

Fill in the flow chart below. It is THE GUIDE to factoring ANY Algebra 1 expression.

Level 1

GCF

Level 2

2 terms

3 terms

4 terms

DOTS

short  
 $x^2 + bx + c$   
 long (force grouping)  
 $ax^2 + bx + c$

grouping

Now, Use your guide to factor each of the expressions below.

GCF

1.  $30ab^2 - 100a^2b^3$   
 $10ab^2(3 - 10ab)$

2.  $w^2 - 81$   
 $(w-9)(w+9)$

3.  $x^2 - 9x - 22$   
 $(x-11)(x+2)$

4.  $2m^2 - 12m + 54$   
 $2(m^2 - 6m + 27)$

5.  $3k^2 - 11k - 20$   
 $3k^2 - 15k + 4k - 20$   
 $3k(k-5) + 4(k-5)$   
 $(3k+4)(k-5)$

6.  $2x^3 + x^2 + 2x + 1$   
 $x^2(2x+1) + 1(2x+1)$   
 $(x^2+1)(2x+1)$

7.  $2x^2 - 5x + 2$   
 $2x^2 - 4x - 1x + 2$   
 $2x(x-2) - 1(x-2)$   
 $(2x-1)(x-2)$

8.  $x^2 + 8x - 9$   
 $(x+9)(x-1)$

9.  $4w^2 - 49$   
 $(2w+7)(2w-7)$

10.  $w^2 - 100$   
 $(w+10)(w-10)$

11.  $5x^2y - 35xy$   
 $5xy(x-7)$

12.  $3k^3 + 12k^2 - 36k$   
 $3k(k^2 + 4k - 12)$   
 $3k(k+6)(k-2)$

13.  $2w^3 - 3w^2 + 4w - 6$   
 $w^2(2w-3) + 2(2w-3)$   
 $(w^2+2)(2w-3)$

14.  $2m^2 - m - 3$   
 $2m^2 - 3m + 2m - 3$   
 $m(2m-3) + 1(2m-3)$   
 $(m+1)(2m-3)$

\*15.  $x^4 + 4x^2 + 3$   
 $(x^2+3)(x^2+1)$

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

17.  $5x^3 + 30x^2 + 45x$   
 $5x(x^2 + 6x + 9)$   
 $5x(x+3)(x+3)$

\*18.  $8y^4 - 8$   
 $8(y^4 - 1)$   
 $8(y^2+1)(y^2-1)$   
 $8(y^2+1)(y-1)(y+1)$



DOTS

DOTS again