

## Factoring a Multivariate Polynomial by Grouping: Problem Type 2

### • Example 1

Factor

$$4x - y - xy + 4x^2.$$

The terms  $4x$  and  $4x^2$  have  $4x$  as a common factor.

Also,  $-y$  and  $-xy$  have  $-y$  as a common factor.

Gathering terms and factoring out the common factors gives in succession

$$\begin{aligned} 4x - y - xy + 4x^2 &= (4x + 4x^2) + (-y - xy) && \text{(gathering terms)} \\ &= 4x(1 + x) - y(1 + x) && \text{(factoring out } 4x \text{ and } -y) \\ &= (4x - y)(1 + x) && \text{(factoring out } 1 + x) \end{aligned}$$

### ● ● ● CHECK YOURSELF 1

Factor.

$$2yz - y + 2z^2 - z$$


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### ● ● ● CHECK YOURSELF ANSWER

1.  $(2z - 1)(y + z)$ .

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# 6.12 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

Factor each polynomial.

1.  $ab - ac + b^2 - bc$

2.  $3x^2 - 2xy + 3x - 2y$

3.  $xy - 5y^2 - x + 5y$

4.  $u^2 + 2uv - 7u - 14v$

5.  $8x^2 + 12x - 2xy - 3y$

6.  $27x + 12y + 18xy + 8y^2$