

5.3 Trinomials

Solutions

Factor.													
1. $x^2 + 5x + 6$ $= (x + 2)(x + 3)$	<table border="1"> <tr><td colspan="2">Product 6</td></tr> <tr><td>1</td><td>6</td></tr> <tr><td>2</td><td>3</td></tr> <tr><td colspan="2">Sum 5</td></tr> </table>	Product 6		1	6	2	3	Sum 5					
Product 6													
1	6												
2	3												
Sum 5													
3. $x^2 - 5x + 6$ $= (x - 2)(x - 3)$	<table border="1"> <tr><td colspan="2">Product 6</td></tr> <tr><td>1</td><td>6</td></tr> <tr><td>2</td><td>3</td></tr> <tr><td>-2</td><td>-3</td></tr> <tr><td colspan="2">Sum -5</td></tr> </table>	Product 6		1	6	2	3	-2	-3	Sum -5			
Product 6													
1	6												
2	3												
-2	-3												
Sum -5													
5. $x^2 - 9x + 14$ $= (x - 2)(x - 7)$	<table border="1"> <tr><td colspan="2">Product 14</td></tr> <tr><td>1</td><td>14</td></tr> <tr><td>2</td><td>7</td></tr> <tr><td>-2</td><td>-7</td></tr> <tr><td colspan="2">Sum -9</td></tr> </table>	Product 14		1	14	2	7	-2	-7	Sum -9			
Product 14													
1	14												
2	7												
-2	-7												
Sum -9													
7. $x^2 - 9x + 18$ $= (x - 3)(x - 6)$	<table border="1"> <tr><td colspan="2">Product 18</td></tr> <tr><td>1</td><td>18</td></tr> <tr><td>2</td><td>9</td></tr> <tr><td>3</td><td>6</td></tr> <tr><td>-3</td><td>-6</td></tr> <tr><td colspan="2">Sum -9</td></tr> </table>	Product 18		1	18	2	9	3	6	-3	-6	Sum -9	
Product 18													
1	18												
2	9												
3	6												
-3	-6												
Sum -9													
9. $x^2 + 3x - 18$ $= (x - 3)(x + 6)$	<table border="1"> <tr><td colspan="2">Product -18</td></tr> <tr><td>-1</td><td>18</td></tr> <tr><td>-2</td><td>9</td></tr> <tr><td>-3</td><td>6</td></tr> <tr><td colspan="2">Sum 3</td></tr> </table>	Product -18		-1	18	-2	9	-3	6	Sum 3			
Product -18													
-1	18												
-2	9												
-3	6												
Sum 3													
11. $x^2 + 4x - 10$ Prime	<table border="1"> <tr><td colspan="2">Product -10</td></tr> <tr><td>-1</td><td>10</td></tr> <tr><td>-2</td><td>5</td></tr> <tr><td colspan="2">Sum 4</td></tr> </table>	Product -10		-1	10	-2	5	Sum 4					
Product -10													
-1	10												
-2	5												
Sum 4													
2. $x^2 + 8x + 15$													
4. $x^2 - 8x + 15$													
6. $x^2 - 7x + 12$													
8. $x^2 - 7x + 10$													
10. $x^2 + 2x - 15$													
12. $x^2 + 7x - 20$													
Answers: 1. $(x + 2)(x + 3)$; 3. $(x - 2)(x - 3)$; 5. $(x - 2)(x - 7)$; 7. $(x - 3)(x - 6)$; 9. $(x - 3)(x + 6)$; 11. prime													

Factor.

13. $x^2 + 5xy - 6y^2$

$= (x - y)(x + 6y)$

Product -6	
-1	6
Sum 5	

14. $x^2 + 7xy - 8y^2$

15. $x^2 - xy - 12y^2$

$= (x + 3y)(x - 4y)$

Product -12	
-1	12
-2	6
-3	4
3	-4
Sum -1	

16. $x^2 + 11xy - 12y^2$

Factor completely.

17. $3x^2 - 15x + 18$

$= 3(x^2 - 5x + 6)$

$= 3(x - 2)(x - 3)$

Product 6	
1	6
2	3
-2	-3
Sum -5	

18. $2x^2 + 4x - 30$

19. $x^2y + 6xy + 8y$

$= y(x^2 + 6x + 8)$

$= y(x + 2)(x + 4)$

Product 8	
1	8
2	4
Sum 6	

20. $4x^2y - 12xy - 40y$

Answers: 13. $(x - y)(x + 6y)$; 15. $(x + 3y)(x - 4y)$; 17. $3(x - 2)(x - 3)$; 19. $y(x + 2)(x + 4)$

Factor.

21. $3x^2 + 14x + 8$

Step 1:

Product 24	
1	24
2	12
2	12
Sum 14	

Step 2:

$$= 3x^2 + 2x + 12x + 8$$

Step 4:

$$= (x + 4)(3x + 2)$$

Step 3:

	$3x$	2
x	$3x^2$	$2x$
4	$12x$	8

22. $2x^2 + 7x + 6$

23. $2x^2 - 11x + 12$

Step 1:

Product 24	
1	24
2	12
3	8
-3	-8
Sum -11	

Step 2:

$$= 2x^2 - 3x - 8x + 12$$

Step 4:

$$= (x - 4)(2x - 3)$$

Step 3:

	$2x$	-3
x	$2x^2$	$-3x$
-4	$-8x$	12

24. $3x^2 - 17x + 10$

Answers: 21. $(x + 4)(3x + 2)$; 23. $(x - 4)(2x - 3)$

Factor.

25. $6x^2 - 11x - 10$

Step 1:

Product -60	
-1	60
-2	30
-3	20
-4	15
4	-15
Sum -11	

Step 2:

$= 6x^2 + 4x - 15x + 10$

Step 4:

$= (2x - 5)(3x + 2)$

	$3x$	2
$2x$	$6x^2$	$4x$
-5	$-15x$	10

Step 3:

26. $8x^2 - 11x + 3$

27. $4x^2 + 5x + 2$

Step 1:

Product 8	
1	8
2	4
Sum 5	

Step 2:

Prime

28. $6x^2 - 2x + 5$

Answers: 25. $(2x - 5)(3x + 2)$; 27. prime