**ALGEBRA**

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| The word “**algebra”** is derived from the Arabic word **al-jabr** which means *the reunion of the broken parts*. Algebra is a branch of mathematics that substitutes letters for numbers. Algebraic expressions often look like long lines of numbers and letters: |

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* This expression has 3 distinct parts. Each of these parts is called a \_\_\_\_\_\_\_ and they are separated by + or – signs.
* As you can see, there are two distinct parts to every term, the ‘number part’ and the ‘letter part’.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_ refers to the number (with its sign). It is always written to the left of the letters. Note that the term ‘c’ has no number. When a variable is written with no coefficient, the coefficient is always ‘1’. A ‘+c’ has a coefficient of ‘+1’.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_ refers to the letter(s) and their respective **exponent**. It is written to the right of the coefficient, usually in ***alphabetical*** order.

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| **MONOMIAL** | **BINOMIAL** | **TRINOMIAL** | **POLYNOMIAL** |
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| **TERM** | 4x | -3c2d4 | -6ba3 | 9 | -y | a |
| **COEFFICIENT** |  |  |  |  |  |  |
| **VARIABLE** |  |  |  |  |  |  |

Of the above terms, five are ‘variable’ terms and only one is a ‘**constant’** term. The term, \_\_\_, is called a constant term because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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| **YOU WILL ONLY ADD OR SUBTRACT LIKE TERMS** |
| **LIKE TERMS** | **UNLIKE TERMS** |
| * 2x, -121x, 5x, x, and -2x are like terms because they have the same variable x.
* $\frac{1}{2}a, \frac{4}{5}a and\frac{3a}{4}$ are also like terms since a is the common variable.
* $y^{2}, -3y^{2} and \frac{1}{2}y^{2}$ are like terms because $y^{2}$ is the common variable.
* 9xy2, 5y2x, -10xy2, xy2, -y2x are ALSO like terms because their variables are all \_\_\_\_\_\_\_\_ (when put in alphabetical order)
 | * 2x2 and 4x are ‘UNLIKE TERMS because the variables \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ are not the same.
* $\frac{1}{2}a and\frac{1}{2a}$ are also unlike terms.
* 9xy2, 5yx2, -10xy are unlike terms.
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**MATCH THE FOLLOWING**

* Using a line, connect the like terms (one from list A and one from list B).
* Remember, like terms have the exact same **variables** with the exact same **exponents**. Only the **coefficients** can be different.

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| **List A** | **List B** |
| **3x** | **5n2** |
| **6ab** | **9** |
| **-8n2** | **-4m3n** |
| **m3n** | **9mnp** |
| **-11p** | **-2yx** |
| **4** | **5x3** |
| **16mnp** | **P** |
| **-4x3** | **7a2b** |
| **-8a2b** | **7ab** |
| **3xy** | **-4x** |

**GROUPING ACTIVITY B**

* Circle all the monomials. Underline all the binomials. Draw a rectangle around the trinomials.

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**COLLECTING / ADDING LIKE TERMS**

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| **To simplify an expression by collection like terms, you:**1. Determine which terms are like
2. Rearrange \*remember the sign (+/-) stays with the term
3. Add the coefficients \*remember the sign (+/-) stays with the term
4. Keep the variable the same
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| **Example** **A** 1x + 3x - 5 + 7x - 4x + 2  = 1x + 3x + 7x - 4x -5 + 2 = 7x – 3 | **Example B**  1x2 + 3x+ 7x - 2x2 + 2 + 4  |

**Practice: Simplify the following expressions by collecting like terms**

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| 1)  | 2)  |
| 3)  | 4)  |
| 5)  | 6)  |
| 7)  | 8)  |
| ANSWERS: a) , b) , c) , d) , e), f) , g)  h)  |