

$4(2)+28(1)+3(2) = 7(1\cdot2+4\cdot1)$

$8+28+6 = 14+28$

$42 = 42$ ✓

4. $1(m - n) = m - n$ m= 2 n= 1

$1(2-1) = 2-1$

$2-1 = 2-1$

$1 = 1$ ✓

Check with the answer key and get a teacher signature BEFORE moving on.

Teacher Signature: _____

2G Writing Equivalent Expressions

Notes

REFRESH:

Use the distributive property to rewrite $3(x + 7y) =$ _____

1. **Are the following expressions equivalent? YES NO**

$$3(3x + y) = 9x + 9y$$

2. **Why or why not?**

3. **Re-write one side of the expression to make them equivalent.**

$3(3x + y) =$ _____ OR $9x + 9y =$ _____

Practice

Determine if each set of expressions are equivalent. *For each set of expressions that are not equivalent, rewrite one of the two expressions to make it equivalent with the other one.*

★ $2(2x + 5y) = 4x + 5y + 2y$ Equivalent Not Equivalent

$4x + 10y = 4x + 7y$

New expression: $2(2x+5y) = 4x+5y+5y$

★ $2c + d^2 = c + d \bullet d$ Equivalent Not Equivalent

$2c + d^2 = c + d^2$

New expression: $2c+d^2 = 1c+1c+d \cdot d$

Have a peer check your notes for completion then sign below.

Peer Signature: ___