



## Concept: Factoring Expressions

Name: \_\_\_\_\_

**Note:** You should have completed Algebra Outline A for Topic 8: Factoring Expressions before beginning this COMPUTER COMPONENT.

### COMPUTER COMPONENT: Part B

**Instructions:**

Select the computer program *Understanding Algebra* (Neufeld)  
Follow the instructions to the Main Menu.  
Select *Factoring Expressions* from the Main Menu.



Use the **Jump To** feature of the program (found on the top left of your screen) in order to get to the section where you left off.

Work through all sections of the following topics **in order**:

- *Difference of Squares*
- *Factoring By Grouping*
- *Summary*
- *Practice Questions*



As you work through the computer exercises, make your own notes in your notebook/math journal.

When you reach the end of the section *Practice Questions* on the computer, move on to the **OFF COMPUTER EXERCISES** below.

### OFF COMPUTER EXERCISES: Part B

1. Fill in the blanks.

- (a) When given any expression to factor, always look for a common factor first.
- (b) When common factoring, you factor out the greatest common factor.
- (c) The following is an example of a perfect square trinomial.

$$x^2 - 6x + 9 = (x - 3)(x - 3) = (x - 3)^2$$

- (d) The two types of factoring that you learned about in this COMPUTER COMPONENT were:

<sup>1</sup> difference of squares and <sup>2</sup> factor

by grouping.



2. Factor by difference of squares.

(a)  $x^2 - 81$

$$= (x + 9)(x - 9)$$

(b)  $x^2 - 36$

$$= (x - 6)(x + 6)$$

(c)  $x^2 - 4$

$$= (x - 2)(x + 2)$$

(d)  $x^2 - 64$

$$= (x + 8)(x - 8)$$

(e)  $x^2 - 1$

$$= (x + 1)(x - 1)$$

(f)  $4x^2 - 9$

$$= (2x + 3)(2x - 3)$$

3. Factor by grouping.

(a)  $4d^2 + dc + 12d + 3c$

$$= (3b + 4)(bc + 9)$$

(b)  $15x^2 - 5x + 24x - 8$

$$= (3mn + 9)(2m - 1)$$

(c)  $3b^2c + 27b + 4bc + 36$

$$= (3b + 4)(bc + 9)$$

(d)  $6m^2n - 3mn + 18m - 9$

$$= (3mn + 9)(2m - 1)$$

(e)  $2p^2q^3r - 10pqr + 3pq^2 - 15$

$$= (2pqr + 3)(pq^2 - 5)$$

(f)  $18fgh^2 - 3g - 12fh^2 + 2$

$$= (3g - 2)(6fh^2 - 1)$$

4. Factor completely. These questions cover all the types of factoring studied in Topic 7.

(a)  $49t + 14$

$$= 7(7t + 2)$$

(b)  $9x^2 - 16$

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

(c)  $36 - 36g^2$

$$= 36(1 - g)(1 + g)$$

(d)  $c^2 + 5c + 6$

$$= (c + 3)(c + 2)$$

(e)  $55d^2 - 15$

$$= 5(11d^2 - 3)$$

(f)  $y^4 - 25$

$$= (y - 5)(y^2 + 5)$$

4 cont'd

(g)  $2y^2 + 12y + 10$

$$= 2(y^2 + 6y + 5)$$

$$= 2(y + 5)(y + 1)$$

(h)  $a^2 + a - 56$

$$= (a + 8)(a - 7)$$

(i)  $12x^2y + 4xy - 8y$

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

$$= 4y(3x - 2)(x + 1)$$

(k)  $44p^2q - 8pq + 66p - 12$

$$= (4pq + 6)(11p - 2)$$

(l)  $4t^2u - u + 32t^2 - 8$

$$= (u + 8)(4t^2 - 1)$$

(m)  $2h^2 - 12h + 10$

$$= 2(h - 5)(h - 1)$$

(n)  $z^2 - 8z + 16$

$$= (z - 4)^2$$

(o)  $6a^2d - 18a^2 - 12d + 36$

$$= 6(a^2d - 3a^2 - 2d + 6)$$

$$= 6(a^2 + 2)(d - 3)$$

(p)  $5q^2 - 10q - 40$

$$= 5(q^2 - 2q - 8)$$

$$= 5(q - 4)(q + 4)$$

(q)  $7b^2 - 35b + 42$

$$= 7(b^2 - 5b + 6)$$

$$= 7(b - 3)(b - 2)$$

(r)  $81k^4 - 16$

$$= (9k^2 + 4)(9k^2 - 4)$$

$$= (9k^2 + 4)(3k - 2)(3k + 2)$$

(s)  $(a + b)^2 - (a - b)^2$

$$= (a + b)(a + b) - (a - b)(a - b)$$

$$= (a^2 + 2ab + b^2) - (a^2 - 2ab + b^2)$$

$$= a^2 + 2ab + b^2 - a^2 + 2ab - b^2$$

$$= 4ab$$

