Factoring Packet

Directions:

Practice
Practice
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Practice
Practice
Practice

Learn it!

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7-2 Practice Worksheet

Factoring Using the Distributive Property

Complete.

1. $8m - 6 = 2(4m - \_\_\_)$
2. $36a^2 + 24b^2 = 12(\_\_\_ + 2b^2)$
3. $12x^3y - 15xy = \_\_\_(4x^2 - 5)$
4. $5a^2b - 10a^2b^2 = \_\_\_(1 - 2b)$

Factor each expression.

5. $5a^2 - 15$
6. $7x + 49$
7. $2y + 6xy$
8. $8ax - 56a$
9. $36xy^2 - 48x^2y$
10. $75b^2c^3 + 60bc^6$
11. $64 - 40ab$
12. $81 - 36xy$
13. $t^2h + 3t$
14. $6p - 72$
15. $81r + 48rs$
16. $5c^3 - 2c^2$
17. $82e^3 - 122ef$
18. $10q - 25q^2$
19. $xy^2 + xy$
20. $15cd + 30c^2d^2$
21. $a^2b^2 + a$
22. $6r^2s - 3rs^2$
23. $\ell^2 - 9\ell$
24. $4d^2 + 16$
25. $6z^4 - 18z^3$
26. $20p^2 - 16p^2q^2$
27. $6m^4 - 60$
28. $7a^3 + 14a^2$
29. $16wv^4 + 12w^3v^2$
30. $9c^4d^3 - 6c^2d^4$
31. $6y + 15y^2$
32. $30x^3y + 35x^2y^2$
33. $6e^3f - 11ef$
34. $20r^3s^2 + 25rs^3$
35. $34x^4y^3 - 17x^2y^5$
36. $35m^3n + 105m^2n^3$
37. $2d^2e^2 - 8d^6e^6$

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7-2 Practice Worksheet

Factoring Using the Distributive Property

Complete.

1. $8m - 6 = 2(4m - \underline{3})$
2. $36a^2 + 24b^2 = 12(\underline{3a^2} + 2b^2)$
3. $12x^3y - 15xy = \underline{3xy}(4x^2 - 5)$
4. $5a^2b - 10a^2b^2 = \underline{5a^2b}(1 - 2b)$

Factor each expression.

5. $5a^2 - 15$
   $5(a^2 - 3)$
6. $7x + 49$
   $7(x + 7)$
7. $2y + 6xy$
   $2y(1 + 3x)$
8. $8ax - 56a$
   $8a(x - 7)$
9. $36xy^2 - 48x^2y$
   $12xy(3y - 4x)$
10. $75b^2c^3 + 60bc^6$
    $15bc^3(5b + 4c^3)$
11. $64 - 40ab$
    $8(8 - 5ab)$
12. $81 - 36xy$
    $9(9 - 4xy)$
13. $t^2h + 3t$
    $t(th + 3)$
14. $6p - 72$
    $6(p - 12)$
15. $81r + 48rs$
    $3r(27 + 16s)$
16. $5c^3 - 2c^2$
    $c^2(5c - 2)$
17. $82e^3 - 122ef$
    $2e(41e^2 - 61f)$
18. $10q - 25q^2$
    $5q(2 - 5q)$
19. $xy^2 + xy$
    $xy(y + 1)$
20. $15cd + 30c^2d^2$
    $15cd(1 + 2cd)$
21. $a^2b^2 + a$
    $a(ab^2 + 1)$
22. $6r^2s - 3rs^2$
    $3rs(2r - s)$
23. $\ell^2 - 9\ell$
    $\ell(\ell - 9)$
24. $4d^2 + 16$
    $4(d^2 + 4)$
25. $6z^4 - 18z^3$
    $6z^3(z - 3)$
26. $20p^2 - 16p^2q^2$
    $4p^2(5 - 4q^2)$
27. $6m^4 - 60$
    $6(m^4 - 10)$
28. $7a^3 + 14a^2$
    $7a^2(a + 2)$
29. $16wv^4 + 12w^3v^2$
    $4wv^2(4v^2 + 3w^2)$
30. $9c^4d^3 - 6c^2d^4$
    $3c^2d^3(3c^2 - 2d)$
31. $6y + 15y^2$
    $3y(2 + 5y)$
32. $30x^3y + 35x^2y^2$
    $5x^2y(6x + 7y)$
33. $6e^3f - 11ef$
    $ef(6e^2 - 11)$
34. $20r^3s^2 + 25rs^3$
    $5rs^2(4r^2 + 5s)$
35. $34x^4y^3 - 17x^2y^5$
    $17x^2y^3(2x^2 - y^2)$
36. $35m^3n + 105m^2n^3$
    $35m^2n(m + 3n^2)$
37. $2d^2e^2 - 8d^6e^6$
    $2d^2e^2(1 - 4d^4e^4)$

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7-3 Practice Worksheet

Factoring by Grouping

Complete. In each exercise, the blank represents the same expression.

1. $(6ab + 4a) + (3b + 2) = 2a(\_\_\_\_\_) + (\_\_\_\_\_)$

2. $(2x^2 - 8xz) + (2xy - 8yz) = 2x(\_\_\_\_\_) + 2y(\_\_\_\_\_)$

Factor each polynomial. Check by using FOIL.

3. $6mn - 9m - 4n + 6$

4. $2x^2y + 6xy - x - 3$

5. $6xy^2 - 3xy + 8y - 4$

6. $8x^2 + 2xy + 12x + 3y$

7. $2e^2f - 12ef + 3e - 18$

8. $6cd^2 - 8cd - 9d + 12$

9. $4r^2s - 8rs - 3r + 6$

10. $4k + 12 + k^2 + 3k$

11. $2uv - u^2v - 6 + 3u$

12. $xz + xw + yz + yw$

13. $2ac + ad + 6bc + 3bd$

14. $2c^2d + 9c + 6cd + 3c^2$

15. $z^3 - 6 + 2z - 3z^2$

16. $p^2q + pq - 1 - p$

17. $r^3s^2 - 2r^2s + 2rs - 4$

18. $ac + bd + bc + ad$

19. $m^3 - 5n + 5m - m^2n$

20. $x^3 + xy^2 - x^2y - y^3$

21. $6x^3 + 9x - 4x^2 - 6$

22. $a^3 + b^2 + a^2b + ab$

23. $c^2d^2 + xy + d^2x + c^2y$

24. $3j - 5j^2 - 6k + 10jk$

25. $3v^2 - 9v - wv + 3w$

26. $2xz - 6xy + 2yz - 6y^2$

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7-3 Practice Worksheet

Factoring by Grouping

Complete. In each exercise, the blank represents the same expression.

1. $(6ab + 4a) + (3b + 2) = 2a(\underline{\mathbf{3b + 2}}) + (\underline{\mathbf{3b + 2}})$

2. $(2x^2 - 8xz) + (2xy - 8yz) = 2x(\underline{\mathbf{x - 4z}}) + 2y(\underline{\mathbf{x - 4z}})$

Factor each polynomial. Check by using FOIL.

3. $6mn - 9m - 4n + 6$
   $(3m - 2)(2n - 3)$

4. $2x^2y + 6xy - x - 3$
   $(2xy - 1)(x + 3)$

5. $6xy^2 - 3xy + 8y - 4$
   $(3xy + 4)(2y - 1)$

6. $8x^2 + 2xy + 12x + 3y$
   $(2x + 3)(4x + y)$

7. $2e^2f - 12ef + 3e - 18$
   $(2ef + 3)(e - 6)$

8. $6cd^2 - 8cd - 9d + 12$
   $(2cd - 3)(3d - 4)$

9. $4r^2s - 8rs - 3r + 6$
   $(4rs - 3)(r - 2)$

10. $4k + 12 + k^2 + 3k$
    $(4 + k)(k + 3)$

11. $2uv - u^2v - 6 + 3u$
    $(uv - 3)(2 - u)$

12. $xz + xw + yz + yw$
    $(x + y)(z + w)$

13. $2ac + ad + 6bc + 3bd$
    $(a + 3b)(2c + d)$

14. $2c^2d + 9c + 6cd + 3c^2$
    $(c^2 + 3c)(2d + 3)$

15. $z^3 - 6 + 2z - 3z^2$
    $(z^2 + 2)(z - 3)$

16. $p^2q + pq - 1 - p$
    $(pq - 1)(p + 1)$

17. $r^3s^2 - 2r^2s + 2rs - 4$
    $(r^2s + 2)(rs - 2)$

18. $ac + bd + bc + ad$
    $(a + b)(c + d)$

19. $m^3 - 5n + 5m - m^2n$
    $(m^2 + 5)(m - n)$

20. $x^3 + xy^2 - x^2y - y^3$
    $(x - y)(x^2 + y^2)$

21. $6x^3 + 9x - 4x^2 - 6$
    $(3x - 2)(2x^2 + 3)$

22. $a^3 + b^2 + a^2b + ab$
    $(a + b)(a^2 + b)$

23. $c^2d^2 + xy + d^2x + c^2y$
    $(c^2 + x)(d^2 + y)$

24. $3j - 5j^2 - 6k + 10jk$
    $(j - 2k)(3 - 5j)$

25. $3v^2 - 9v - wv + 3w$
    $(3v - w)(v - 3)$

26. $2xz - 6xy + 2yz - 6y^2$
    $2(x + y)(z - 3y)$

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7-5 Practice Worksheet

Factoring Quadratic Trinomials

Factor each trinomial, if possible. If the trinomial cannot be factored using integers, write prime.

1. $t^2 + 8t + 12$

2. $w^2 + 24w + 144$

3. $m^2 - 7m + 12$

4. $n^2 + 3n - 18$

5. $v^2 - 18v + 80$

6. $p^2 - p - 56$

7. $b^2 + 8b - 22$

8. $x^2 + 7x - 44$

9. $y^2 - 5y - 84$

10. $32 + 18r + r^2$

11. $48 - 16e + e^2$

12. $s^2 + 17s + 52$

13. $102 - 23t + t^2$

14. $u^2 - 16u - 36$

15. $a^2b^2 + ab - 6$

16. $a^2b^2 + 5ab + 6$

17. $m^2 - mv - 56v^2$

18. $j^2 - 9jk - 10k^2$

19. $3h^2 + 2h - 16$

20. $6c^2 + 7c + 2$

21. $5p^2 - 22p + 8$

22. $8m^2 - 10m + 3$

23. $6z^2 - 5z - 4$

24. $15y^2 - y - 2$

25. $18x^2 + 9xz + z^2$

26. $20m^2 + 13mn + 2n^2$

27. $5\ell^2 - 26\ell x + 5x^2$

28. $15s^2 - 16st + 4t^2$

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7-5 Practice Worksheet

Factoring Quadratic Trinomials

Factor each trinomial, if possible. If the trinomial cannot be factored using integers, write prime.

1. $t^2 + 8t + 12$
   $(t + 2)(t + 6)$

2. $w^2 + 24w + 144$
   $(w + 12)(w + 12)$

3. $m^2 - 7m + 12$
   $(m - 4)(m - 3)$

4. $n^2 + 3n - 18$
   $(n + 6)(n - 3)$

5. $v^2 - 18v + 80$
   $(v - 8)(v - 10)$

6. $p^2 - p - 56$
   $(p - 8)(p + 7)$

7. $b^2 + 8b - 22$
   prime

8. $x^2 + 7x - 44$
   $(x + 11)(x - 4)$

9. $y^2 - 5y - 84$
   $(y - 12)(y + 7)$

10. $32 + 18r + r^2$
    $(16 + r)(2 + r)$

11. $48 - 16e + e^2$
    $(12 - e)(4 - e)$

12. $s^2 + 17s + 52$
    $(s + 4)(s + 13)$

13. $102 - 23t + t^2$
    $(6 - t)(17 - t)$

14. $u^2 - 16u - 36$
    $(u - 18)(u + 2)$

15. $a^2b^2 + ab - 6$
    $(ab + 3)(ab - 2)$

16. $a^2b^2 + 5ab + 6$
    $(ab + 3)(ab + 2)$

17. $m^2 - mv - 56v^2$
    $(m - 8v)(m + 7v)$

18. $j^2 - 9jk - 10k^2$
    $(j - 10k)(j + k)$

19. $3h^2 + 2h - 16$
    $(3h + 8)(h - 2)$

20. $6c^2 + 7c + 2$
    $(3c + 2)(2c + 1)$

21. $5p^2 - 22p + 8$
    $(5p - 2)(p - 4)$

22. $8m^2 - 10m + 3$
    prime

23. $6z^2 - 5z - 4$
    $(3z - 4)(2z + 1)$

24. $15y^2 - y - 2$
    $(5y - 2)(3y + 1)$

25. $18x^2 + 9xz + z^2$
    $(6x + z)(3x + z)$

26. $20m^2 + 13mn + 2n^2$
    $(4m + n)(5m + 2n)$

27. $5\ell^2 - 26\ell x + 5x^2$
    $(5\ell - x)(\ell - 5x)$

28. $15s^2 - 16st + 4t^2$
    $(5s - 2t)(3s - 2t)$

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7-6 Practice Worksheet

Factoring Differences of Squares

Factoring each polynomial, if possible. If the polynomial cannot be factored, write prime.

1. $a^2 - 4$
2. $y^2 - 1$
3. $x^2 - 64$
4. $1 - 49c^2$
5. $-16 + p^2$
6. $100r^2 - 9$
7. $36 - n^2$
8. $144 - 9f^2$
9. $-r^2s^2 + 81$
10. $5c^2 - 4d^2$
11. $4g^2 - 81h^2$
12. $36j^2 - 49m^2$
13. $8n^2 - 72p^2$
14. $20q^2 - 5r^2$
15. $s^4t^2 - 4t^2$
16. $36n^2 - 25$
17. $49 - 100k^2$
18. $32 - 8n^2$
19. $t^2 - 64u^2$
20. $121r^2 - 1$
21. $2yz^4 - 50yz^2$
22. $25v^5x - 9v^3x$
23. $4t^2 - s^4t^2$
24. $200y^2z^5 - 242y^4z^3$
25. $75x^2 - 147y^2$
26. $32h^2 - 18\ell^2$
27. $x^2 + y^2$
28. $x^2y^2 - z^2$
29. $-4c^2 + 25$
30. $j^2 - 33k^2$
31. $100b^4 - 169$
32. $24e^2 - 54f^4$
33. $32a^2 - 50b^2$
34. $-98r^2 + 8t^2$
35. $x^{12} - 4x^2$
36. $3\ell^2 - \frac{1}{3}$
37. $\frac{1}{4}u^2 - \frac{9}{4}$
38. $9t^6m^4 - 196t^8m^4$
39. $5v^2 - \frac{5}{4}$
40. $64v^7x^3 - 121vx^7$
41. $2z^2 - 196c^2$
42. $85p^2 - 17q^2$

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7-6 Practice Worksheet

Factoring Differences of Squares

Factoring each polynomial, if possible. If the polynomial cannot be factored, write prime.

1. $a^2 - 4$
$(a - 2)(a + 2)$

2. $y^2 - 1$
$(y - 1)(y + 1)$

3. $x^2 - 64$
$(x - 8)(x + 8)$

4. $1 - 49c^2$
$(1 - 7c)(1 + 7c)$

5. $-16 + p^2$
$(p - 4)(p + 4)$

6. $100r^2 - 9$
$(10r - 3)(10r + 3)$

7. $36 - n^2$
$(6 - n)(6 + n)$

8. $144 - 9f^2$
$(12 - 3f)(12 + 3f)$

9. $-r^2s^2 + 81$
$(9 - rs)(9 + rs)$

10. $5c^2 - 4d^2$
prime

11. $4g^2 - 81h^2$
$(2g - 9h)(2g + 9h)$

12. $36j^2 - 49m^2$
$(6j - 7m)(6j + 7m)$

13. $8n^2 - 72p^2$
$8(n - 3p)(n + 3p)$

14. $20q^2 - 5r^2$
$5(2q - r)(2q + r)$

15. $s^4t^2 - 4t^2$
$t^2(s^2 - 2)(s^2 + 2)$

16. $36n^2 - 25$
$(6n - 5)(6n + 5)$

17. $49 - 100k^2$
$(7 - 10k)(7 + 10k)$

18. $32 - 8n^2$
$8(2 - n)(2 + n)$

19. $t^2 - 64u^2$
$(t - 8u)(t + 8u)$

20. $121r^2 - 1$
$(11r - 1)(11r + 1)$

21. $2yz^4 - 50yz^2$
$2yz^2(z - 5)(z + 5)$

22. $25v^5x - 9v^3x$
$v^3x(5v - 3)(5v + 3)$

23. $4t^2 - s^4t^2$
$t^2(2 - s^2)(2 + s^2)$

24. $200y^2z^5 - 242y^4z^3$
$2y^2z^3(10z - 11y)(10z + 11y)$

25. $75x^2 - 147y^2$
$3(5x - 7y)(5x + 7y)$

26. $32h^2 - 18\ell^2$
$2(4h - 3\ell)(4y + 3\ell)$

27. $x^2 + y^2$
prime

28. $x^2y^2 - z^2$
$(xy - z)(xy + z)$

29. $-4c^2 + 25$
$(5 - 2c)(5 + 2c)$

30. $j^2 - 33k^2$
prime

31. $100b^4 - 169$
$(10b^2 - 13)(10b^2 + 13)$

32. $24e^2 - 54f^4$
$6(2e - 3f^2)(2e + 3f^2)$

33. $32a^2 - 50b^2$
$2(4a - 5b)(4a + 5b)$

34. $-98r^2 + 8t^2$
$2(2t - 7r)(2t + 7r)$

35. $x^{12} - 4x^2$
$x^2(x^5 - 2)(x^5 + 2)$

36. $3\ell^2 - \frac{1}{3}$
$3\left(\ell - \frac{1}{3}\right)\left(\ell + \frac{1}{3}\right)$

37. $\frac{1}{4}u^2 - \frac{9}{4}$
$\frac{1}{4}(u - 3)(u + 3)$

38. $9t^6m^4 - 196t^8m^4$
$t^6m^4(3 - 14t)(3 + 14t)$

39. $5v^2 - \frac{5}{4}$
$5\left(v - \frac{1}{2}\right)\left(v + \frac{1}{2}\right)$

40. $64v^7x^3 - 121vx^7$
$vx^3(8v^3 - 11x^2)(8v^3 + 11x^2)$

41. $2z^2 - 196c^2$
$2(z^2 - 98c^2)$

42. $85p^2 - 17q^2$
$17(5p^2 - q^2)$

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7-7 Practice Worksheet

Perfect Squares and Factoring

Determine whether each trinomial is a perfect square trinomial. If so, factor it.

1. $a^2 + 2a + 1$
2. $2c^2 - 4c + 9$
3. $4d^2 - 4d + 1$
4. $r^2 + 4r + 4$

Factor each trinomial, if possible. If the trinomial cannot be factored using integers, write prime.

5. $x^2 - 6x + 9$
6. $m^2 + 16m + 64$
7. $s^2 - 14s + 49$
8. $a^2 - 14 + 36$
9. $c^2 + 24c + 144$
10. $49z^2 - 56z + 16$
11. $25v^2 + 30v + 9$
12. $36s^2 - 24s + 4$
13. $4 - 28t + 49t^2$
14. $9p^2 + 12pq + 4q^2$
15. $16m^2 - 24mn + 9n^2$
16. $9r^2 + 48rt + 64t^2$
17. $28m^2 - 28mp + 7p^2$
18. $16s^2 + 56s + 49$
19. $16c^2 + 72cd + 81d^2$
20. $9k^2 - 30k - 25$
21. $\frac{1}{9}h^2 - 4hj + 36j^2$
22. $\frac{1}{4}x^2 - 5xz + 25z^2$
23. $4e^2 - 44ef + 121f^2$
24. $16a^4 - 40a^2b^3 + 25b^6$
25. $c^2d^2 - 2cde + e^2$
26. $\frac{1}{16}m^2 - \frac{1}{4}mn + \frac{1}{4}n^2$

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7-7 **Practice Worksheet**

Perfect Squares and Factoring

Determine whether each trinomial is a perfect square trinomial. If so, factor it.

1. $a^2 + 2a + 1$
   $(a + 1)^2$

2. $2c^2 - 4c + 9$
   no

3. $4d^2 - 4d + 1$
   $(2d - 1)^2$

4. $r^2 + 4r + 4$
   $(r + 2)^2$

Factor each trinomial, if possible. If the trinomial cannot be factored using integers, write prime.

5. $x^2 - 6x + 9$
   $(x - 3)^2$

6. $m^2 + 16m + 64$
   $(m + 8)^2$

7. $s^2 - 14s + 49$
   $(s - 7)^2$

8. $a^2 - 14 + 36$
   prime

9. $c^2 + 24c + 144$
   $(c + 12)^2$

10. $49z^2 - 56z + 16$
    $(7z - 4)^2$

11. $25v^2 + 30v + 9$
    $(5v + 3)^2$

12. $36s^2 - 24s + 4$
    $4(3s - 1)^2$

13. $4 - 28t + 49t^2$
    $(2 - 7t)^2$

14. $9p^2 + 12pq + 4q^2$
    $(3p + 2q)^2$

15. $16m^2 - 24mn + 9n^2$
    $(4m - 3n)^2$

16. $9r^2 + 48rt + 64t^2$
    $(3r + 8t)^2$

17. $28m^2 - 28mp + 7p^2$
    $7(2m - p)^2$

18. $16s^2 + 56s + 49$
    $(4s + 7)^2$

19. $16c^2 + 72cd + 81d^2$
    $(4c + 9d)^2$

20. $9k^2 - 30k - 25$
    prime

21. $\frac{1}{9}h^2 - 4hj + 36j^2$
    $\left(\frac{1}{3}h - 6j\right)^2$

22. $\frac{1}{4}x^2 - 5xz + 25z^2$
    $\left(\frac{1}{2}x - 5z\right)^2$

23. $4e^2 - 44ef + 121f^2$
    $(2e - 11f)^2$

24. $16a^4 - 40a^2b^3 + 25b^6$
    $(4a^2 - 5b^3)^2$

25. $c^2d^2 - 2cde + e^2$
    $(cd - e)^2$

26. $\frac{1}{16}m^2 - \frac{1}{4}mn + \frac{1}{4}n^2$
    $\frac{1}{4}\left(\frac{1}{2}m - n\right)^2$

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7-8 **Reteaching Worksheet**

Summary of Factoring

The following table can help you decide which method to use to factor polynomials.

	Number of Terms		
Check for:	**Two**	**Three**	**Four or More**
greatest common factor	✔	✔	✔
difference of squares	✔		✔
perfect square trinomial		✔	
trinomial that has two binomial factors		✔	
pairs of terms that have a common monomial factor			✔

If there is a GCF, factor that out first. Then, check the appropriate factoring methods in the order shown in the table. Using these methods, factor until each of the remaining factors is prime.

Factor. Check by using FOIL or the distributive property.

1. $5a^2b + 10acd - abcd - 2c^2d^2$

2. $3y^2 - 39$

3. $2x^4 + 5x^3 - 3x^2$

4. $3m^4 - m^2q - 2q^2$

5. $17b^2 - 34b + 17$

6. $-45a^4 - 135a^2d - 40d^2$

7. $y^3 - 8y + 2y^2 - 16$

8. $6r^3m^3 - 42r^2m^2 + 54rm - 378$

9. $8x^2 + 64x + 128$

10. $6d^2 + 48cd + 32c^2$

11. $7a^2 - 252$

12. $5x^2 - 5y^2 + mx^2 - my^2$

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7-8 Reteaching Worksheet

Summary of Factoring

The following table can help you decide which method to use to factor polynomials.

	Number of Terms		
Check for:	**Two**	**Three**	**Four or More**
greatest common factor	✓	✓	✓
difference of squares	✓		✓
perfect square trinomial		✓	
trinomial that has two binomial factors		✓	
pairs of terms that have a common monomial factor			✓

If there is a GCF, factor that out first. Then, check the appropriate factoring methods in the order shown in the table. Using these methods, factor until each of the remaining factors is prime.

Factor. Check by using FOIL or the distributive property.

1. $5a^2b + 10acd - abcd - 2c^2d^2$
   $(ab + 2cd)(5a - cd)$

2. $3y^2 - 39$
   $3(y^2 - 13)$

3. $2x^4 + 5x^3 - 3x^2$
   $x^2(x^2 + 5x - 3)$

4. $3m^4 - m^2q - 2q^2$
   $(3m^2 + 2q)(m^2 - q)$

5. $17b^2 - 34b + 17$
   $17(b - 1)^2$

6. $-45a^4 - 135a^2d - 40d^2$
   $-5(3a^2 + 8d)(3a^2 + d)$

7. $y^3 - 8y + 2y^2 - 16$
   $(y^2 - 8)(y + 2)$

8. $6r^3m^3 - 42r^2m^2 + 54rm - 378$
   $6(r^2m^2 + 9)(rm - 7)$

9. $8x^2 + 64x + 128$
   $8(x + 4)^2$

10. $6d^2 + 48cd + 32c^2$
    $2(3d^2 + 24cd + 16c^2)$

11. $7a^2 - 252$
    $7(a - 6)(a + 6)$

12. $5x^2 - 5y^2 + mx^2 - my^2$
    $(5 + m)(x + y)(x - y)$

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7-8 Practice Worksheet

Summary of Factoring

Factor. Check by using FOIL or the distributive property.

1. $6x^2 + x - 15$
2. $m^2 - 12m + 36$
3. $2p^2 - 18$
4. $12w^2 + 28w + 15$
5. $28z^2 - 65z + 28$
6. $42x^2 - xy - 30y^2$
7. $15y^2 - y - 2$
8. $a^2 - b^2$
9. $21x^3 - 35xy^2$
10. $6ax^2 + 11ax - 10a$
11. $45 + 2\ell^2$
12. $6c^2 - 10c - 4$
13. $18z^2 + 9z + 1$
14. $3s^2 - 12$
15. $15r^2 - 16rt + 4t^2$
16. $4y^3 + 12y^2 - y - 3$
17. $10k^2 + 105km + 270m^2$
18. $3w^3 - w^2 - 12w + 4$
19. $102 - 23c + c^2$
20. $6a^2 + 2a + 6am + 2m$
21. $u^4 - 7u^3 - 18u^2$
22. $2n^3 - 12n^2y + 18ny^2$
23. $p^4 + 5p^2 + 6$
24. $7j^2 - 112j$
25. $3ar - 6yr + 9am - 18ym$
26. $0.36x + 0.6x + 0.25$
27. $15 + 78v - 72v^2$
28. $36d^3e + de^3 - 12d^2e^2$

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7-8 Practice Worksheet

Summary of Factoring

Factor. Check by using FOIL or the distributive property.

1. $6x^2 + x - 15$
   $(3x + 5)(2x - 3)$

2. $m^2 - 12m + 36$
   $(m - 6)^2$

3. $2p^2 - 18$
   $2(p - 3)(p + 3)$

4. $12w^2 + 28w + 15$
   $(6w + 5)(2w + 3)$

5. $28z^2 - 65z + 28$
   $(7z - 4)(4z - 7)$

6. $42x^2 - xy - 30y^2$
   $(7x - 6y)(6x + 5y)$

7. $15y^2 - y - 2$
   $(5y - 2)(3y + 1)$

8. $a^2 - b^2$
   $(a - b)(a + b)$

9. $21x^3 - 35xy^2$
   $7x(3x^2 - 5y^2)$

10. $6ax^2 + 11ax - 10a$
    $a(3x - 2)(2x + 5)$

11. $45 + 2l^2$
    prime

12. $6c^2 - 10c - 4$
    $2(3c + 1)(c - 2)$

13. $18z^2 + 9z + 1$
    $(6z + 1)(3z + 1)$

14. $3s^2 - 12$
    $3(s - 2)(s + 2)$

15. $15r^2 - 16rt + 4t^2$
    $(5r - 2t)(3r - 2t)$

16. $4y^3 + 12y^2 - y - 3$
    $(2y - 1)(2y + 1)(y + 3)$

17. $10k^2 + 105km + 270m^2$
    $5(2k + 9m)(k + 6m)$

18. $3w^3 - w^2 - 12w + 4$
    $(w - 2)(w + 2)(3w - 1)$

19. $102 - 23c + c^2$
    $(6 - c)(17 - c)$

20. $6a^2 + 2a + 6am + 2m$
    $2(a + m)(3a + 1)$

21. $u^4 - 7u^3 - 18u^2$
    $u^2(u - 9)(u + 2)$

22. $2n^3 - 12n^2y + 18ny^2$
    $2n(n - 3y)^2$

23. $p^4 + 5p^2 + 6$
    $(p^2 + 3)(p^2 + 2)$

24. $7j^2 - 112j$
    $7j(j - 16)$

25. $3ar - 6yr + 9am - 18ym$
    $3(r + 3m)(a - 2y)$

26. $0.36x + 0.6x + 0.25$
    $(0.6x + 0.5)^2$

27. $15 + 78v - 72v^2$
    $3(5 - 4v)(1 + 6v)$

28. $36d^3e + de^3 - 12d^2e^2$
    $de(6d - e)^2$