Test on Factoring. Name KEY

Factor using the **distributive property**

1. $24a^2b^2 - 18ab$

$6AB(4AB-3)$

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2. $5x^2 + 10x$

$5x(x+2)$

2. $5x(x+2)$

3. $14mn^2 + 2mn$

$2MN(7N+1)$

3. $2MN(7N+1)$

4. $10x^3 + 25x^2$

$5x^2(2x+5)$

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

Factor by grouping.

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

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

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

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

6. $[8ac - 2ad][+4bc - bd]$

$2A(4c-D)+B(4c-D)$

$(2A+B)(4c-D)$

6. $(2A+B)(4c-D)$

7. $[x^2 + 8x][+5x + 40]$

$x(x+8)+5(x+8)$

$(x+5)(x+8)$

7. $(x+5)(x+8)$

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

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

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

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

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

9. $x^2 - x - 30$

AC B
-30 -1
-6 +5

$(x-6)(x+5)$

10. $15x^2 - 13x + 2$

AC B
30 -13
-10 -3

$(5x-1)(3x-2)$

11. $x^2 + 7x + 12$

AC B
12 7
3, 4

$(x+3)(x+4)$

12. $2r^2 + 3r - 14$

AC B
-28 3
7, -4

$(2r+7)(r-2)$

13. $2g^2 - 3g - 20$

AC B
-40 -3
-8 +5

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

Factor using a **difference of squares**

14. $49t^2 - 225k^2$

$(7t-15k)(7t+15k)$

15. $25a^2 - 529$

$(5A-23)(5A+23)$

16. $625h^2 - 81$

$(25h-9)(25h+9)$

17. $324h^2 - 1$

$(18h-1)(18h+1)$

18. $36m^2 - 121p^2$

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

DIFFERENCE OF SQUARES

DIFFERENT SIGNS

9. $(x-6)(x+5)$

10. $(5x-1)(3x-2)$

11. $(x+3)(x+4)$

12. $(2r+7)(r-2)$

13. $(2g+5)(g-4)$

14. $(7t-15k)(7t+15k)$

15. $(5A-23)(5A+23)$

16. $(25h-9)(25h+9)$

17. $(18h-1)(18h+1)$

18. $(6m-11p)(6m+11p)$

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

PERFECT SQUARES "SAME SIGNS"

19. $49j^2 - 126j + 81$
$(7j-9)(7j-9)$

20. $25w^2 + 120w + 144$
$(5w+12)(5w+12)$

21. $64x^2 - 80x + 25$
$(8x-5)(8x-5)$

22. $484p^2 - 220p + 25$
$(22p-5)(22p-5)$

23. $16x^2 + 40xy + 25y^2$
$(4x+5y)(4x+5y)$

19. $(7j-9)(7j-9)$

20. $(5w+12)(5w+12)$

21. $(8x-5)(8x-5)$

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

23. $(4x-5y)(4x+5y)$

Factor using a **combination of methods.**

24. $x^4 - 17x^2 + 16$
$(x^2-16)(x^2-1)$
$(x-4)(x+4)(x-1)(x+1)$
AC THEN 2 DIFFERENCE of SQUARES

24. $(x-4)(x+4)(x-1)(x+1)$

25. $5p^3 - 35p^2 - 40p$
5p $p^2 - 7p - 8$
$5p(p-8)(p+1)$
PULL OUT 5p THEN AC

25. $5p(p-8)(p+1)$

26. $24y^3 - 56y^2 - 80y$
8y $3y^2 - 7y - 10$
$8y(3y-10)(y+1)$
PULL OUT 8y THEN AC

AC B
-30 -7
-10, +3

26. $8y(3y-10)(y+1)$

27. $2x^4y - 26x^2y + 72y$

PULL OUT $2y$, AC, THEN BREAK DOWN BOTH DIFFERENCE OF SQUARES

27. $2y(x-3)(x+3)(x-2)(x+2)$

$2y$

$x^4 - 13x^2 + 36$

$(x^2-9)(x^2-4)$

AC B

36 -13

-4 -9

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

28. $98h^3 - 2h$

PULL OUT $2h$ THEN BREAK DOWN DIFFERENCE OF SQUARE

28. $2h(7h-1)(7h+1)$

$2h$

$49h^2 - 1$

$2h(7h-1)(7h+1)$

29. $15c^2 - 65c + 50$

PULL OUT 5, THEN AC

29. $5(3c-10)(c-1)$

5

$3c^2 - 13c + 10$

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

AC B

30 -13

-3 -10

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

30. $3n^2 - 21n + 30$

PULL OUT 3, THEN AC

30. $3(n-2)(n-5)$

3

$n^2 - 7n + 10$

AC B

10 -7

-2, -5

$3(n-2)(n-5)$

31. $2l^3 - 13l^2 - 24l$

PULL OUT l THEN AC

31. $l(2l+3)(l-8)$

l

$2l^2 - 13l - 24$

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

AC B

-48 -13

-16, 3

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

32. $625x^4 - 81y^4$

: DIFFERENCE OF SQUARES

32. $(5x-3y)(5x+3y)(25x^2+9y^2)$

$(25x^2 - 9y^2)(25x^2+9y^2)$

$(5x-3y)(5x+3y)(25x^2+9y^2)$: ANOTHER DIFFERENCE OF SQUARES

BE SURE NOT TO FACTOR SUM OF SQUARES.

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

1. $9k(k-4)(5k+3)=0$

$k=0 \quad k=4 \quad k=-3/5$

1. $k=\{ -3/5, 0, 4 \}$

2. $7(m-5)(m+2)=0$

$m=5 \quad m=-2$

2. $m=\{ -2, 5 \}$

3. $3f(2f-5)(3f+1)=0$

$F=0 \quad f=5/2=2\frac{1}{2} \quad f=-1/3$

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

4. $(5x+7)(3x-11)=0$

$x=\frac{-7}{5}=-1\frac{2}{5} \quad x=\frac{11}{3}=3\frac{2}{3}$

4. $x=\{ -1\frac{2}{5}, 3\frac{2}{3} \}$

5. $5(r-3)(r+3)=0$

$R=3 \quad R=-3$

5. $r=\{ -3, 3 \}$

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

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

AC B
-48 13
+16, -3

$2y^2+13y-24=0$
$(2y-3)(y+8)=0$

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

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

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

AC B
30 17
15, 2

$6p^2+17p+5=0$
$(2p+5)(3p+1)=0$

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

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

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

AC B
-35 34
35 -1

$5B^3+34B^2-7B=0$
B $5B^2+34B-7=0$
$B(5B-1)(B+7)$

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

C. $b=\{ -7, 0, \frac{1}{5} \}$

D. $2k^3-21k=k^2$

AC B
-42 -1
-7 +6

$2K^3-K^2-21K=0$
K $2k^2-K-21=0$
$K(2K-7)(K+3)=0$

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

D. $k=\{ -3, 0, 3\frac{1}{2} \}$

E. $y^2-289=0$

$(y-17)(y+17)=0$

$y=17$
$y=-17$

E. $y=\{ -17, 17 \}$

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

1. $\left[\frac{3}{4}h^2+\frac{7}{8}h-h=0\right]8$

$6H^2+7H-8H=0$

$6H^2-H=0$

$H(6H-1)=0$

$H=0$

$H=1/6$

1. h = { 0, 1/6 }

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

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

$(F-12)(F+4)=0$

$F=12$

$F=-4$

2. f = { -4, 12 }

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

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

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

$(5g+4)(g-1)=0$

$g=-4/5$

$g=1$

AC B

-20 -1

-5 +4

1

3. g = { -4/5, 1 }

4. $\left[\frac{w^2}{10}-\frac{7w}{10}=\frac{9}{5}\right]10$

$w^2-7w-18=0$

$(w-9)(w+2)=0$

$w=9$

$w=-2$

4. w = { -2, 9 }

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

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

$v^2-2v+1=36$: FOIL

$v^2-2v+1-36=0$: ABSORB

$v^2-2v-35=0$: REFACTOR

$(v-7)(v+5)=0$: CASES

$v=7$ $v=-5$

A. v = { -5, 7 }

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

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

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

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

$z=2/3$ $z=-4$: CASES

AC B

-24 10

12 -2

B. z = { -4, 2/3 }

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

1. $(2x-1)(3x+7)=3x^2-2x+3$ 1. $x=\{\ -5,\ 2/3\ \}$

AC B
-30 13
15 -2

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

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

$(3x-2)(x+5)=0$: RE FACTOR

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

2. $(c-5)(c-5)=4$ 2. $c=\{\ 3,7\ \}$

$c^2-10c+25=4$

$c^2-10c+21=0$

$(c-7)(c-3)=0$

$c=7 \quad c=3$

3. $(4y-3)(y+2)=y^2+18y-16$ 3. $y=\{\ 1,\ 3\frac{1}{3}\ \}$

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

AC B
30 -13
-3 -10

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

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

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

4. $3g^2-13g=-14$ 4. $g=\{\ 2,\ 2\frac{1}{3}\ \}$

AC B
42 -13
-6 -7

$3g^2-13g+14=0$

$(3g-7)(g-2)=0$

$g=\frac{7}{3}=2\frac{1}{3} \quad g=2$

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

A. $3x^3+11x^2-x-15=(2x+3)(x-5)$

A. $x=\{-2,-1,0\}$

$3x^3+11x^2-x-15=2x^2-7x-15$: FOIL

$3x^3+9x^2+6x=0$: ABSORB TERMS

$\boxed{3x}\ x^2+3x+2=0$: PULL OUT $3x$

$3x(x+1)(x+2)=0$: FACTOR & LOOK AT CASES

$x=0 \quad x=-1 \quad x=-2$

B. $h^4-4h^2+64=(5h-6)(5h+6)$

B. $h=\{-5,-2,2,5\}$

$H^4-4H^2+64=25H^2-36$

$H^4-29H^2+100=0$

$(H^2-25)(H^2-4)=0$

$(H-5)(H+5)(H-2)(H+2)=0$

$H=5 \quad H=-5 \quad H=2 \quad H=-2$

The actual test will not be as long as this practice test but will follow the same format. Be able to do each type of problem.