

Quiz!

Fully factor each of the following.

$$\begin{aligned} \text{a) } & 5a^3 - 15a^6 + 20a^2 \\ & = 5a^2(a - 3a^4 + 4) \end{aligned}$$

$$\begin{aligned} \text{b) } & 16x^3y + 12xy - 18xy^2 \\ & = 2xy(8x^2 + 6 - 9y) \end{aligned}$$

4.3 Common Factoring - Day 2

Binomial Common Factors

binomial common factor

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

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

$$4(\text{🎃}) + 5y(\text{🎃})$$

$$= \text{🎃}(4+5y)$$

Ex. 1: Factor

$$\text{a) } 2y(a-1) - 3x(a-1)$$

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

$$\text{b) } 4a(x-y) - 3b(-y+x)$$

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

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

$$\text{c) } 4a(x-y) - 3b(y-x)$$

Factor by Grouping

★ group terms that have a common factor

★ factor each group to try and get a binomial common factor

$$\begin{array}{l}
 ac + bc + ad + bd \\
 = c(a + b) + d(a + b) \\
 = (a + b)(c + d)
 \end{array}
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 \begin{array}{l}
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 \end{array}
 \right\}
 \begin{array}{l}
 = ac + ad + bc + bd \\
 = a(c + d) + b(c + d) \\
 = (c + d)(a + b)
 \end{array}$$

Ex. 2 Factor by Grouping

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

$$\begin{aligned}
 &= xy + 4x + 3y + 12 \\
 &= x(y + 4) + 3(y + 4) \\
 &= (y + 4)(x + 3)
 \end{aligned}$$

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

$$\begin{aligned}
 &= 5m^2(t - 2) + t(t - 2) \\
 &= (t - 2)(5m^2 + t)
 \end{aligned}$$

c) $6x^2y - 12x - xy + 2$

$$\begin{aligned}
 &= 6x^2y - xy + 2 - 12x \\
 &= xy(6x - 1) + 2(1 - 6x)
 \end{aligned}$$

OR

$$\begin{aligned}
 &= -xy(-6x + 1) + 2(1 - 6x) \\
 &= (-xy + 2)(-6x + 1) \\
 &= (2 - xy)(1 - 6x)
 \end{aligned}$$

OR

$$\begin{aligned}
 &= xy(6x - 1) - 2(-1 + 6x) \\
 &= (xy - 2)(6x - 1)
 \end{aligned}$$

FBUHL
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