9.4 Multiplying Special Cases

The Square of a Binomial:

The expressions $(a+b)^2$ and $(a-b)^2$ are squares of binomials. To square a binomial, you can use FOIL or use the following rule:

$(a+b)^2$ = $a^2+2ab+b^2$

$(a-b)^2$ = $a^2-2ab+b^2$

**Note-> The square of a binomial is the Square of the first term plus twice the product of the two terms plus the Square of the last term.

Examples:

1. $(x+7)^2$ (a=x, b=7)

$x^2+2(x\cdot 7)+7^2$

$x^2+14x+49$

2. $(4k-3)^2$ (a=4K, b=3)

$(4K)^2-2(4K)(3)+3^2$

$16K^2-24K+9$

3. $(t+6)^2$ (a=t, b=6)

$t^2+2(t\cdot 6)+6^2$

$t^2+12t+36$

4. $(5y+1)^2$ (a=5y, b=1)

$(5y)^2+2(5y\cdot 1)+1^2$

$25y^2+10y+1$

9.4 Notes

5. $(7m-2p)^2$ $a=7m$ $b=2p$

$(7m)^2-2(7m\cdot 2p)+(2p)^2$

$49m^2-28mp+4p^2$

6. $(9c-8)^2$ $a=9c$ $b=8$

$(9c)^2-2(9c\cdot 8)+8^2$

$81c^2-144c+64$

The Difference of Squares:

$(a+b)(a-b) =$ a^2-b^2

The product of the sum and difference of the same two terms is the differences of their Squares.

Examples:

1. $(a+8)(a-8)$

a^2-8^2

a^2-64

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

x^2-4^2

x^2-16

3. $(d+11)(d-11)$

d^2-11^2

d^2-121

4. $(c^2+7)(c^2-7)$

$(c^2)^2-7^2$

c^4-49

5. $(9j+2)(9j-2)$

$(9j)^2-2^2$

$81j^2-4$

6. $(9v^3+w^4)(9v^3-w^4)$

$(9v^3)^2-(w^4)^2$

$81v^6-w^8$