**8-4 Study Guide and Intervention**

***Special Products***

**Squares of Sums and Differences** Some pairs of binomials have products that follow specific patterns.   
One such pattern is called the *square of a sum*. Another is called the *square of a difference*.

|  |  |
| --- | --- |
| **Square of a Sum** | = (*a* + *b*)(*a* + *b*) = + 2*ab* + |
| **Square of a Difference** | = (*a* – *b*)(*a* – *b*) = – 2*ab* + |

**Example 1: Find (3*a* + 4)(3*a* + 4).**

Use the square of a sum pattern, with *a* = 3*a* and *b* = 4.

(3*a* + 4)(3*a* + 4) = + 2(3*a*)(4) +

= 9*a*2 + 24*a* + 16

The product is 9 + 24*a* + 16.

**Example 2: Find (2*z* – 9)(2*z* – 9).**

Use the square of a difference pattern with  
*a* = 2*z* and *b* = 9.

(2*z* – 9)(2*z* – 9) = – 2(2*z*)(9) + (9)(9)

= 4 – 36*z* + 81

The product is 4 – 36*z* + 81.

**Exercises**

**Find each product.**

**1.**  **2.**  **3.**

**4.**  **5.**  **6.**

**7.** **8.** **9.**

**10.** **11.**  **12.**

**13.**  **14.**  **15.**

**16.**  **17.**  **18.**

**19.**  **20.**  **21.**

**8-4 Study Guide and Intervention** *(continued)*

***Special Products***

**Product of a Sum and a Difference** There is also a pattern for the product of a sum and a difference of the same two terms, (*a* + *b*)(*a* – *b*). The product is called the **difference of squares**.

|  |  |
| --- | --- |
| **Product of a Sum and a Difference** | (*a* + *b*)(*a* – *b*) = – |

**Example: Find (5*x* + 3*y*)(5*x* – 3*y*).**

(*a* + *b*)(*a* – *b*) = – Product of a Sum and a Difference

(5*x* + 3*y*)(5*x* – 3*y*) = – *a* = 5*x* and *b* = 3*y*

= 25 – 9 Simplify.

The product is 25 – 9.

**Exercises**

**Find each product.**

**1.** (*x* – 4)(*x* + 4) **2.** (*p* + 2)( *p* – 2) **3.** (4*x* – 5)(4*x* + 5)

**4.** (2*x* – 1)(2*x* + 1) **5.** (*h* + 7)(*h* – 7) **6.** (*m* – 5)(*m* + 5)

**7.** (2*d* – 3)(2*d* + 3) **8.** (3 – 5*q*)(3 + 5*q*) **9.** (*x* – *y*)(*x* + *y*)

**10.** ( *y* – 4*x*)( *y* + 4*x*) **11.** (8 + 4*x*)(8 – 4*x*) **12.** (3*a* – 2*b*)(3*a* + 2*b*)

**13.** (3*y* – 8)(3*y* + 8) **14.** (– 1)( + 1) **15.** ( – 5)( + 5)

**16.** ( – 2)( + 2) **17.** ( – )( + ) **18.**

**19.** (3*x* – 2)(3*x* + 2) **20.** (2*p* – 5*r*)(2*p* + 5*r*) **21.**