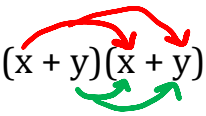
# Simplifying Products

| Quick Review | |
|---|---|
| When multiplying parenthetical quantities together you must apply the *distributive property*. Remember to *group like terms* in your final answer. | Example:<br>  <br>$(x + y)(x + y)$<br><br>$= x*x + x*y + y*x + y*y$<br>$= x^2 + 2xy + y^2$ |
| An acronym for remembering how to multiply two two-term parenthetical quantities together is *FOIL*<br>F = first terms of each quantity<br>O = outer terms of the two quantities<br>I = inner terms of the two quantities<br>L = last terms of each quantity<br><br>Once you find each new term, add them together and group like terms. | Example:<br>$(2x - 4)(5x + 7)$<br><br>F $= 2x * 5x = 10x^2$<br>O $= 2x * 7 \quad = 14x$<br>I $= -4 * 5x \quad = -20x$<br>L $= -4 * 7 \quad = -28$<br><br>$= 10x^2 + 14x - 20x - 28$<br>$= 10x^2 - 6x - 28$ |

**Problems:** Simplify each product.

1. $(m + n)(m + n)$

2. $(3x + 4)(x - 5)$

3. $(-6 - 4b)(b + 7)$

4. $(19y - 10)(8y - 24)$

5. $(2x + 3)(x^2 + 3)$

6. $(2g - h)(-p + 3q)$

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

8. $(5x + 9)(x^3 + 2x^2 + 5)$

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

10. $(x^2 + 4x - 6)(2x^2 + 8x + 1)$