

Unit 4: Arithmetic to Algebra

What you need to know & be able to do	Things to remember	Examples	
1. Identifying Parts of Algebraic Expressions	<ul style="list-style-type: none"> Identify Parts of an expression Variable Constant Term Coefficient Degree 	a. Identify the: $32x^2 - 8x + 4y - 9$ Variables: x, y Constants: -9 Degree: 2 -quadratic	b. Identify the: $24x^2 - x - 7$ Terms: $24x^2, -x, -7$ Coefficients: $24, -1$ Degree: 2 -quadratic
2. Writing Expressions in Words	<ul style="list-style-type: none"> Look for key words that tell you what operation to do 	a. Create an expression for "four less than three times a number" <div style="border: 1px solid black; padding: 5px; display: inline-block;">$3x - 4$</div>	b. Write 2 verbal descriptions of $\frac{n}{5} \cdot a$ # divided by 5 \cdot the quotient of a # & 5.
3. Simplifying Polynomials	<ul style="list-style-type: none"> Distributive Property (multiplying!) Combining Like Terms (same variable and same exponent) 	a. Simplify: $5x^2 - 3x + 4 - 3 + 8x$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$5x^2 + 5x + 1$</div> c. Simplify: $-8x + 4(7x + 2) - 3(5x - 2)$ $-8x + 28x + 8 - 15x + 6$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$5x + 14$</div>	b. Simplify: $15x + 5(2x - 4) - 11$ $15x + 10x - 20 - 11$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$25x - 31$</div> d. Simplify: $\frac{24x - 18}{6} + 4(-2x + 5) - 7x$ $\frac{24x}{6} - \frac{18}{6} - 8x + 20 - 7x$ $4x - 3 - 8x + 20 - 7x$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$-11x + 17$</div>

<p>4. Classifying Polynomials</p>	<ul style="list-style-type: none"> • Degree (largest exponent) <ul style="list-style-type: none"> 0 = constant 1 = linear 2 = quadratic 3 = cubic • # of terms <ul style="list-style-type: none"> 1 = monomial 2 = binomial 3 = trinomial 4+ = polynomial 	<p>a. Classify the following:</p> <p>$7x^3$</p> <p>Cubic monomial</p> <p>c. Classify the following:</p> <p>$5x + 9$</p> <p>Linear binomial</p>	<p>b. Classify the following:</p> <p>$4x^2 + 7x + 6$</p> <p>Quadratic trinomial</p> <p>d. Classify the following:</p> <p>6 Constant monomial</p>
<p>4. Adding Polynomials</p>	<ul style="list-style-type: none"> • Check to see if there is anything to distribute • Drop parenthesis • Combine like terms 	<p>a. ✓</p> <p>$(4m^2 + 5) + (m^2 - m + 6)$</p> <p>$5m^2 - m + 11$</p> <p>c. ✓</p> <p>$(5x^3 - 6x + 10) + (x^3 + 10x - 9)$</p> <p>$6x^3 + 4x + 1$</p>	<p>b. ✓</p> <p>$(2a^3 + 3a^2 + 5a) + (a^3 + 4a + 3)$</p> <p>$3a^3 + 3a^2 + 9a + 3$</p> <p>d.</p> <p>$(2x^2 - 4) + (x^2 + 3x - 3)$</p> <p>$3x^2 + 3x - 7$</p>
<p>5. Subtracting Polynomials</p>	<ul style="list-style-type: none"> • Distribute the negative 1 • Then treat like addition problem 	<p>a.</p> <p>$(-5x^3 - 2x^2 + 7) - (4x^3 + 7x^2 - 3x + 2)$</p> <p>$-5x^3 - 2x^2 + 7$ $-4x^3 - 7x^2 + 3x - 2$</p> <p>$-9x^3 - 9x^2 + 3x + 5$</p> <p>c.</p> <p>$(2x^2 + 5x - 2) - (6x^2 - 3x - 1)$</p> <p>$2x^2 + 5x - 2$ $-6x^2 + 3x + 1$</p> <p>$-4x^2 + 8x - 1$</p>	<p>b.</p> <p>$(3n^2 + 13n^3 + 5n) - (7n + 4n^3)$</p> <p>$13n^3 + 3n^2 + 5n$ $-4n^3 - 7n$</p> <p>$9n^3 + 3n^2 - 2n$</p> <p>d.</p> <p>$(5x^4 - 2x^2) - (3x - 2x^2 - 4x^3 + 6x^4)$</p> <p>$5x^4 - 2x^2$ $-6x^4 + 4x^3 + 2x^2 - 3x$</p> <p>$-x^4 + 4x^3 - 3x$</p>

<p>6. Multiplying Polynomials</p>	<ul style="list-style-type: none"> Distribute each term in the first polynomial to every term in the second polynomial Combine like terms 	<p>a. ✓ $-3x(x^2 - 7x + 1)$ $-3x^3 + 21x^2 - 3x$</p> <p>c. ✓ $(x + 6)^2$ $(x+6)(x+6)$ $x^2 + 6x + 6x + 36$ $x^2 + 12x + 36$</p> <p>e. ✓ $(x - 1)(x + 4)(x + 3)$ $x^2 + 4x - 1x - 4$ $(x^2 + 3x - 4)(x + 3)$ $x^3 + 3x^2 + 3x^2 + 9x - 12$ $x^3 + 6x^2 + 9x - 12$</p>	<p>b. ✓ $(9x - 4)(x - 6)$ $9x^2 - 54x - 4x + 24$ $9x^2 - 58x + 24$</p> <p>d. ✓ $(x - 2)(x^2 + 3x - 5)$ $x^3 + 3x^2 - 5x - 2x^2 - 10x + 10$ $x^3 + x^2 - 11x + 10$</p>
<p>7. Evaluating Expressions</p>	<ul style="list-style-type: none"> Replace the variable with the value stated. Use parenthesis each time you substitute a value in for the variable! 	<p>a. Evaluate $-5x - 8y$ when $x = -3$ and $y = 7$ $-5(-3) - 8(7)$ -41</p>	<p>b. Evaluate $x^2 - 4x + 7$ when $x = -3$ $(-3)^2 - 4(-3) + 7$ 28</p>