

Module 11 Writing and Simplifying Algebraic Expressions
Lesson 4 Multiplying Monomials and Binomials

Guided Notes Questions:

<p>1. Simplify: $x^3y \cdot 6xy^2$ Select the correct answer.</p> <p>A. $6x^4y^3$ B. $6x^3xyy^2$ C. $6x^2y$ D. $6x^3y^2$</p>

	Answer Choice
A	$6x^4y^3$
Feedback	Correct.
B	$6x^3xyy^2$
Feedback	This expression is not in simplest form. Group the like factors together. Remember, when multiplying powers with like bases, add the exponents.
C	$6x^2y$
Feedback	Remember, when multiplying powers with like bases, add the exponents.
D	$6x^3y^2$
Feedback	Remember, when multiplying powers with like bases, add the exponents.

2.	Simplify: $2x(x+2)$ Select the correct answer.
	A. $2x^2 + 2$
	B. $2x \cdot x + 4x$
	C. $2x^2 + 4x$
	D. $x + 4x$

	Answer Choice
A	$2x^2 + 2$
Feedback	Remember to distribute $2x$ to each term inside the parentheses.
B	$2x \cdot x + 4x$
Feedback	This expression is not in simplest form. Group the like factors together. Remember, when multiplying powers with like bases, add the exponents.
C	$2x^2 + 4x$
Feedback	Correct.
D	$x + 4x$
Feedback	Remember to distribute $2x$ to each term inside the parentheses.

3. Multiply: $-4ab(8a - 3b^3)$
Select the correct answer.

- A. $-32a^2b - 12ab^4$
- B. $-32aba + 12b^4$
- C. $-32a^2b - 3b^3$
- D. $-32a^2b + 12ab^4$

	Answer Choice
A	$-32a^2b - 12ab^4$
Feedback	Remember, the product of two factors with negative coefficients is positive.
B	$-32aba + 12b^4$
Feedback	This expression is not in simplest form. Group the like factors together. Remember, when multiplying powers with like bases, add the exponents.
C	$-32a^2b - 3b^3$
Feedback	Remember to distribute $-4ab$ to each term inside the parentheses.
D	$-32a^2b + 12ab^4$
Feedback	Correct.

4.	Simplify: $(2p - 5)(p - 4)$ Select the correct answer. A. $2p^2 + 20$ B. $2p^2 - 8p - 5p + 20$ C. $2p^2 - 13p + 20$ D. $2p - 5p + 20$
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	Answer Choice
A	$2p^2 + 20$
Feedback	Remember, when multiplying two binomials; multiply the first, outer, inner, and last terms.
B	$2p^2 - 8p - 5p + 20$
Feedback	This expression is not in simplest form. Group the like factors together.
C	$2p^2 - 13p + 20$
Feedback	Correct.
D	$2p - 5p + 20$
Feedback	Remember, when multiplying two binomials; multiply the first, outer, inner, and last terms.

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Guided Practice:

Set 1:

<p>1. Simplify: $(3v^4)(-5v^2)$ Select the correct answer.</p> <p>A. $-15v^4v^2$ B. $-15v^8$ C. $-15v^6$ D. $-15v^2$</p>

	Answer Choice
A	$-15v^4v^2$
Feedback	This expression is not in simplest form. Group the like factors together. Remember, when multiplying powers with like bases, add the exponents.
B	$-15v^8$
Feedback	Remember, when multiplying powers with like bases, add the exponents.
C	$-15v^6$
Feedback	Correct.
D	$-15v^2$
Feedback	Remember, when multiplying powers with like bases, add the exponents.

2. Simplify $(-2x^2y^5)(-4x^3)$
Select the correct answer.

- A. $8x^5y^5$
- B. $-8x^5y^5$
- C. $-6x^5y^5$
- D. $8x^2x^3y^5$

	Answer Choice
A	$8x^5y^5$
Feedback	Correct.
B	$-8x^5y^5$
Feedback	Remember, the product of two negative numerical factors is positive.
C	$-6x^5y^5$
Feedback	Remember, when multiplying monomials, multiply the numerical factors.
D	$8x^2x^3y^5$
Feedback	This expression is not in simplest form. Group the like factors together. Remember, when multiplying powers with like bases, add the exponents.

3. Simplify: $(2r^3)(-3r^2s^2)(2s^2)$

Select the correct answer.

A. $-12(r^3)(r^2s^2)(s^2)$

B. $-12r^5s^4$

C. r^5s^4

D. $12r^5s^4$

	Answer Choice
A	$-12(r^3)(r^2s^2)(s^2)$
Feedback	This expression is not in simplest form. Group the like factors together. Remember, when multiplying powers with like bases, add the exponents.
B	$-12r^5s^4$
Feedback	Correct.
C	r^5s^4
Feedback	Remember, when multiplying monomials, multiply the numerical factors.
D	$12r^5s^4$
Feedback	Remember, the product of two positive numerical factors and one negative numerical factor is negative.

Set 2:

1. Simplify: $5d(3d^2 - 6d)$
Select the correct answer.

- A. $15d^3 - 6d$
B. $15dd^2 - 30dd$
C. $15d^3 + 30d^2$
D. $15d^3 - 30d^2$

	Answer Choice
A	$15d^3 - 6d$
Feedback	Remember to distribute $5d$ to each term inside the parentheses.
B	$15dd^2 - 30dd$
Feedback	This expression is not in simplest form. Group the like factors together. Remember, when multiplying powers with like bases, add the exponents.
C	$15d^3 + 30d^2$
Feedback	Remember, the product of one positive numerical factor and one negative numerical factor is negative.
D	$15d^3 - 30d^2$
Feedback	Correct.

<p>2. Simplify: $bc^3(9c^3 - 4b^2)$ Select the correct answer.</p> <p>A. $9bc^6 - 4b^3c^3$ B. $9bc^6 - 4b^2$ C. $bc^3 \cdot 9c^3 - bc^3 \cdot 4b^2$ D. $9c^3 - 4b^3c^3$</p>

	Answer Choice
A	$9bc^6 - 4b^3c^3$
Feedback	Correct.
B	$9bc^6 - 4b^2$
Feedback	Remember to distribute bc^3 to each term inside the parentheses.
C	$bc^3 \cdot 9c^3 - bc^3 \cdot 4b^2$
Feedback	This expression is not in simplest form. Group the like factors together. Remember, when multiplying powers with like bases, add the exponents.
D	$9c^3 - 4b^3c^3$
Feedback	Remember to distribute bc^3 to each term inside the parentheses.

Set 3:

1. Simplify: $(m + 2)(m + 3)$
Select the correct answer.

- A. $m^2 + 3m + 2m + 6$
 B. $m^2 + 5m + 6$
 C. $m + 2m + 6$
 D. $m^2 + 6$

	Answer Choice
A	$m^2 + 3m + 2m + 6$
Feedback	This expression is not in simplest form. Group the like factors together.
B	$m^2 + 5m + 6$
Feedback	Correct.
C	$m + 2m + 6$
Feedback	Remember, when multiplying two binomials; multiply the first, outer, inner, and last terms.
D	$m^2 + 6$
Feedback	Remember, when multiplying two binomials; multiply the first, outer, inner, and last terms.

2. Simplify: $(2r - 7)(3r + 5)$
 Select the correct answer.

- A. $6r^2 - 11r + 35$
- B. $5r^2 - 11r - 35$
- C. $2r - 21r - 35$
- D. $6r^2 - 11r - 35$

	Answer Choice
A	$6r^2 - 11r + 35$
Feedback	Remember, the product of one positive numerical factor and one negative numerical factor is negative.
B	$5r^2 - 11r - 35$
Feedback	Remember, when multiplying monomials, multiply the numerical factors.
C	$2r - 21r - 35$
Feedback	Remember, when multiplying two binomials; multiply the first, outer, inner, and last terms.
D	$6r^2 - 11r - 35$
Feedback	Correct.

3. Simplify: $(p - 8)(p + 8)$
 Select the correct answer.

- A. $p^2 - 64$
- B. $p^2 + 8p - 8p - 64$
- C. p^2
- D. $p^2 + 64$

	Answer Choice
A	$p^2 - 64$
Feedback	Correct.
B	$p^2 + 8p - 8p - 64$
Feedback	This expression is not in simplest form. Group the like factors together.
C	p^2
Feedback	Remember, when multiplying two binomials; multiply the first, outer, inner, and last terms.
D	$p^2 + 64$
Feedback	Remember, the product of one positive numerical factor and one negative numerical factor is negative.

Manipulatives:1. Simplify: $2k(3k-1)$

Select the correct answer.

A.

$= 6k^2 - 2k$

B.

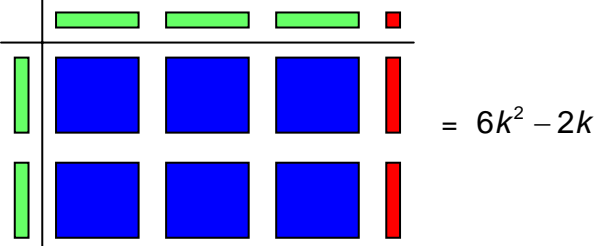
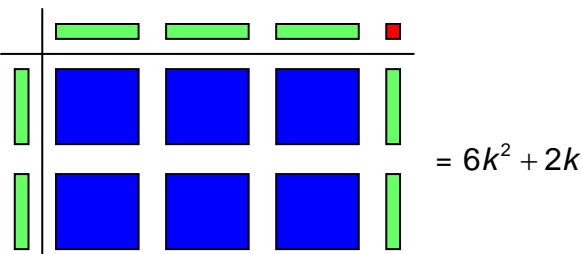
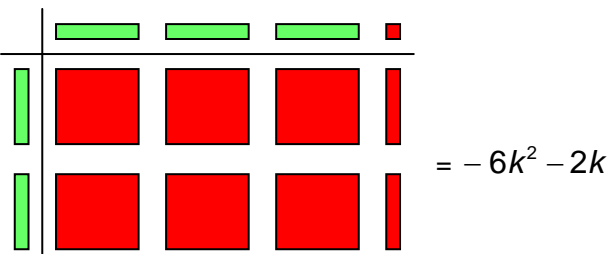
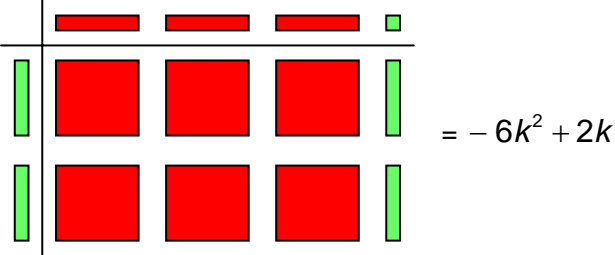
$= 6k^2 + 2k$

C.

$= -6k^2 - 2k$

D.

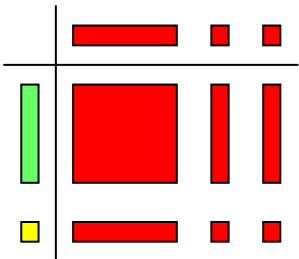
$= -6k^2 + 2k$

	Answer Choice
A	 $= 6k^2 - 2k$
Feedback	Correct.
B	 $= 6k^2 + 2k$
Feedback	Remember, the product of one green rectangular tile (k) and one red small square tile (-1) is a red rectangular tile ($-k$).
C	 $= -6k^2 - 2k$
Feedback	Remember, the product of two green rectangular tiles (k) is one blue large square tile (k^2).
D	 $= -6k^2 + 2k$
Feedback	The width of the rectangle is incorrect. Remember to use a green rectangular tile for k and a red small square tile for -1 .

2. Simplify: $(f + 1)(f - 2)$.

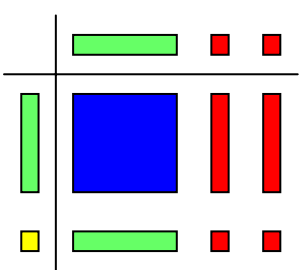
Select the correct answer.

A.



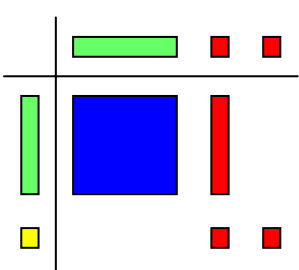
$= -f^2 - 3f - 2$

B.



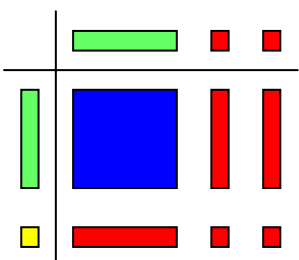
$= f^2 - 2f + f - 2$

C.

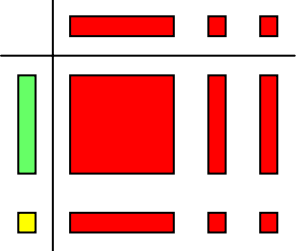
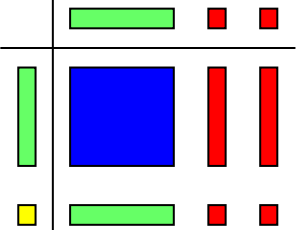
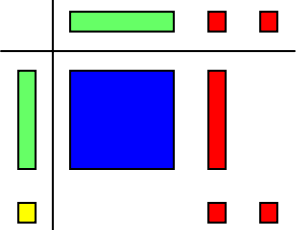
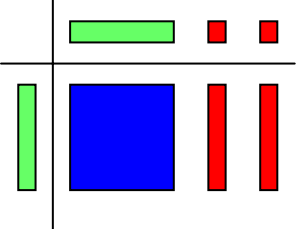


$= f^2 - f - 2$

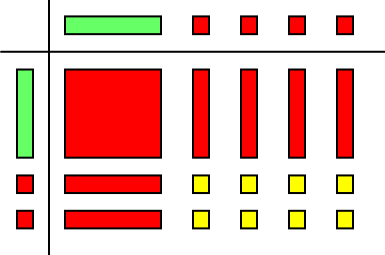
D.



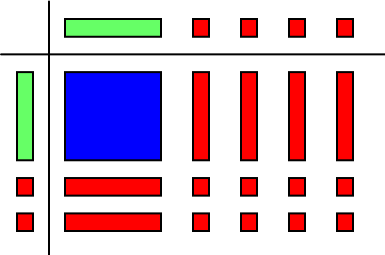
$= f^2 - 3f - 2$

	Answer Choice
A	 $= -f^2 - 3f - 2$
Feedback	The width of the rectangle is incorrect. Remember to use a green rectangular tile for f and a red small square tiles for -1 .
B	 $= f^2 - 2f + f - 2$
Feedback	Remember, one red rectangle tile ($-f$) and one green rectangle tile (f) make a zero pair.
C	 $= f^2 - f - 2$
Feedback	Correct.
D	 $= f^2 - 3f - 2$
Feedback	Remember, the product of one yellow small square tile (1) and one green rectangular tile (f) is one green rectangular tile (f).

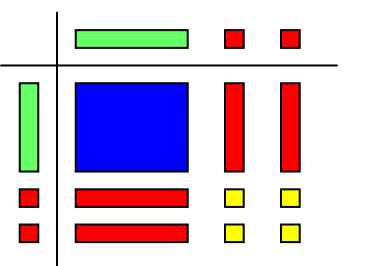
3. Simplify: $(x-2)(x-4)$
 Select the correct answer.

A.  = $-x^2 - 6x + 8$

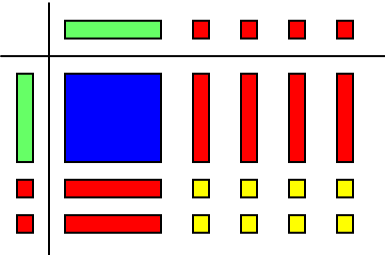
The diagram shows a large red square representing x^2 . To its right are four vertical red rectangles representing $4x$. Below the red square are two horizontal red rectangles representing $2x$. To the right of these two rectangles are eight small yellow squares representing 8 . A vertical green bar is on the left, and a horizontal green bar is at the top, with a vertical line separating them from the rest of the model.

B.  = $x^2 - 6x - 8$

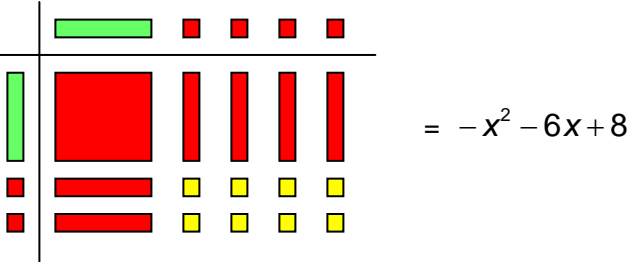
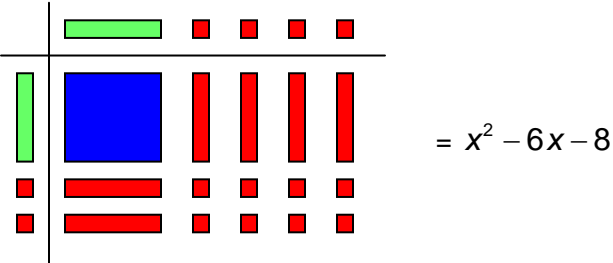
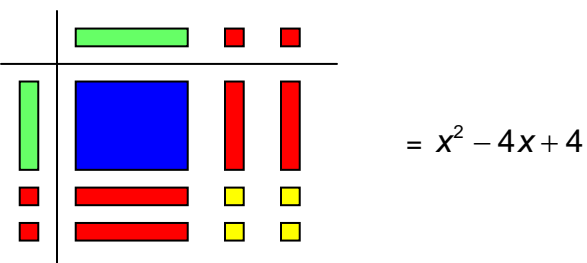
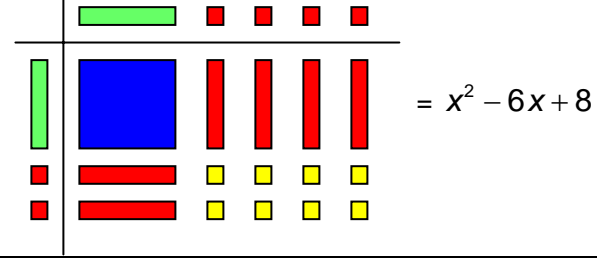
The diagram shows a large blue square representing x^2 . To its right are four vertical red rectangles representing $4x$. Below the blue square are two horizontal red rectangles representing $2x$. To the right of these two rectangles are eight small red squares representing 8 . A vertical green bar is on the left, and a horizontal green bar is at the top, with a vertical line separating them from the rest of the model.

C.  = $x^2 - 4x + 4$

The diagram shows a large blue square representing x^2 . To its right are two vertical red rectangles representing $2x$. Below the blue square are two horizontal red rectangles representing $2x$. To the right of these two rectangles are four small yellow squares representing 4 . A vertical green bar is on the left, and a horizontal green bar is at the top, with a vertical line separating them from the rest of the model.

D.  = $x^2 - 6x + 8$

The diagram shows a large blue square representing x^2 . To its right are four vertical red rectangles representing $4x$. Below the blue square are two horizontal red rectangles representing $2x$. To the right of these two rectangles are eight small yellow squares representing 8 . A vertical green bar is on the left, and a horizontal green bar is at the top, with a vertical line separating them from the rest of the model.

	Answer Choice
A	 $= -x^2 - 6x + 8$
Feedback	Remember, the product of two green rectangular tiles (x) is one blue large square tile (x^2).
B	 $= x^2 - 6x - 8$
Feedback	Remember, the product of two small red square tiles (-1) is one small yellow square tile (1).
C	 $= x^2 - 4x + 4$
Feedback	The width of the rectangle is incorrect. Remember to use a green rectangular tile for x and a red small square tiles for -1 .
D	 $= x^2 - 6x + 8$
Feedback	Correct.