

Test on Factoring.

Name KEY

Factor using the **distributive property**

1.  $24a^2b^2 - 18ab$   
 $6ab(4ab - 3)$

1.  $6ab(4ab - 3)$

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

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

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

AC B  
30 -13  
-10-3  
 $(5x-1)(3x-2)$

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

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

AC B  
12 7  
3,4  
 $(x+3)(x+4)$

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

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

AC B  
-28 3  
7,-4  
 $(2r+7)(r-2)$

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

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

AC B  
-40 -3  
-8+5  
 $(2g+5)(g-4)$

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

Factor using a difference of squares

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

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

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

15.  $25a^2 - 529$

$(5a-23)(5a+23)$

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

16.  $625h^2 - 81$

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

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

17.  $324h^2 - 1$

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

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

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

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

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

DIFFERENCE OF SQUARES

DIFFERENT SIGNS

Factor each using the perfect square method.

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

"SAME SIGNS"  
 PERFECT SQUARES

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

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

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

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

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

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

AC B  
 -30 -7  
 -10 +3

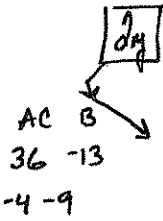
27.  $2x^4y - 26x^2y + 72y$

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

27.  $\underline{2y(x-3)(x+3)(x-2)(x+2)}$

$x^4 - 13x^2 + 36$   
 $(x^2-9)(x^2-4)$

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



28.  $98h^3 - 2h$

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

28.  $\underline{2h(7h-1)(7h+1)}$

$49h^2 - 1$

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



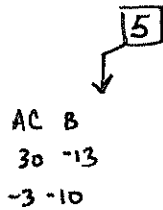
29.  $15c^2 - 65c + 50$

PULL OUT 5,  
THEN AC

29.  $\underline{5(3c-10)(c-1)}$

$3c^2 - 13c + 10$   
 $(3c-10)(c-1)$

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



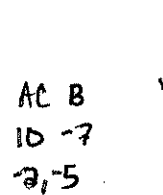
30.  $3n^2 - 21n + 30$

PULL OUT 3,  
THEN AC

30.  $\underline{3(n-2)(n-5)}$

$n^2 - 7n + 10$

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



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

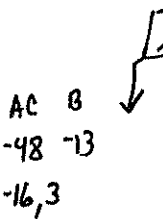
PULL OUT  $l$   
THEN AC

31.  $\underline{l(2l+3)(l-8)}$

$2l^2 - 13l - 24$

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

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



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

: DIFFERENCE OF SQUARES

32.  $\underline{(5x-3y)(5x+3y)(25x^2+9y^2)}$

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



$(5x-3y)(5x+3y)(25x^2+9y^2)$  : 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.  $f = \{ -1/3, 0, 2\frac{1}{2} \}$

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

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

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

$2y^2 + 13y - 24 = 0$

$(2y-3)(y+8) = 0$

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

$y = -8$

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

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

$6p^2 + 17p + 5 = 0$

$(2p+5)(3p+1) = 0$

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

$p = -1/3$

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

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

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

$5b^2 + 34b - 7 = 0$

$b(5b-1)(b+7) = 0$

$b=0$

$b=1/5$

$b=-7$

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

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

$2k^3 - k^2 - 21k = 0$

$2k^2 - k - 21 = 0$

$k(2k-7)(k+3) = 0$

$k=0$

$k=7/2=3\frac{1}{2}$

$k=-3$

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

E.  $y^2 - 289 = 0$

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

$y=17$

$y=-17$

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

AC B  
-48 13  
116, -3

AC B  
30 17  
15, 2

AC B  
35 34  
35 -1

AC B  
-42 -1  
-7 +6

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.  $g^2 - \frac{8}{5}g = \frac{4}{5}$

$g = -4/5$

5  $\left[ g^2 - \frac{8}{5}g - \frac{4}{5} = 0 \right]$

$5g^2 - 8g - 4 = 0$

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

$g = 1$

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

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

AC B  
-20 -1  
-5 +4  
1

AC B  
-24 10  
12 -2

Factor completely then write the appropriate solutions.

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

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

$x = \frac{2}{3} \quad x = -5$  : CASES

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

2.  $(c-5)(c-5) = 4$

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

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

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

$c = 7 \quad c = 3$

2.  $c = \{ 3, 7 \}$

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

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

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

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

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

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

4.  $3g^2 - 13g = -14$

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

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

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

4.  $g = \{ 2, 2\frac{1}{3} \}$

AC B  
30 -13  
-3 -10

AC B  
42 -13  
-6 -7

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

$\boxed{3x} \downarrow x^2 + 3x + 2 = 0$   
 $3x(x+1)(x+2) = 0$

: PULL OUT 3x

: 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.