Name _____

4.2 Adding Polynomials

MATHPOWER™ *Nine*, pp. 150–152

Green x^2-tiles and x-tiles and red 1-tiles are positive. White algebra tiles are negative.

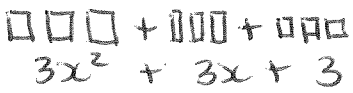
	Algebra Tile Representation	Algebraic Expression
	x^2 x x $+1$ $+1$	$x^2 + 2x + 2$
Add	x^2 x^2 x $+1$	$2x^2 + x + 1$
Result	x^2 x^2 x^2 x x x $+1$ $+1$ $+1$	$3x^2 + 3x + 3$

To add polynomials, collect like terms and add.

$(x^2 + 3x - 3) + (2x^2 - x + 1) = x^2 + 3x - 3 + 2x^2 - x + 1$
$= x^2 + 2x^2 + 3x - x - 3 + 1$
$= 3x^2 + 2x - 2$

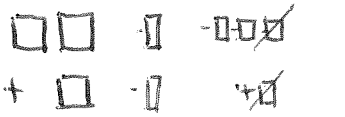
Model the expressions using algebra tiles or drawings on grid paper. Then, add.

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



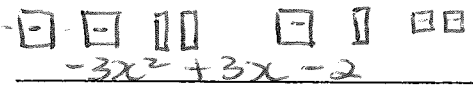
$3x^2 + 3x + 3$

2. $2x^2 - x - 3$
$+ x^2 - x + 1$



$3x^2 - 2x - 2$

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



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

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

$-x^2 - 4x + 1$

Simplify.

5. $(3y + 4z + 6) + (2y - z - 4)$

$5y + 3z + 2$

6. $2ab + 3bc + d + 2bc + 3ab - d$

$5ab + 5bc$

7. $x^2 - 2xy - y^2 + y^2 - 2xy + x^2$

$2x^2 - 4xy$

8. $s^2 + 4 + t + 3 + 2t^3 + 3s$

$2t^3 + s^2 + 3s + t + 7$

Add.

9. $4a + b$
$+ 2a + 2b - 3$

$6a + 3b - 3$

10. $4m^2 + 8mn + 2n^2$
$+ m^2 - 2mn + n^2$

$5m^2 + 6mn + 3n^2$

11. $3r^2 - 8r + 4$
$+ r^2 - 2r + 5$

$4r^2 - 10r + 9$

12. $c^2 + 2ac + 4$
$+ 3c^2 + 6 + a^2$

$4c^2 + a^2 + 2ac + 10$

Simplify.

13. $(4k^2 + 2k - 5) + (3 - k - 2k^2)$

$2k^2 + k - 2$

14. $(x^3 + 2y - 5) + (3x^3 - 4y + 7)$

$4x^3 - 2y + 2$

15. $(z^3x + 3z - 2) + (3z^3x - 4z + 6)$

$4z^3x - z + 4$