NAME

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 $(a^2 - b^2)$, $(a - b)^2$, (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 $(a^2 b^2)$, $(a b)^2$, (a b)(a + b), and $(a + b)^2$ in Columns C, D, E, and F. To enter an exponent, use the symbol ^ followed by the exponent. For example, the square of the value in cell A2 is entered as A2^2.

	A	B	C	D	E	F
1	a	b	a^2 - b^2	(a - b)^2	(a - b)(a + b)	(a + b)^2
2			=A2^2-B2^2	=(A2-B2)^2	=(A2-B2)*(A2+B2)	=(A2+B2)^2
3			=A3^2-B3^2	=(A3-B3)^2	=(A3-B3)*(A3+B3)	=(A3+B3)^2
4			=A4/2-B4/2	=(A4-B4)^2	=(A4-B4)*(A4+B4)	=(A4+B4)^2
5				NG (V	<i>1</i> 2 8 8 8	

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. $4x^2 - 1$	10. $16t^2 - s^2$	11. $25c^2 - 81d^2$