

# 8B Student Success Sheet (SSS)

## *Factoring*

Olathe East High School – Intermediate Algebra

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

### Reminders:

- Homework is completed in **homework packet**.
- **All pages** in homework notebook should be done in pencil!

### Need Help? Support is available!

- [www.srushingoe.weebly.com](http://www.srushingoe.weebly.com)

“There are no secrets to success. It is the result of preparation, hard work, and learning from failure.”

Concept #	What we will be learning...
1	FOIL Factors
2	One Term missing
3	Two Terms missing
4	GCF
5	Factoring

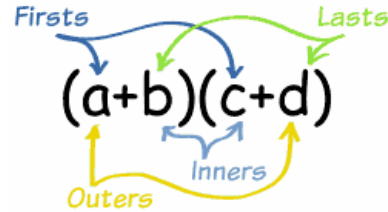
# CONCEPT 1: NON-ALUMINUM FOIL

## Method 1

**FOIL** is A handy way to remember how to multiply two binomials.

When multiplying binomials, the result is the sum of:

- multiplying the **F**irst terms
- multiplying the **O**utside terms
- multiplying the **I**nside terms, and
- multiplying the **L**ast terms

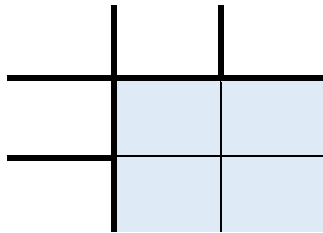


Example:  $(a+b)(c+d) = ac + ad + bc + bd$

## Method 2

PUNNET SQUARE MULTIPLICATION CAN HELP YOU GRAPHICALLY ORGANIZE WHEN MULTIPLYING FIRST TERMS, OUTER TERMS, INNER TERMS, LAST TERMS.

- Example:  $(a + b)(c + d)$



**Find each product.**

1)  $(5r + 6)(7r + 5)$

- A)  $35r^2 + 67r + 30$
- B)  $35r^2 + 17r - 30$
- C)  $48r^2 - 58r + 14$
- D)  $48r^2 - 26r - 14$

2)  $(5x + 8)(8x + 7)$

- A)  $40x^2 + 29x - 56$
- B)  $40x^2 + 99x + 56$
- C)  $56x^2 - 39x + 4$
- D)  $40x^2 + 56$

3)  $(4a + 8)(6a - 8)$

- A)  $24a^2 - 80a + 64$
- B)  $9a^2 + 24a + 12$
- C)  $24a^2 + 16a - 64$
- D)  $9a^2 + 12$

4)  $(7x + 2)(x - 6)$

- A)  $12x^2 + 26x - 10$
- B)  $12x^2 + 34x + 10$
- C)  $7x^2 - 40x - 12$
- D)  $7x^2 - 12$

## CONCEPT 2: ONE TERM MISSING

1)  $7k^2 + 3k - 4$

$(7k - 4)(k \square)$

2)  $5x^2 + 29x - 42$

$(\square - 6)(x + 7)$

3)  $5v^2 + 31v + 30$

$(5v + 6)(\square + 5)$

4)  $2x^2 - x - 21$

$(2x \square)(x + 3)$

5)  $5x^2 - 9x + 4$

$(x - 1)(5x \square)$

6)  $3p^2 + 8p + 4$

$(\square + 2)(p + 2)$

## CONCEPT 3: TWO TERMS MISSING

1)  $v^2 - 3v - 18$

$(v - 6)(\square \square)$

2)  $7n^2 - 25n - 12$

$(\square + 6)(n \square)$

3)  $3n^2 + 11n - 20$

$(\square - 4)(\square + 5)$

4)  $4m^2 + 8m + 3$

$(2m + 3)(\square \square)$

5)  $4x^2 + 11x - 3$

$(\square \square)(4x - 1)$

6)  $4n^2 - n - 3$

$(n \square)(4n \square)$

# Concept 4: Greatest Common Factor

I can...	<ul style="list-style-type: none"><li>Factor using GCF</li></ul>				
<b>GCF - Greatest Common Factor</b>	<p style="text-align: center;">GREATEST COMMON FACTOR:</p> <ul style="list-style-type: none"><li>The greatest value that can be evenly divided out of two or more quantities.</li></ul> <p style="text-align: center;">SO, WHAT IS A "FACTOR"?</p> <p>Factors are the numbers you multiply together to get another number:</p> <ul style="list-style-type: none"><li><math>(2)(3)=6</math></li></ul> <p style="text-align: center;">OKAY, SO WHAT IS A COMMON FACTOR?</p> <p>Let's factor out the two numbers: 12 and 30</p> <p style="text-align: center;"><u>Factors of 12</u>                      <u>Factors of 30</u></p> <p style="text-align: center;">What numbers do you find in both lists? _____</p> <p style="text-align: center;">And what is the GREATEST of those common numbers? _____</p> <p style="text-align: center;">There you have it, the <b>GREATEST COMMON FACTOR!</b></p>				
<p>Greatest Common Factor Examples</p> <table style="width: 100%;"><tr><td style="text-align: center;">Number Only <math>7x + 21y - 14</math></td><td style="text-align: center;">Variable Only <math>4x^3 - 5x^2 + 11x</math></td></tr><tr><td style="text-align: center;">Number and Variable <math>3x^4 - 6x^3 + 12x^2</math></td><td style="text-align: center;">NO GCF <math>5x^4 - 9y^3 + 2z</math></td></tr></table>		Number Only $7x + 21y - 14$	Variable Only $4x^3 - 5x^2 + 11x$	Number and Variable $3x^4 - 6x^3 + 12x^2$	NO GCF $5x^4 - 9y^3 + 2z$
Number Only $7x + 21y - 14$	Variable Only $4x^3 - 5x^2 + 11x$				
Number and Variable $3x^4 - 6x^3 + 12x^2$	NO GCF $5x^4 - 9y^3 + 2z$				

<p><b>1.</b> <math>12a^4 + 18a</math></p> <p>Check:</p>	<p><b>2.</b> <math>-24a^4 - 4</math></p> <p>Check:</p>
<p><b>3.</b> <math>2n^3 + n^2 + 4n + 2</math></p> <p>Check:</p>	<p><b>4.</b> <math>4p^3 - 5p^2 + 8p - 10</math></p> <p>Check:</p>
<p><b>5.</b> <math>28r^6 + 21r^4</math></p> <p>Check:</p>	<p><b>6.</b> <math>40qr^3p^2 - 45qr^3</math></p> <p>Check:</p>
<p><b>7.</b> <math>30x^2 + 21x - 18</math></p> <p>Check:</p>	<p><b>8.</b> <math>2x^2 - 4x^3 + 9x^8y^3</math></p> <p>Check:</p>
<p><b>9.</b> <math>18v^8 + 15v^5 + 24v^4 - 21v^3</math></p> <p>Check:</p>	<p><b>10.</b> <math>30x^3y + 3x^4y + 6xy - 21xy^3</math></p> <p>Check:</p>

# CONCEPT 5: UN-FOILING (FACTORING)

1.  $r^2 + 7r + 12$       GCF: Yes or No

2.  $a^2 - 6a - 2$       GCF: Yes or No

Factors of 1	Factors of 12	Factor Pairs
1r & 1r	1 & 12	$(r + 1)(r + 12)$
	12 & 1	$(r + 12)(r + 1)$
	2 & 6	$(r + 2)(r + 6)$
	6 & 2	$(r + 6)(r + 2)$
	3 & 4	$(r + 3)(r + 4)$
	4 & 3	$(r + 4)(r + 3)$

Factors of 1	Factors of -27	Factor Pairs
1a & 1a		$(a \quad)(a \quad)$
		$(a \quad)(a \quad)$
		$(a \quad)(a \quad)$
		$(a \quad)(a \quad)$
		$(a \quad)(a \quad)$
		$(a \quad)(a \quad)$
		$(a \quad)(a \quad)$
		$(a \quad)(a \quad)$

Check:

Check:

Answer: \_\_\_\_\_

Answer: \_\_\_\_\_

3)  $5x^2 + 19x - 4$       GCF: Yes or No

4)  $3n^2 - 17n - 6$       GCF: Yes or No

Factors of 5	Factors of -4

Factor Pairs

Factors of 3	Factors of -6

Factor Pairs

Check:

Check:

Answer: \_\_\_\_\_

Answer: \_\_\_\_\_

5.  $2x^2 - 16x - 18$

GCF: Yes or No

(            )(            )

Check:

6.  $6x^2 + 3x - 9$

GCF: Yes or No

(            )(            )

Check: