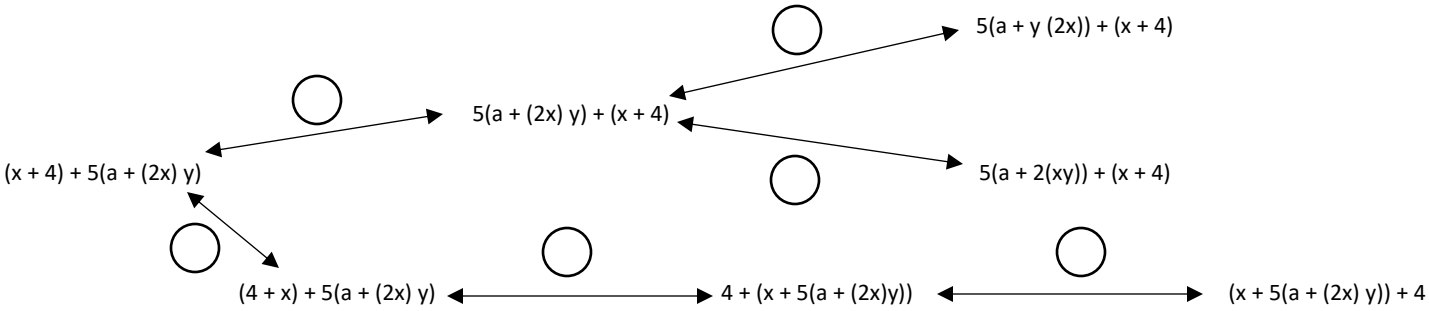
Name: Date: Period:

Examples using Properties of Real #s.

Example 1: Using the abbreviations for the properties of real numbers listed below, complete the flow diagram by writing the correct justification in the circle.

$C_{+:}$ for the commutative property of addition
$C_{x:}$ for the commutative property of multiplication
$A_{+:}$ for the associative property of addition
$A_{x:}$ for the associative property of multiplication



Example 2: Write the appropriate property used to justify that $(x + a)(x + b)$ is equivalent to $x^2 + ax + bx + ab$

$(x + a)(x + b) = (x + a)x + (x + a)b$ _____

$= x(x + a) + b(x + a)$ _____

$= x^2 + xa + bx + ba$ _____

$= x^2 + ax + bx + ab$ _____

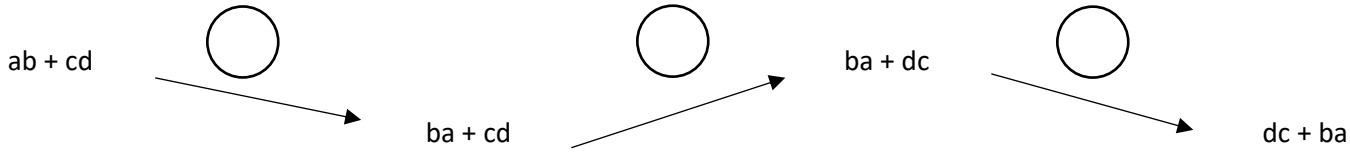
Example 3: Show the algebraic equivalence of (pq)r and (qr)p and write the property justification used for each step.

(pq)r = _____ _____

= _____ _____

Now you try. Complete these problems using the above examples as a guide.

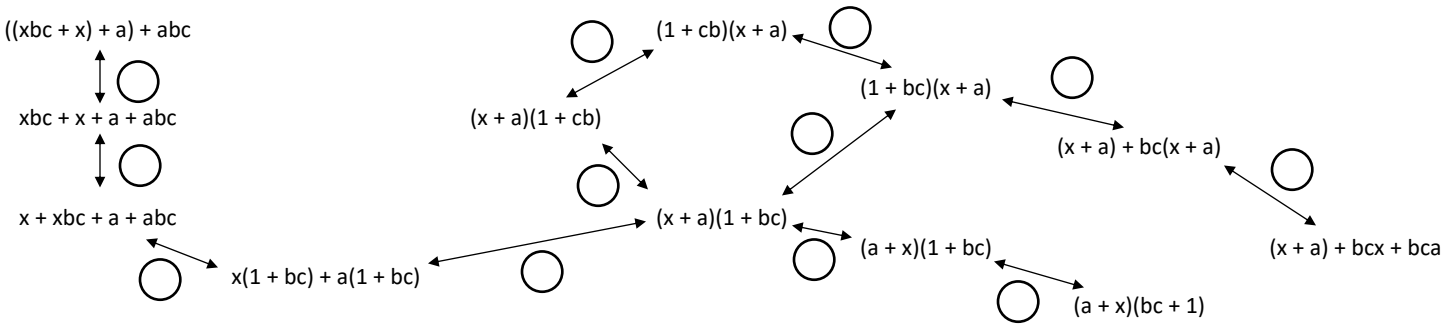
1. The following portion of a flow diagram shows that the expression ab + cd is equivalent to the expression dc + ba. Fill in each circle with the appropriate symbol: Either C_+ (for the "Commutative Property of Addition") or C_x (for the "Commutative Property of Multiplication").



2. Fill in the blanks of this proof showing that (w + 5)(w + 2) is equivalent $w^2 + 7w + 10$. Write either "Commutative Property," "Associative Property," or "Distributive Property" in each blank.

(w + 5)(w + 2)	=	(w + 5)w + (w + 5) x 2	_____
	=	w (w + 5) + (w + 5) x 2	_____
	=	w (w + 5) + 2(w + 5)	_____
	=	w^2 + w x 5 + 2(w + 5)	_____
	=	w^2 + 5w + 2(w + 5)	_____
	=	w^2 + 5w + 2w + 10	_____
	=	w^2 + (5w + 2w) + 10	_____
	=	w^2 + 7w + 10	

3. Fill in each circle of the following flow diagram with one of the letters to justify the step (Use C for Commutative Property (for either addition or multiplication), A for Associative Property (for either addition or multiplication), or D for Distributive Property.



Fill in each of the blanks of each proof with the proper Property Justification.

4. The following is a proof of the algebraic equivalency of $(2x)^3$ and $8x^3$.

$(2x)^3$	=	$2x \cdot 2x \cdot 2x$	**Expansion**
	=	$2(x \cdot 2)(x \cdot 2)x$	_____
	=	2(2x)(2x)x	_____
	=	$2 \cdot 2(x \cdot 2)x \cdot x$	_____
	=	$2 \cdot 2(2x)x \cdot x$	_____
	=	$(2 \cdot 2 \cdot 2)(x \cdot x \cdot x)$	_____
	=	$8x^3$	

5. Write a mathematical proof of the algebraic equivalency of $(ab)^2$ and a^2b^2 using properties.

$(ab)^2$	=	(ab)(ab)	**Expansion**
	=	a(ba)b	_____
	=	a(ab)b	_____
	=	(aa)(bb)	_____
	=	a^2b^2	_____