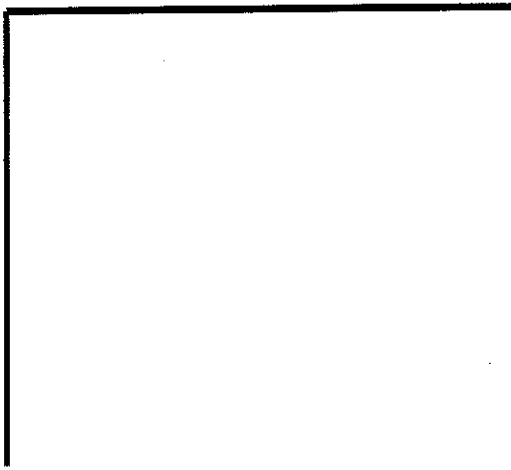


Multiplying Polynomials Using Algebra Tiles

Name _____ Date _____

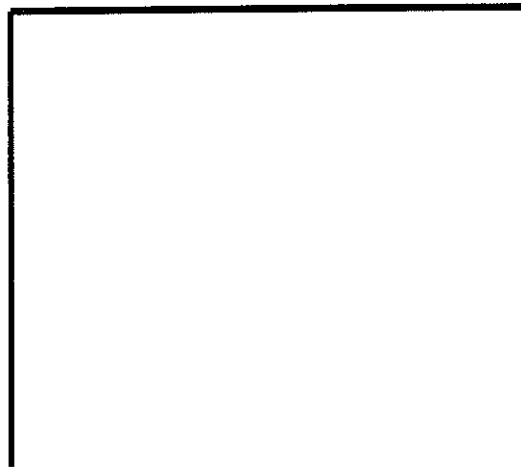
Use algebra tiles to model each multiplication problem and find the product. Draw your model in the frame. Write your simplified answer in the space provided.

1. $x(x + 1)$



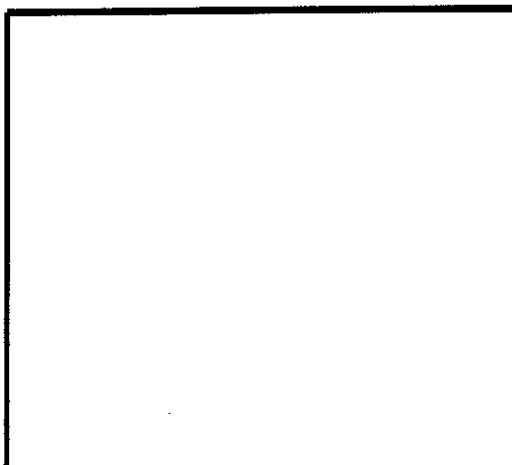
Answer: _____

2. $2x(x - 2)$



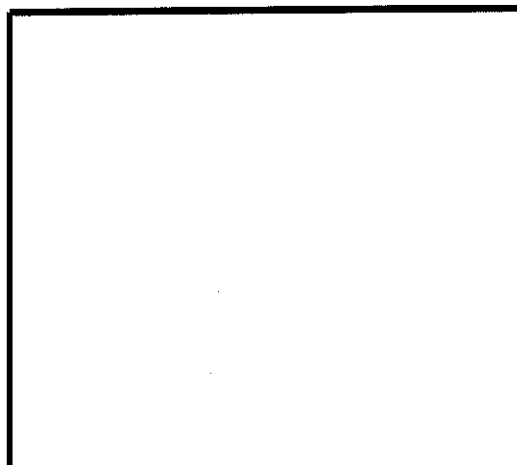
Answer: _____

3. $x(2x + 2)$



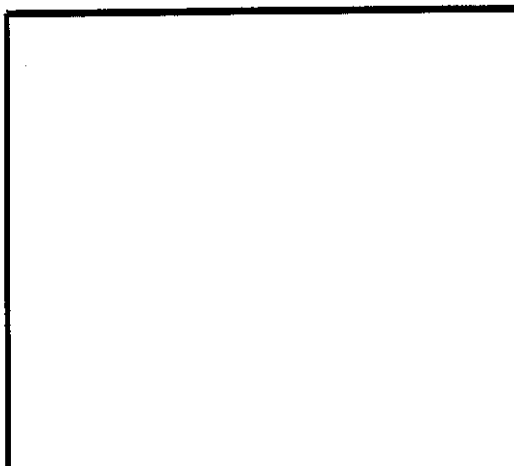
Answer: _____

4. $-x(x - 3)$



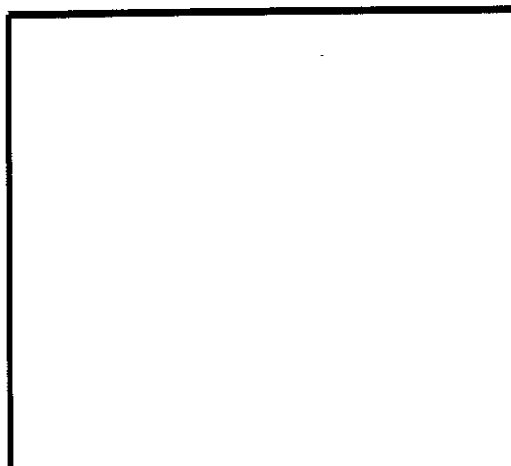
Answer: _____

5. $(2x + 1)(x + 1)$



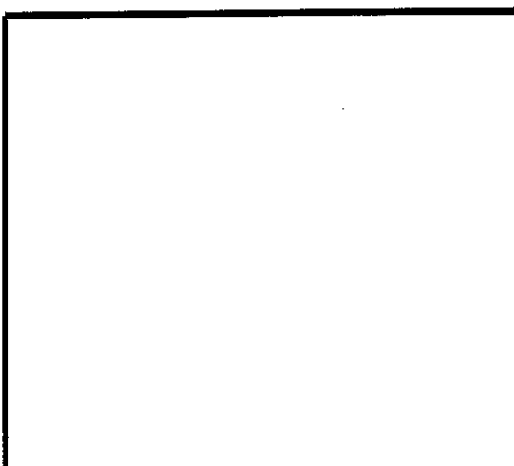
Answer: _____

6. $(-3x + 2)(-x - 2)$



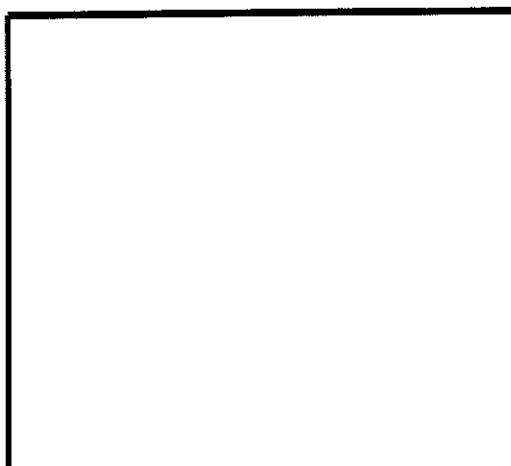
Answer: _____

7. $(2x + 1)(x - 4)$



Answer: _____

8. $(-2x - 2)(2x - 1)$

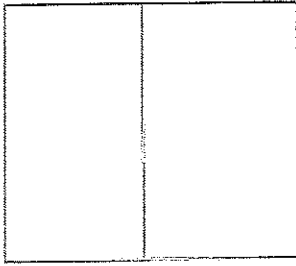


Answer: _____

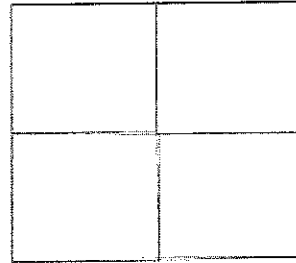
Multiplying Polynomials Practice - BOX Method

Name: _____ Date: _____ Hour: _____

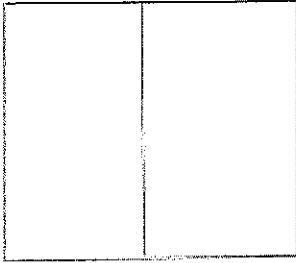
1) $6v(2v + 3)$



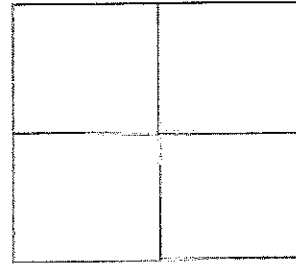
2) $(2n + 2)(6n + 1)$



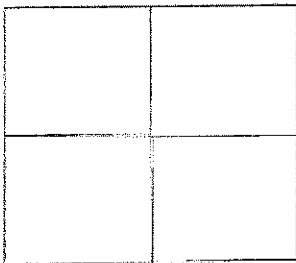
3) $-2x(-2x - 3)$



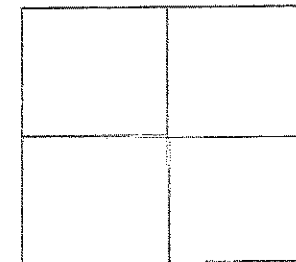
3) $(3m - 1)(8m + 7)$



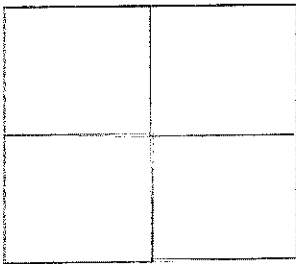
4) $(4m + 1)(2m - 1)$



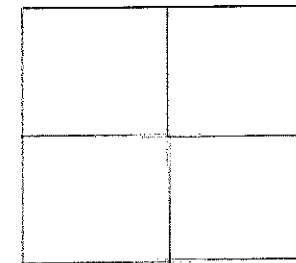
4) $(m + 2)(m - 4)$



5) $(6p - 3)(2p - 4)$



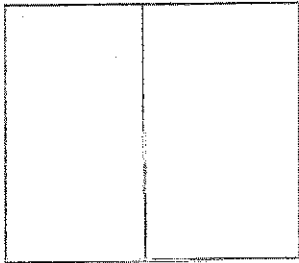
6) $(2x + 2)(2x + 2)$



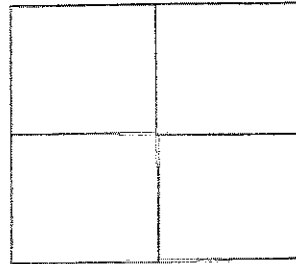
Multiplying Polynomials Practice - BOX Method

Name: _____ Date: _____ Hour: _____

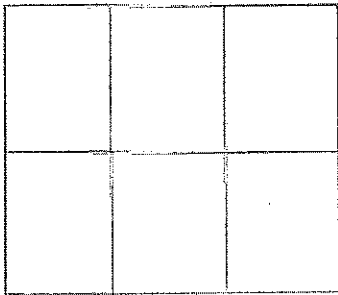
7) $(6n)(n + 2)$



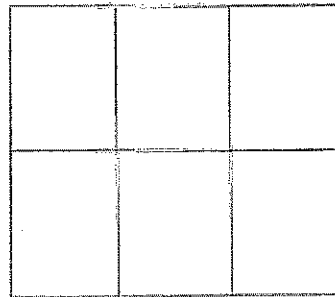
8) $(4n - 1)(n + 2)$



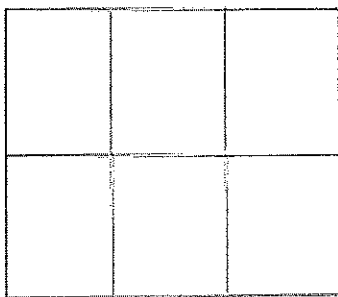
9) $(3m + 1)(m^2 + 2m + 1)$



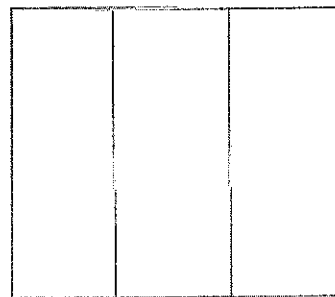
10) $(2m^2 + 4m)(m^2 + m + 2)$



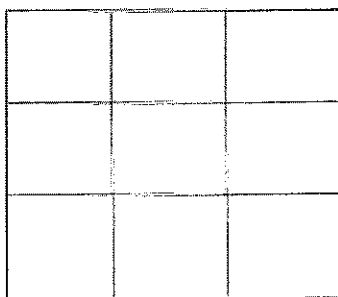
11) $(7k + 1)(k^2 - 2k + 3)$



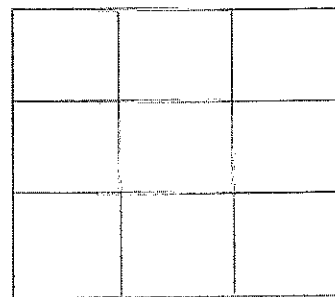
12) $(3m)(2m^2 + m + 3)$



13) $(3x^2 - 4x + 2)(x^2 + 2x + 1)$



14) $(2m^2 + 4m + 1)(m^2 + m + 2)$



More Practice Multiplying Polynomials

Name: _____ Date: _____ Hour: _____

Multiply the following polynomials. Use either the BOX method or the FOIL method.
SHOW YOUR WORK!

1. $(q + 6)(q + 5)$

2. $(x + 7)(x + 4)$

3. $(n - 4)(n - 6)$

4. $(a + 5)(a - 6)$

5. $(4b + 6)(b - 4)$

6. $(2x - 9)(2x + 4)$

9. $(3a - b)(2a - b)$

10. $(4g + 3h)(2g + 3h)$

11. $(m + 5)(m^2 + 4m - 8)$

12. $(t + 3)(t^2 + 4t + 7)$

8-3 Skills Practice**Multiplying Polynomials**

Find each product.

1. $(m + 4)(m + 1)$

2. $(x + 2)(x + 2)$

3. $(b + 3)(b + 4)$

4. $(t + 4)(t - 3)$

5. $(r + 1)(r - 2)$

6. $(n - 5)(n + 1)$

7. $(3c + 1)(c - 2)$

8. $(2x - 6)(x + 3)$

9. $(d - 1)(5d - 4)$

10. $(2\ell + 5)(\ell - 4)$

11. $(3n - 7)(n + 3)$

12. $(q + 5)(5q - 1)$

13. $(3b + 3)(3b - 2)$

14. $(2m + 2)(3m - 3)$

15. $(4c + 1)(2c + 1)$

16. $(5a - 2)(2a - 3)$

17. $(4h - 2)(4h - 1)$

18. $(x - y)(2x - y)$

19. $(w + 4)(w^2 + 3w - 6)$

20. $(t + 1)(t^2 + 2t + 4)$

21. $(k + 4)(k^2 + 3k - 6)$

22. $(m + 3)(m^2 + 3m + 5)$

Error Analysis: Multiplying Polynomials

Name: _____ Date: _____ Hour: _____

Problem	Did they solve it correctly? If not, circle the mistake.	If they didn't, solve it correctly.
$(x+2)(x^2-4)$ $\begin{array}{r cc} & x^2 & -4 \\ \hline x & x^3 & -4x \\ 2 & 2x^2 & -8 \end{array}$ $\boxed{x^3 + 2x^2 - 8 - 4x}$		
$(x^2+3x-1)(x+2)$ $\begin{array}{r ccc} & x^2 & 3x & -1 \\ \hline x & x^3 & 3x^2 & -x \\ 2 & 2x^2 & 6x & -2 \end{array}$ $\boxed{x^3 + 5x^2 + 5x - 2}$		
$(x+3)(x^2-5x+2)$ $\begin{array}{r} (x+3)(x^2-5x+2) \\ \hline x^3 - 5x^2 + 2x + 3x^2 - 15x \\ \hline \end{array}$ $\boxed{x^3 - 2x^2 - 13x}$		
$(x^2+3x+1)(2x^2+2x+3)$ $\begin{array}{r ccc} & 2x^2 & 2x & 3 \\ \hline x^2 & 2x^4 & 2x^3 & 3x^2 \\ 3x & 6x^3 & 6x^2 & 9x \\ 1 & 2x^2 & 2x & 3 \end{array}$ $2x^4 + 8x^3 + 11x^2 + 11x + 3$		

Error Analysis: Multiplying Polynomials

Name: _____ Date: _____ Hour: _____

Find the error in each of the solved problems. Both methods (FOIL and BOX method) were used when solving this problem.

Problem	Did they solve it correctly? If not, circle the mistake.	If they didn't, solve it correctly.
$(x + 3)(2x - 1)$ $\begin{array}{r} 2x \quad -1 \\ x \begin{array}{ c c } \hline 2x^2 & -x \\ \hline \end{array} \\ 3 \begin{array}{ c c } \hline 6x & -3 \\ \hline \end{array} \\ \hline \boxed{2x^2 + 5x - 3} \end{array}$		
$(3x^2 + 4x - 4)(x - 2)$ $\begin{array}{r} 3x^2 \quad 4x \quad -4 \\ x \begin{array}{ c c c } \hline 3x^2 & 4x^2 & -4x \\ \hline \end{array} \\ -2 \begin{array}{ c c c } \hline -6x^2 & -8x & 8 \\ \hline \end{array} \\ \hline \boxed{x^2 - 12x + 8} \end{array}$		
$(7x^2 + 3x)(2x - 4)$ $\begin{array}{l} (7x^2 + 3x)(2x - 4) \\ 14x^3 - 28x^2 + 6x^2 - 12x \\ \boxed{14x^3 - 22x^2 - 12x} \end{array}$		
$(x^2 + 1)(3x - 2)$ $\begin{array}{l} (x^2 + 1)(3x - 2) \\ \boxed{3x^3 - 2x^2 + 3x} \end{array}$		
$(4x - 1)(3x^4 + 2x - 1)$ $\begin{array}{r} 3x^4 \quad 2x \quad -1 \\ 4x \begin{array}{ c c c } \hline 12x^4 & 8x & -4x \\ \hline \end{array} \\ -1 \begin{array}{ c c c } \hline -3x^4 & -2x & 1 \\ \hline \end{array} \\ \hline \boxed{9x^4 + 6x - 4x + 1} \end{array}$		

Multiplying Special Binomials

Name: _____ Date: _____ Hour: _____

1) $(x - 3)(x + 3)$

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

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

What pattern do you notice from problems 1-3?

4) $(x + 3)^2$

5) $(x + 4)^2$

6) $(x + 5)^2$

What pattern do you notice from problems 4-6?

7) $(x - 2)^2$

8) $(x - 5)^2$

9) $(x - 7)^2$

What pattern do you notice from problems 7-9?

Multiplying Special Case Polynomials

Find each product.

1) $(x + 5)(x - 5)$

2) $(n - 1)(n + 1)$

3) $(p - 1)^2$

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

5) $(x - 4)^2$

6) $(n + 3)^2$

7) $(x - 5)(x + 5)$

8) $(n - 5)^2$

9) $(2k^2 + 1)^2$

10) $(8a^2 + 4)(8a^2 - 4)$

11) $(2 + 5n^2)^2$

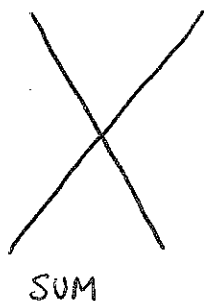
12) $(3x - 7)(3x + 7)$

Name: _____ Date: _____ Hour: _____

Guided Notes: Factoring Trinomials

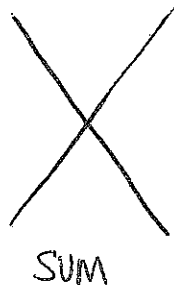
Factoring is basically the opposite of multiplying polynomials. It takes a polynomial and breaks it down into separate polynomials.

Factor $x^2 + 9x + 20$
PRODUCT



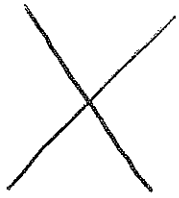
Factor $b^2 + 8b + 12$

PRODUCT



Factor $x^2 - 8x + 15$

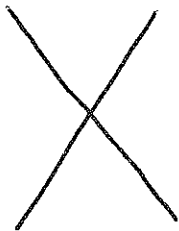
PRODUCT



SUM

Factor $x^2 + 2x - 8$

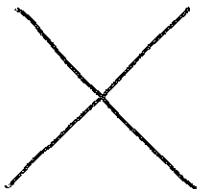
PRODUCT



SUM

Factor $x^2 - 11x + 30$

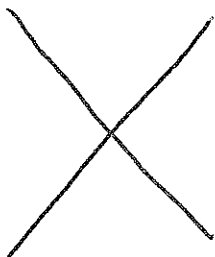
PRODUCT



SUM

Factor $m^2 + 4m - 60$

PRODUCT



SUM

Review: GCF, Reverse Distributing, & Basic Factoring

Name: _____ Date: _____ Hour: _____

Find the Greatest Common Factor (GCF) of following numbers and expressions.

1) $5x + 15y$

2) $6xy - 2x$

3) $15pq - 20q$

4) $-18xy - 6x$

5) $7x^2y + xy$

6) $aw - aw^2$

7) $9x + 6$

8) $10 + 15a$

9) $2x^2 - 3x$

10) $4m - 8n + 6p$

Factoring Trinomials (a = 1)

Factor each completely.

1) $b^2 + 8b + 7$

2) $n^2 - 11n + 10$

3) $m^2 + m - 90$

4) $n^2 + 4n - 12$

5) $n^2 - 10n + 9$

6) $b^2 + 16b + 64$

7) $m^2 + 2m - 24$

8) $x^2 - 4x + 24$

9) $k^2 - 13k + 40$

10) $a^2 + 11a + 18$

11) $n^2 - n - 56$

12) $n^2 - 5n + 6$

8-3 Study Guide and Intervention *(continued)***Multiplying Polynomials**

Multiply Polynomials The Distributive Property can be used to multiply any two polynomials.

Example Find $(3x + 2)(2x^2 - 4x + 5)$.

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

$$= 3x(2x^2 - 4x + 5) + 2(2x^2 - 4x + 5)$$

Distributive Property

$$= 6x^3 - 12x^2 + 15x + 4x^2 - 8x + 10$$

Distributive Property

$$= 6x^3 - 8x^2 + 7x + 10$$

Combine like terms.

The product is $6x^3 - 8x^2 + 7x + 10$.

Exercises

Find each product. SHOW ALL WORK!

1. $(x + 2)(x^2 - 2x + 1)$

2. $(x + 3)(2x^2 + x - 3)$

3. $(2x - 1)(x^2 - x + 2)$

4. $(p - 3)(p^2 - 4p + 2)$

5. $(3k + 2)(k^2 + k - 4)$

6. $(2t + 1)(10t^2 - 2t - 4)$

7. $(3n - 4)(n^2 + 5n - 4)$

8. $(8x - 2)(3x^2 + 2x - 1)$

9. $(2a + 4)(2a^2 - 8a + 3)$

10. $(3x - 4)(2x^2 + 3x + 3)$

11. $(n^2 + 2n - 1)(n^2 + n + 2)$

12. $(t^2 + 4t - 1)(2t^2 - t - 3)$

13. $(y^2 - 5y + 3)(2y^2 + 7y - 4)$

14. $(3b^2 - 2b + 1)(2b^2 - 3b - 4)$

8-6 Skills Practice

Solving $x^2 + bx + c = 0$

Factor each polynomial. Be sure to show all work! Use a separate sheet of paper if needed.

1. $t^2 + 8t + 12$

2. $n^2 + 7n + 12$

3. $p^2 + 9p + 20$

4. $h^2 + 9h + 18$

5. $n^2 + 3n - 18$

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

7. $y^2 - 5y - 6$

8. $g^2 + 3g - 10$

9. $r^2 + 4r - 12$

10. $x^2 - x - 12$

11. $w^2 - w - 6$

12. $y^2 - 6y + 8$

13. $x^2 - 8x + 15$

14. $b^2 - 9b + 8$

15. $t^2 - 15t + 56$

16. $-4 - 3m + m^2$

Factor each equation. The first problem has been completed for you.

17. $x^2 - 6x + 8 = 0$
 $(x-6)(x-4) = 0$

19. $m^2 + 5m + 6 = 0$

18. $b^2 - 7b + 12 = 0$

20. $d^2 + 7d + 10 = 0$

21. $y^2 - 2y - 24 = 0$

22. $p^2 - 3p = 18$

23. $h^2 + 2h = 35$

24. $a^2 + 14a = -45$

25. $n^2 - 36 = 5n$

26. $w^2 + 30 = 11w$

→ HINT: Rewrite the equations so all of the terms are on one side!

~~8~~
~~6~~ -4

$\begin{array}{|c|c|} \hline x & -6 \\ \hline x^2 & -6x \\ \hline -4x & 8 \\ \hline \end{array}$