**5.5 – Multiplying a Polynomial by a Monomial**

When we multiply something by say, 4, we are creating four sets of that item. For example, $4×3$ means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The same is true when we multiply a polynomial by a constant – we are creating multiple sets of that polynomial.

Ex. 1: $3(-2x^{2})$

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| Using algebra tiles | Symbolically (algebraically) |

What if we have a negative constant out front? When using algebra tiles, we ignore the negative at first, but then we have to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the tiles to their opposite sign.

Ex. 2 : $-2(-2y^{2}+y-2)$

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| Using algebra tiles | Symbolically (algebraically) |

What about multiplying by a monomial that isn’t just a constant? Multiplication can also be thought of as finding the area of a rectangle. So, $3×6$ can be interpreted as “find the area of a 3 by 6 rectangle”. We can use algebra tiles by placing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ along the side and the top to represent each dimension. Then, we fill in the rectangle with tiles.

Ex. 3: $\left(2c\right)\left(-3c\right)$

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| Using algebra tiles | Symbolically (algebraically) |

Ex. 4: $-2m(3m-2)$

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| Using algebra tiles | Symbolically (algebraically) |

Ex. 5: Multiply symbolically:

1. $-5y\left(10xy+4\right)$ (b) $(-3p+r+1)(-4r)$