


Concept: Factoring Expressions

Name:

- You should have completed Algebra – Section 8 Part A: Factoring Expressions before beginning this handout.

COMPUTER COMPONENT: Part B

Instructions: In  follow the **Content Menu** path:

Algebra > Factoring Expressions

NOTE: Use the **Menu** feature of the program (found on the left side of your screen) in order to get to the lesson where you left off.



Work through all Sub Lessons of the following Lessons **in order**:

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



As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

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:

¹ **difference** of **squares**

² **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) $y^4 - 25$

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

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

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

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

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

$$= 4ab$$