

Simplify the following (remember  $x * x = x^2$ , etc)

1.  $5(x + 3)$

$5x + 15$

2.  $x(y - 8)$

$xy - 8x$

3.  $12(x + 2y)$

$12x + 24y$

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

$3xy^2 - 12xy + 15x$

5.  $8y(3x + z^2)$

$24xy + 8yz^2$

6.  $w(4 - x)$

$4w - xw$

7.  $7xy(w + 2z)$

$7xyw + 14xyz$

8.  $(2x)(3x)$

$6x^2$

9.  $2x(x - 2)$

$2x^2 - 4x$

10.  $3y(4y - 9)$

$12y^2 - 27y$

11.  $6y(x^2z - 3xz^2)$

$6x^2yz - 18xyz^2$

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

$x^2 - 5x + 3x - 6$

$x^2 - 2x - 6$

13.  $v(2v - 1) + 3(5 - v)$

$2v^2 - v + 15 - 3v$

$2v^2 - 4v + 15$

14.  $y(x - 6) + 2x(y + 1)$

$xy - 6y + 2xy + 2x$

$3xy - 6y + 2x$

15.  $x(x - 6) + 2(x - 6)$

$x^2 - 6x + 2x - 12$

$x^2 - 4x - 12$

Simplify the following using double distribution (A.K.A. F-O-I-L = First-Outside-Inside-Last)

16.  $(x + 2)(x - 6)$

$x^2 - 6x + 2x - 12$

$x^2 - 4x - 12$

17.  $(x + 5)(x + 3)$

$x^2 + 3x + 5x + 15$

$x^2 + 8x + 15$

18.  $(2x - 7)(x - 3)$

$2x^2 - 6x - 7x + 21$

$2x^2 - 13x + 21$

19.  $(3x - 1)(4x - 3)$

$12x^2 - 9x - 4x + 3$

$12x^2 - 13x + 3$

20.  $(3y + 21)(2y + 5)$

$6y^2 + 15y + 42y + 105$

$6y^2 + 57y + 105$

21.  $(m - 3)(m + 3)$

$m^2 + 3m - 3m - 9$

$m^2 - 9$

22.  $(x + 2)^2$

$(x + 2)(x + 2)$

$x^2 + 2x + 2x + 4$

$x^2 + 4x + 4$

23.  $(x + 5)^2$

$(x + 5)(x + 5)$

$x^2 + 5x + 5x + 25$

$x^2 + 10x + 25$

24.  $(3x - 4)^2$

$(3x - 4)(3x - 4)$

$9x^2 - 12x - 12x + 16$

$9x^2 - 24x + 16$