

21.3b Worksheet Factoring Special Cases 2: The Difference of Two Squares

Name \_\_\_\_\_ date \_\_\_\_\_ per \_\_\_\_

Multiply by using the Generic Rectangles. Write the answer as a simplified sum.

<p>1. <math>(x - 4)(x + 4) = x^2 - 4x + 4x - 16</math></p> <div style="display: flex; align-items: center;"> <div style="margin-right: 5px;"> <math>x</math> <math>+4</math> </div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;"><math>x</math></td> <td style="padding: 5px;"><math>-4</math></td> </tr> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> </div> <p>Sum: _____</p>	$x$	$-4$					<p>2. <math>(x + 13)(x - 13) =</math></p> <table border="1" style="border-collapse: collapse; margin: 10px auto; width: 80px; height: 80px;"> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> </table> <p>Sum: _____</p>					<p>3. <math>(x - 9)(x + 9) =</math></p> <table border="1" style="border-collapse: collapse; margin: 10px auto; width: 80px; height: 80px;"> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> </table> <p>Sum: _____</p>				
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<p>4. <math>(x + 0.5)(x - 0.5) =</math></p> <table border="1" style="border-collapse: collapse; margin: 10px auto; width: 80px; height: 80px;"> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> </table> <p>Sum: _____</p>					<p>5. <math>(2x - 5)(2x + 5) =</math></p> <table border="1" style="border-collapse: collapse; margin: 10px auto; width: 80px; height: 80px;"> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> </table> <p>Sum: _____</p>					<p>6. <math>(3x - 4)(3x + 4) =</math></p> <table border="1" style="border-collapse: collapse; margin: 10px auto; width: 80px; height: 80px;"> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> <tr> <td style="width: 40px; height: 40px;"></td> <td style="width: 40px; height: 40px;"></td> </tr> </table> <p>Sum: _____</p>						

Now, multiply each pair of binomials **without** using Generic Rectangles.

Use this formula:  $(a - b)(a + b) = a^2 - b^2$

For example:  $(x - 7)(x + 7) = x^2 - 14x + 14x - 49 = x^2 - 49$

7.  $(x - 6)(x + 6)$

8.  $(x + 8)(x - 8)$

9.  $(2x - 3)(2x + 3)$

10.  $(5x - y)(5x + y)$

**(Turn over for the rest of the assignment)**

Factor by using the Generic Rectangles. Write the answer as a sum and a product.

<p>11. <math>x^2 - 9 =</math> <math>x^2 - 3x + 3x - 9</math></p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;"><math>x</math></td> <td style="border: 1px solid black; padding: 5px;"><math>x^2</math></td> <td style="border: 1px solid black; padding: 5px;"><math>-3x</math></td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;"><math>3x</math></td> <td style="border: 1px solid black; padding: 5px;"><math>-9</math></td> <td></td> </tr> </table> <p><math>x^2 - 9 = ( \quad )( \quad )</math></p>	$x$	$x^2$	$-3x$	$3x$	$-9$		<p>12. <math>x^2 - 169 =</math></p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="padding-right: 10px;"><math>x</math></td> <td style="border: 1px solid black; padding: 5px;"><math>x^2</math></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> </table> <p><math>x^2 - 169 =</math></p>	$x$	$x^2$					<p>13. <math>x^2 - 1 =</math></p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> </table>				
$x$	$x^2$	$-3x$																
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<p>14. <math>4x^2 - 9 =</math></p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> </table>					<p>15. <math>100x^2 - 121 =</math></p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> </table>					<p>16. <math>25x^2 - 81 =</math></p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;"></td> <td style="border: 1px solid black; padding: 5px;"></td> </tr> </table>								

Now, factor each Difference of Two Squares **without** Generic Rectangles.

For example:  $x^2 - 49 = (x)^2 - (7)^2 = (x - 7)(x + 7)$

17.  $x^2 - 100$

18.  $64 - x^2$

19.  $x^2 - 4$

20.  $144 - z^2$

21.  $81x^2 - 1$

22.  $16y^2 - 25$