Find the GCF of:

a) $6x - 3x^2 + 18$ GCF = 3

b) $2a^4 + 3a^3 + 4a^2 + a$ GCF = a

c) $15b^2 - 30b^3 + 10b^5$ GCF = $5b^2$

d) $14c^7 + 21c^6 - 35c^3$ GCF = $7c^3$

e) $16d^8e^4 - 20e^5d^4 + 8de^6$ GCF = $4de^4$

f) $8x^2yz - 6xy^3 + 10x^3y^2z^4$ GCF = $2xy$

Common Factor

a) $12k - 36m$

$= 12(k - 3m)$

b) $9x^2y - 3x^3y^2 - 6x^4y$

$= 3x^2y(3 - xy - 2x^2)$

c) $6x^2 - 9x - 12$

$= 3(2x^2 - 3x - 4)$

d) $8x^2y - 24xy + 12y$

$= 4y(2x^2 - 6x + 3)$

e) $4a^2 + 6ab + 12abc$

$= 2a(2a + 3b + 6bc)$

f) $6x^2y - 4xy - 2y$

$= 2y(3x^2 - 2x - 1)$

Binomial Common Factors

binomial common factor

$4(w+1)+5y(w+1)$

$=(w+1)(4+5y)$

4( ) + 5y( )

= ( )(4 + 5y)

Ex. 1: Factor

a) $2y(a-1)-3x(a-1)$

$=(a-1)(2y-3x)$

b) $4a(x-y)-3b(-y+x)$

$=4a(x-y)-3b(x-y)$

$=(x-y)(4a-3b)$

Factor by Grouping

- group terms that have a common factor
- factor each group to try and get a binomial common factor

$ac+bc+ad+bd$

$=c(a+b)+d(a+b)$

$=(a+b)(c+d)$

$=ac+ad+bc+bd$

$=a(c+d)+b(c+d)$

$=(c+d)(a+b)$

Ex. 2 Factor by Grouping

a) $xy+12+4x+3y$

$=xy+4x+3y+12$

$=x(y+4)+3(y+4)$

$=(y+4)(x+3)$

b) $5m^2t-10m^2+t^2-2t$

$=5m^2(t-2)+t(t-2)$

$=(t-2)(5m^2+t)$