

The Distributive Property Pattern

TDP 1

Instructions: The Distributive Property pattern shows two equivalent forms of an expression involving a factor multiplied by a group. In these problems, if you are given the grouped form, then use the Distributive Property to re-write the expression without the group. But if you are given the distributed form, then apply the Distributive Property in *reverse* to “factor out” the common factor. See examples:

	grouped form	=	distributed form
1	$a(b + c)$	=	$ab + ac$
2	$2(x - y)$	=	$2x - 2y$
3	$5(a - b)$	=	_____
4	_____	=	$ax + ay$
5	$4(a + b - c)$	=	_____
6	$2(x - y + z)$	=	_____
7	_____	=	$xa + xb + xc$
8	_____	=	$yx^2 + yx$
9	$-2(a + b + c)$	=	_____
10	_____	=	$(-3x) + (-3y)$
11	$2(5a + 5b)$	=	_____
12	_____	=	$5x + 10y$

Applying the Distributive Property - Set 1

TDP 2

Instructions: Apply the Distributive Property to eliminate the group in each expression.

1 $4(2x + 10)$

$4(2x) + 4(10)$

$8x + 40$

2 $5(a + 2b)$

3 $-2(x + 1)$

4 $-3(x - 1)$

5 $a(a + b + c)$

6 $x(x^2 - x - 1)$

7 $3(2x + b + 6c)$

8 $-1(5x - 2y + 7z)$

9 $2x(y + 4)$

10 $x^2(x - 1)$

11 $-a(a - 2b)$

12 $3x(4x + 5y)$

Applying the Distributive Property - Set 2

TDP 3

Instructions: Apply the Distributive Property to eliminate the group in each expression.

1 $-5(5x^2 + x - 2)$
 $(-5)(5x^2) + (-5)(x) + (-5)(-2)$
 $-25x^2 - 5x + 10$

2 $y(3y + 5)$

3 $-3(x^2 - 5)$

4 $b(3a - 4b + c)$

5 $9(x + ax + 10)$

6 $4x(x^2 - y^2)$

7 $-x^2(x + y - 1)$

8 $6(2x - 5y + 4z)$

9 $xy(x + y)$

10 $5(-a^3 - 2a^2 + 1)$

11 $4y(2y - x + 10)$

12 $-2(-2x - 3y - 4z)$

Identifying Common Factors

TDP 4

Instructions: In order to apply the Distributive Property in reverse, you need to be able to identify factors that are common to each term in a polynomial. You can only factor something out if it's a factor of *every* term. For each polynomial, list any factors that all of its terms have in common. (If there are no common factors, write "none")

	common factors
1 $2x^2 + 6x + 4$	<u>2</u>
2 $3a^3 + 3a^2 + 3a$	<u>3a</u>
3 $bx + by - bz$	_____
4 $5a - 10b - 20c$	_____
5 $axy + bxc - yzx$	_____
6 $2xy + 2xa + 2xb$	_____
7 $x^6 + x^4 + x^2$	_____
8 $3a - 6b - 12c$	_____
9 $ay + by + bc$	_____
10 $-2x + (-2y) + (-2z)$	_____
11 $-4x^2 + 8x + 16$	_____
12 $6x^3 + 2x^2 - 4x$	_____

“Factoring Out” - Set 1

TDP 5

Instructions: Look at each polynomial to identify the common factor(s) in each term. Then, use the Distributive Property in reverse to factor them out.

1 $6x + 24$

$6(x) + 6(4)$

$6(x + 4)$

2 $5a^2 - 10a$

$5a(a) - 5a(2)$

$5a(a - 2)$

3 $2x^2 + 20$

4 $4a - 4b - 4c$

5 $3x^2 + 3y^2 + 3$

6 $9y - 99$

7 $ab + bc$

8 $2xy - 2xz$

9 $(-7)a^2 + (-7)b^2$

10 $5x + 40y + 25$

11 $-xy - 2xz$

12 $3x^3 - 6x^2 - 9x$

“Factoring Out” - Set 2

TDP 6

Instructions: Look at each polynomial to identify the common factor(s) in each term. Then, use the Distributive Property in reverse to factor them out.

1 $2x^2 + 2x + 6$

$2(x^2) + 2(x) + 2(3)$

$2(x^2 + x + 3)$

2 $x^3 + x^2 - x$

$x(x^2) + x(x) - x(1)$

$x(x^2 + x - 1)$

3 $5x^2 + 5x + 5$

4 $3a - 6b - 9c$

5 $ax + ay^2 + az$

6 $2ax + 2ay + 2az$

7 $4x + 16y$

8 $-5x - 5y$

9 $7a^2 + 7ab$

10 $-2x + (-4y) + (-6z)$

11 $cba + bxa + xyb$

12 $-x^3 - x^2 - x$