Multiplying Polynomials by a Single Term

To multiply a polynomial of any size by a single term, you take the single term and multiply if by each term of the polynomial.

This is easier to express through an example.

$$4xy(x^2+3xy+2)$$
$$=(4xy)(x^2)+(4xy)(3xy)+(4xy)(2)$$
$$=4x^3y+12x^2y^2+8xy$$

Notice that we multiply the $4xy$ term by each of the terms of the polynomial individually.

Try these on your own.

1. $4k(k^2+2k+1)=$
2. $3(x^2+2x+1)=$
3. $(-x)(-3x^2-2x+y)=$
4. $(-2x)(x-2z+33)=$
5. $(-5z)(z^4-2z^3+2+z)=$
6. $xy(4k+2x^2-1-3xy)=$
7. $2x^2(3x+5y-1)=$

8. $7xyz(2xy + xz - 4) =$

9. $x^2 y(-xy + 3x - 2y^2) =$

10. $(2x^2 yz^3)(-3y + 4xz - z - 2yx) =$

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