Test on Factoring. Name KEY

Factor using the **distributive property**

1. $35a^2b^2 - 14ab$

$7AB(5AB - 2)$

1. $7AB(5AB-2)$

2. $6x^2 + 12x$

$6x(x+2)$

2. $6x(x+2)$

3. $20mn^2 + 8mn$

$4MN(5N+2)$

3. $4MN(5N+2)$

Factor by grouping.

4. $[3x^2 - 6x][+5x - 10]$

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

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

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

5. $[2e^2f - 12ef][+3e - 18]$

$2EF(E-6) + 3(E-6)$

$(2EF+3)(E-6)$

5. $(2EF+3)(E-6)$

6. $[x^2 + 7x][+3x + 21]$

$x(x+7) + 3(x+7)$

$(x+3)(x+7)$

6. $(x+3)(x+7)$

Factor by using the **"AC" method**

7. $t^2 - 13t + 30$

$(t-3)(t-10)$

AC: 30, B: -13; -3, -10

7. $(t-3)(t-10)$

8. $x^2 - x - 42$

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

AC: -42, B: -1; $-7, 6$

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

9. $f^2 - 10f + 21$

$(f-7)(f-3)$

AC: 21, B: -10; -7, -3

9. $(f-7)(f-3)$

10. $4t^2 + 7t + 3$

$(4t+3)(t+1)$

AC: 12, B: 7; 3, 4

10. $(4t+3)(t+1)$

11. $2g^2 - 3g - 20$

$(2g+5)(g-4)$

AC: -40, B: -3; -8, 5

11. $(2g+5)(g-4)$

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

$(3m+1)(m+2)$

AC: 6, B: 7; 6, 1

12. $(3m+1)(m+2)$

13. $3y^2 - 7y - 20$

$(3y+5)(y-4)$

AC: -60, B: -7; -12, $+5$

13. $(3y+5)(y-4)$

Factor using a **difference of squares**

14. $81t^2 - 361k^2$

$(9t - 19k)(9t + 19k)$

14. $(9t - 19k)(9t + 19k)$

15. $25a^2 - 256$

$(5A - 16)(5A + 16)$

15. $(5A - 16)(5A + 16)$

16. $49h^2 - 81$

$(7h - 9)(7h + 9)$

16. $(7h - 9)(7h + 9)$

17. $36m^2 - 121p^2$

$(6m - 11p)(6M + 11p)$

17. $(6M - 11p)(6M + 11p)$

Factor each using the **perfect square method.**

18. $4 - 52j + 169j^2$

$(2 - 13j)(2 - 13j)$

18. $(2 - 13j)(2 - 13j)$

19. $25w^2 + 120w + 144$

$(5w + 12)(5w + 12)$

19. $(5w + 12)(5w + 12)$

20. $64x^2 - 80x + 25$

$(8x - 5)(8x - 5)$

20. $(8x - 5)(8x - 5)$

21. $484p^2 - 220p + 25$

$(22p - 5)(22p - 5)$

21. $(22p - 5)(22p - 5)$

Factor using a **combination of methods.**

22. $x^4 - 81$

$(x^2-9)(x^2+9)$

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

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

23. $5p^3 - 35p^2 - 40p$

$5p$ p^2-7p-8 AC -8 B -7 $-8+1$

$5p(p-8)(p+1)$

23. $5p(p-8)(p+1)$

24. $24y^3 - 56y^2 - 80y$

$8y$ $3y^2-7y-10$ AC -30 B -7 $-10+3$

$8y(3y-10)(y+1)$

24. $8y(3y-10)(y+1)$

25. $3m^3 - 27m$

$3m$ m^2-9

$3m(m-3)(m+3)$

25. $3m(m-3)(m+3)$

26. $15c^2 - 65c + 50$

5 $3c^2-13c+10$ AC 30 B -13 -3 -10

$5(3c-10)(c-1)$

26. $5(3c-10)(c-1)$

27. $2r^3 - 13r^2 - 24r$

R $2R^2-13R-24$ AC -48 B -13 -16 3

$R(2R+3)(R-8)$

27. $R(2R+3)(R-8)$

Write the appropriate **solutions**.
The problems have already been factored.

28. $5k(k-7)(5k+2)=0$

$k=0 \quad k=7 \quad k=-2/5$

28. k = { $-2/5$, 0, 7 }

29. $7(m-3)(m+5)=0$

$M=3 \quad M=-5$

29. m = { -5, 3 }

30. $3f(2f-7)(3f+1)=0$

$f=0 \quad f=7/2 \quad f=-1/3$
$f=3\frac{1}{2}$

30. f = { $-1/3$, 0, $3\frac{1}{2}$ }

31. $(4x+9)(3x-8)=0$

$x=-9/4 \quad x=8/3$
$x=-2\frac{1}{4} \quad x=2\frac{2}{3}$

31. x = { $-2\frac{1}{4}$, $2\frac{2}{3}$ }

32. $5(r-4)(r+11)=0$

$R=4 \quad R=-11$

32. r = { -11, 4 }

Factor completely then write the appropriate **solutions**.

33. $2y^2+13y=24$

AC B
$2y^2+13y-24=0 \quad -48 \quad 13$
$(2y-3)(y+8)=0 \quad 16 \quad -3$

$y=3/2$ or $1\frac{1}{2} \quad y=-8$

33. y = { -8, $1\frac{1}{2}$ }

34. $6p^2+5=-17p$

AC B
$6p^2+17p+5=0 \quad 30 \quad 17$
$(3p+1)(2p+5)=0 \quad 15 \quad 2$

$p=-1/3 \quad p=-5/2$
$p=-2\frac{1}{2}$

34. p = { $-2\frac{1}{2}$, $-1/3$ }

Factor completely then write the appropriate **solutions**.

35. $5b^3 + 34b^2 = 7b$

$5B^3 + 34B^2 - 7B = 0$

B $(5B^2 + 34B - 7) = 0$ AC B

$B(5B-1)(B+7)$ −35 34

$B=0 \quad B=1/5 \quad B=-7$

35. b = { −7, 0, 1/5 }

36. $\left[\frac{1}{12}f^2 - \frac{2}{3}f - 4 = 0\right]12$

$F^2 - 8F - 48 = 0$ AC B

$(F+4)(F-12)$ −48 −8

$F=-4 \quad F=12$

36. f = { −4, 12 }

37. $g^2 - \frac{g}{5} = \frac{4}{5}$

$\left[g^2 - \frac{g}{5} - \frac{4}{5} = 0\right]5$

$5g^2 - g - 4 = 0$ AC B

$(5g+4)(g-1)$ −20 −1

$g=-4/5 \quad g=1$

37. g = { −4/5, 1 }

38. $\frac{w^2}{10} - \frac{7w}{10} = \frac{9}{5}$

$10\left[\frac{w^2}{10} - \frac{7}{10}w - \frac{9}{5} = 0\right]$ AC B

$w^2 - 7w - 18 = 0$ −18 −7

$(w-9)(w+2)=0$ −9 2

$w=9 \quad w=-2$

38. w = { −2, 9 }

39. $(v-1)(v-1) = 36$

$v^2 - 2v + 1 = 36$ AC B

$v^2 - 2v - 35 =$ −35 −2

$(v-7)(v+5)=0$ −7 +5

$v=7 \quad v=-5$

39. v = { −5, 7 }

40. $(3z+2)(z+3) = z+14$

$3z^2 + 11z + 6 = z + 14$ AC B

$3z^2 + 10z - 8 = 0$ −24 10

$(3z-2)(z+4)=0$ 12 −2

$z=2/3 \quad z=-4$

40. z = { −4, 2/3 }

Factor completely then write the appropriate **solutions**.

41. $(3z+2)(z+3) = z+14$

41. $z = \{ -4, 2/3 \}$

$3z^2 + 11z + 6 = z + 14$

AC: -24, B: 10; $12, -2$

$3z^2 + 10z - 8 = 0$

$(3z - 2)(z + 4)$

$z = 2/3 \quad z = -4$

42. $(2x-1)(3x+7) = 3x^2 - 2x + 3$

42. $x = \{ -5, 2/3 \}$

$14x$, $-3x$

$6x^2 + 11x - 7 = 3x^2 - 2x + 3$

AC: -30, B: 13; $15, -2$

$3x^2 + 13x - 10 = 0$

$(3x - 2)(x + 5) = 0$

$x = 2/3 \quad x = -5$

43. $(4y-3)(y+2) = y^2 + 18y - 16$

43. $y = \{ 1, 3\frac{1}{3} \}$

$3y$, $-3y$

$4y^2 + 5y - 6 = y^2 + 18y - 16$

AC: 30, B: -13; $-10, -3$

$3y^2 - 13y + 10 = 0$

$(3y - 10)(y - 1) = 0$

$y = \frac{10}{3} \quad y = +1$

$y = 3\frac{1}{3}$