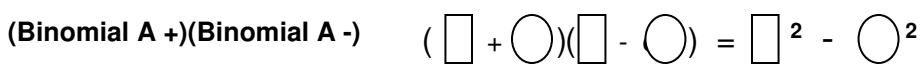
Intermediate Algebra
Skill-Builder # AE - 7
Writing a Polynomial Multiplication Problem as a Binomial Multiplication Problem

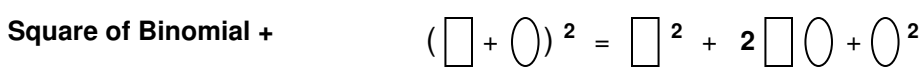
Strategy: **Use either shapes or letters to reduce the multiplication problem to one of the following forms and apply the corresponding formula:**

(Binomial A)(Binomial B)

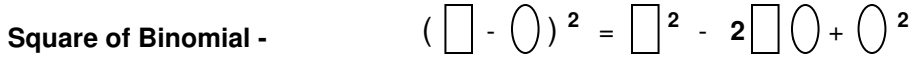
(Binomial A +)(Binomial A -)



Square of Binomial +



Square of Binomial -



Examples

1. $\left[(x+1)-y\right]\left[(x+1)+y\right]=\left[(x+1)-y\right]\left[(x+1)+y\right]=(x+1)^2-y^2$

2. $\left[(a+3)+b\right]\left[c+(d-1)\right]=\left[(a+3)+b\right]\left[c+(d-1)\right]=(a+3)c+(a+3)(d-1)+bc+b(d-1)$

3. $\left[n+(m-p)\right]^2=\left[n+(m-p)\right]^2=n^2+2n(m-p)+(m-p)^2$

4. $\left[(y+4)-(x-5)\right]^2=\left[(y+4)-(x-5)\right]^2=(y+4)^2-2(y+4)(x-5)+(x-5)^2$

One can also use letters:

1. $\left[\underbrace{(x+1)}_{a}-y\right]\left[\underbrace{(x+1)}_{a}+y\right]=(a-y)(a+y)=a^2-y^2=(x+1)^2-y^2$

2. $\left[\underbrace{(a+3)}_{x}+b\right]\left[c+\underbrace{(d-1)}_{y}\right]=(x+b)(c+y)=xc+xy+bc+by=(a+3)c+(a+3)y+bc+b(d-1)$

3. $\left[n+\underbrace{(m-p)}_{x}\right]^2=(n+x)^2=n^2+2nx+x^2=n^2+2n(m-p)+(m-p)^2$

4. $\left[\underbrace{(y+4)}_{a}-\underbrace{(x-5)}_{b}\right]^2=(a-b)^2=a^2-2ab+b^2=(y+4)^2-2(y+4)(x-5)+(x-5)^2$

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Use either shapes or letters to rewrite the given multiplication problem as a binomial multiplication problem.

1. $\left[a-(b+2)\right]^2$

2. $\left[(x+y)+4n\right]\left[(x+y)-4n\right]$

3. $\left[(n-1)+2m\right]\left[(n+1)-3m\right]$

4. $\left[(b-2)-(a-c)\right]^2$

5. $\left[x+(2y-1)\right]\left[(x+1)-5y\right]$

6. $\left[(p+q)-(r+s)\right]\left[(p+q)+(r+s)\right]$

7. $\left[4y+(x-1)\right]^2$

8. $\left[(2a-b)-(3c+4d)\right]^2$

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Answers

Using letters:

1. $(x-y)^2$

2. $(a+b)(a-b)$

3. $(a+b)(c-d)$

4. $(x-y)^2$

5. $(a+b)(c-d)$

6. $(a+b)(a-b)$

7. $(a+b)^2$

8. $(x-y)^2$

Prepared by: Dr. Teresa V. Sutcliffe, Fall 2009