Factoring - Factor By Grouping

Step 1: Look for GCF.
Step 2: Divide polynomial in half.
Step 3: Find the GCF on the left side.
Step 4: Find the GCF on the right side.
Step 5: Find the GCF for the entire polynomial.

1. Factor each polynomial.

a) $x^2+3x+4x+12$

$x \quad x \quad 4 \quad 4$

GCF = x ; GCF = 4

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

$x+3 \quad x+3$

GCF = $x+3$

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

b) $y^2+y+4y+4$

$y \quad y \quad 4 \quad 4$

GCF = y GCF = 4

$y(y+1)+4(y+1)$ GCF = $y+1$

$y+1 \quad y+1$

$(y+1)(y+4)$

c) $x^2-x-2x+2$

$x \quad x \quad -2 \quad -2$

GCF = x GCF = -2

$x(x-1)-2(x-1)$ GCF = $x-1$

$x-1 \quad x-1$

$(x-1)(x-2)$

d) $16x+16y-8ax-8ay$

$8 \quad 8 \quad 8 \quad 8$

GCF = 8

$8\left(\frac{2x}{2}+\frac{2y}{2}-\frac{ax}{-a}-\frac{ay}{-a}\right)$

GCF = 2 GCF = $-a$

$8\left[\frac{2(x+y)}{x+y}-\frac{a(x+y)}{x+y}\right]$

GCF = $x+y$

$8(x+y)(2-a)$

e) $yx-3x+y-3$

$x \quad x \quad 1 \quad 1$

GCF=x GCF = 1

$\frac{x(y-3)}{y-3} + 1\frac{(y-3)}{y-3}$ GCF = y-3

$(y-3)(x+1)$