

Concept: Factoring Expressions

Name:

OFF COMPUTER COMPONENT

1. Calculate $5(3 + 6)$ by using each of the following methods:

(a) Order of operations: $\underline{5(9) = 45}$

(b) The distributive law: $\underline{15 + 30 = 45}$

2. Calculate $(5 + 3)(5 + 15)$ by using each of the following methods:

(a) Order of operations: $\underline{(8) \times (20) = 160}$

(b) The distributive law: $\underline{25 + 75 + 15 + 45 = 160}$

3. Discuss your answers to 1 and 2 with a friend.

COMPUTER COMPONENT: Part A

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

Algebra > Factoring Expressions



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

- *Our Problem*
- *Common Factoring*
- *Factoring Trinomials*

NOTE: You will not be finishing the entire section before stopping to complete some **OFF COMPUTER EXERCISES**.



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

When you reach the end of the lesson *Factoring Trinomials* on the computer, move on to the **OFF COMPUTER EXERCISES** below.

OFF COMPUTER EXERCISES: Part A

1. Fill in the blanks:

When factoring, always look for the greatest **common factor** first.

2. Complete the following.

(a) $4w^2 = 4(w^2)$

(b) $15c = 5(3c)$

(c) $8x^2 = 2(4x^2)$

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

(e) $21x^2y^2 = 3(7x^2y^2)$

3. Find the greatest common factor in each of the following expressions.

(a) $12z + 6$

(b) $16z - 12$

(c) $5w^2 + 25w$

(d) $20q^2 - 10q$

GCF = 6

GCF = 4

GCF = 5w

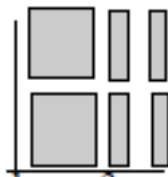
GCF = 10q

NOTE: You may wish to re-do the computer section Common Factoring with Tiles in order to complete numbers 4 and 5.

4. (a) Display $2x^2 + 4x$ with tiles.



(b) Arrange the tiles to form a rectangle. Draw this below.



(c) The factors of $2x^2 + 4x$ are $2x$ and $x + 2$.

5. (a) Display $2x^2 + 4x$ with tiles by using *another* method.



(b) Arrange the tiles to form a rectangle. Draw this below.



7. Fill in the blanks.

- (a) To factor $x^2 + 6x + 8$, you need two numbers that add up to 6 and have a product of 8.

$$\text{Then } x^2 + 6x + 8 = (x + 2)(x + 4)$$

- (b) To factor $x^2 + 10x + 16$, you need two numbers that add up to 10 and have a product of 16.

$$\text{Then } x^2 + 10x + 16 = (x + 8)(x + 2)$$

- (d) To factor $x^2 - 2x - 3$, you need two numbers that add up to -2 and have a product of -3.

$$\text{Then } x^2 - 2x - 3 = (x - 3)(x + 1)$$

- (e) To factor $x^2 - 6x + 8$, you need two numbers that add up to -6 and have a product of 8.

$$\text{Then } x^2 - 6x + 8 = (x - 4)(x - 2)$$

8. Factor each trinomial.

In each case, use the FOIL rule to multiply your answer. This allows you to check to see if your answer is correct.

Example: $b^2 + b - 30$

$$= (b - 5)(b + 6)$$

Check: Using FOIL, $(b - 5)(b + 6)$

$$= b^2 + b - 30, \text{ so the answer is correct.}$$

(a) $x^2 + 7x + 10$

$$= (x + 5)(x + 2)$$

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

$$= (x - 5)(x - 3)$$

(c) $a^2 + 8a + 7$

$$= (a + 7)(a + 1)$$

(d) $a^2 + 2a + 1$

$$= (a + 1)^2$$

$$\begin{aligned} \text{(e)} \quad & t^2 + 13t + 40 \\ & = (t + 8)(t + 5) \end{aligned}$$

$$\begin{aligned} \text{(f)} \quad & t^2 - 9t + 14 \\ & = (t - 7)(t - 2) \end{aligned}$$

$$\begin{aligned} \text{(g)} \quad & m^2 - 12m + 36 \\ & = (m - 6)^2 \end{aligned}$$

$$\begin{aligned} \text{(h)} \quad & m^2 - 15m + 54 \\ & = (m - 9)(m - 6) \end{aligned}$$

$$\begin{aligned} \text{(i)} \quad & y^2 + 9y + 20 \\ & = (y + 4)(y + 5) \end{aligned}$$

$$\begin{aligned} \text{(j)} \quad & y^2 - 18y + 81 \\ & = (y - 9)^2 \end{aligned}$$

$$\begin{aligned} \text{(k)} \quad & c^2 + 6c - 16 \\ & = (c + 8)(c - 2) \end{aligned}$$

$$\begin{aligned} \text{(l)} \quad & c^2 - 5c - 36 \\ & = (c - 9)(c + 4) \end{aligned}$$

$$\begin{aligned} \text{(m)} \quad & r^2 - 4r - 45 \\ & = (r - 9)(r + 5) \end{aligned}$$

$$\begin{aligned} \text{(n)} \quad & r^2 - 3r - 54 \\ & = (r - 9)(r + 6) \end{aligned}$$