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## 9 Spreadsheet Investigation Differences of Squares (Use with Lesson 9-5.)

There is a special pattern you can use to factor binomials of the form $a^{2}-b^{2}$. You can use a spreadsheet to discover this relationship.

Example Use a spreadsheet to investigate the values of the expressions $\left(a^{2}-b^{2}\right),(a-b)^{2},(a-b)(a+b)$, and $(a+b)^{2}$. What conjecture can you make about the expressions?

Step 1 You will use Columns A and B to enter various values that you choose for $a$ and $b$.

Step 2 Enter the formulas for $\left(a^{2}-b^{2}\right),(a-b)^{2},(a-b)(a+b)$, and $(a+b)^{2}$ in Columns C, D, E, and F. To enter an exponent, use the symbol ${ }^{\wedge}$ followed by the exponent. For example, the square of the value in cell A2 is entered as A2^2.


## Exercises

1. Enter various values of $a$ in $b$ in Columns A and B. Look for a pattern. What do you observe about the expressions?
2. Find the products of $(a-b)^{2},(a-b)(a+b)$, and $(a+b)^{2}$. Do the results verify your conjecture?

Use the pattern you observed to factor each binomial.
3. $m^{2}-n^{2}$
4. $x^{2}-4$
5. $y^{2}-16$
6. $q^{2}-121$
7. $r^{2}-169$
8. $b^{2}-1$
9. $4 x^{2}-1$
10. $16 t^{2}-s^{2}$
11. $25 c^{2}-81 d^{2}$

