5-Minute Check

Over Lesson 8–2

3 Simplify $3ab(5a^2 - a - 2) + 2a(b + 1)$.

A. $15a^3b - 3a^2b - 4ab + 2a$

B. $15ab - 3a^2 + 4ab^2$

C. $15a^3 - a^2b - 4ab$

D. $8a^3b - 3a^2b - 2ab + a$

5-Minute Check

Over Lesson 8–2

3 Simplify $3ab(5a^2 - a - 2) + 2a(b + 1)$.

$3a^2b \quad -3a^2b \quad -6ab \quad +2ab \quad +2a$

A. $15a^3b - 3a^2b - 4ab + 2a$

B. $15ab - 3a^2 + 4ab^2$

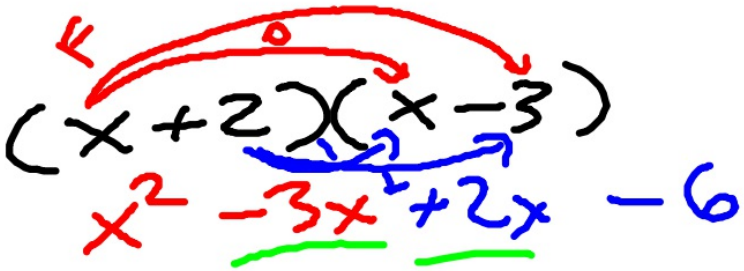
C. $15a^3 - a^2b - 4ab$

D. $8a^3b - 3a^2b - 2ab + a$

8-3 Multiplying Polynomials

KeyConcept FOIL Method

Words To multiply two binomials, find the sum of the products of ***F*** the *First* terms, ***O*** the *Outer* terms, ***I*** the *Inner* terms, ***L*** and the *Last* terms.



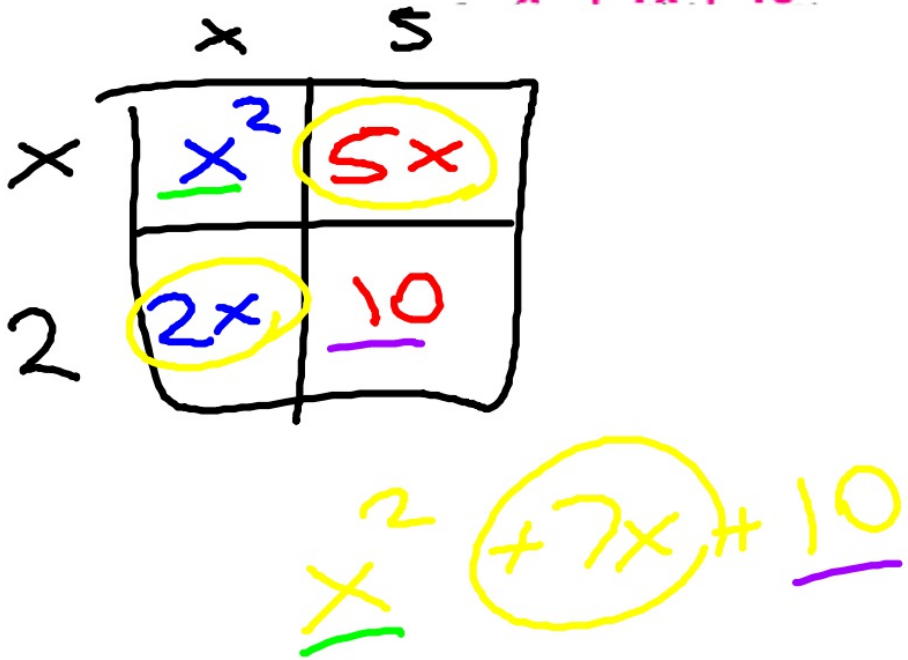
Once upon a time, we were taught the FOIL method. Why?

It helped us distribute!

Examples 1–2 Find each product.

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

$x^2 + 7x + 10$



$x^2 + 7x + 10$

1) create a box

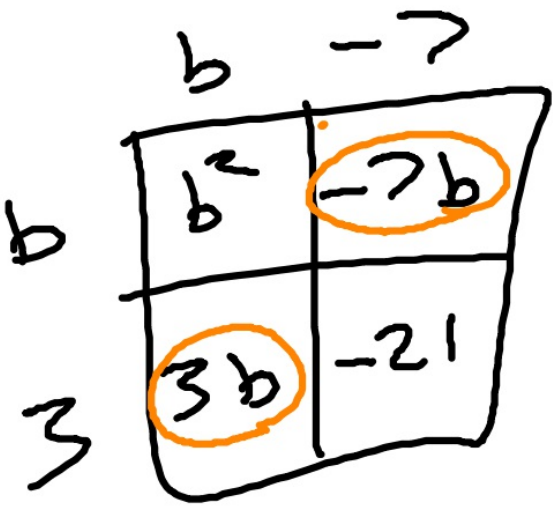
2) label the sides with each term.

3)multiply the sides, write the product in the square.

4) add up the squares!

Now you try!

3. $(b-7)(b+3)$ $b^2 - 4b - 21$



1) create a box

2) label the sides with each term.

3)multiply the sides, write the product in the square.

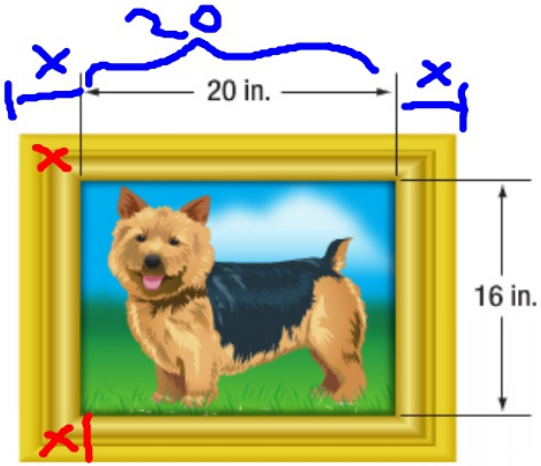
4) add up the squares!

Examples 1–2 Find each product.

1. $(x + 5)(x + 2)$ $x^2 + 7x + 10$
2. $(y - 2)(y + 4)$ $y^2 + 2y - 8$
3. $(b - 7)(b + 3)$ $b^2 - 4b - 21$
4. $(4n + 3)(n + 9)$ $4n^2 + 39n + 27$
5. $(8h - 1)(2h - 3)$ $16h^2 - 26h + 3$
6. $(2a + 9)(5a - 6)$ $10a^2 + 33a - 54$

Example 3

7. FRAME Hugo is designing a frame as shown at the right. The frame has a width of x inches all the way around. Write an expression that represents the total area of the picture and frame. $4x^2 + 72x + 320$



$l = (2x+16)$

$A = l \cdot w$

$= (2x+16)(2x+20)$

$w = (2x+20)$

... then multiply

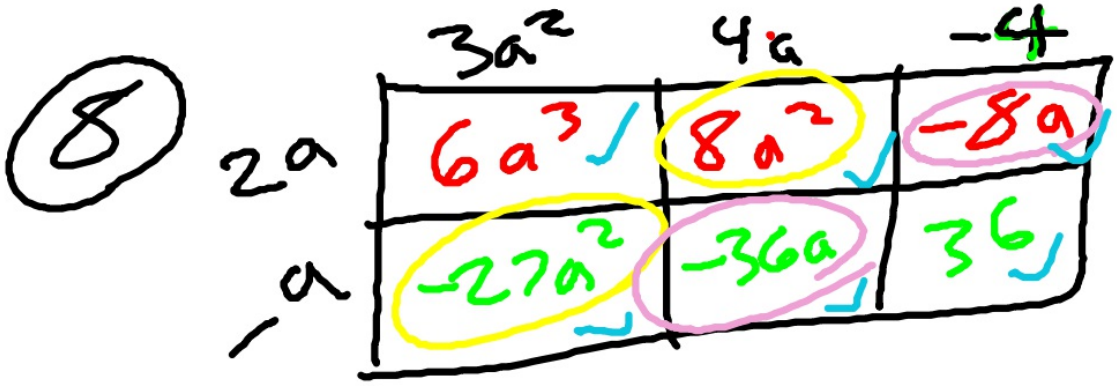
IF the polynomial is bigger, then make a bigger box!

I'll do #8 as an example, you try #9!

Example 4 Find each product.

8. $(2a-9)(3a^2+4a-4)$ $6a^3-19a^2-44a+36$

9. $(4y^2-3)(4y^2+7y+2)$ $16y^4+28y^3-4y^2-21y-6$



Example 4 Find each product.

8. $(2a - 9)(3a^2 + 4a - 4)$ $6a^3 - 19a^2 - 44a + 36$
9. $(4y^2 - 3)(4y^2 + 7y + 2)$ $16y^4 + 28y^3 - 4y^2 - 21y - 6$
10. $(x^2 - 2x + 3)(5x^2 + 3x - 4)$ $5x^4 - 17x^3 + 9x^2 + 31x - 20$
11. $(2n^2 + 3n - 6)(5n^2 - 2n - 8)$ $10n^4 + 11n^3 - 52n^2 - 12n + 48$

16. $15y^2 - 17y + 4$
17. $24d^2 - 62d + 35$
18. $6m^2 + 19m + 15$
19. $49n^2 - 84n + 36$

Practice and Problem Solving

Extra Practice is on page R8.

Examples 1–2 Find each product. 12. $3c^2 + 4c - 15$ 13. $2g^2 + 15g - 50$ 15. $24x^2 + 18x + 3$

12. $(3c - 5)(c + 3)$
13. $(g + 10)(2g - 5)$
14. $(6a + 5)(5a + 3)$ $30a^2 + 43a + 15$
15. $(4x + 1)(6x + 3)$
16. $(5y - 4)(3y - 1)$
17. $(6d - 5)(4d - 7)$
18. $(3m + 5)(2m + 3)$
19. $(7n - 6)(7n - 6)$
20. $(12t - 5)(12t + 5)$ $144t^2 - 25$
21. $(5r + 7)(5r - 7)$ $25r^2 - 49$
22. $(8w + 4x)(5w - 6x)$ $40w^2 - 28wx - 24x^2$
23. $(11z - 5y)(3z + 2y)$ $33z^2 + 7yz - 10y^2$

Example 4 Find each product. 25–30. See margin.

25. $(2y - 11)(y^2 - 3y + 2)$
26. $(4a + 7)(9a^2 + 2a - 7)$
27. $(m^2 - 5m + 4)(m^2 + 7m - 3)$
28. $(x^2 + 5x - 1)(5x^2 - 6x + 1)$
29. $(3b^3 - 4b - 7)(2b^2 - b - 9)$
30. $(6z^2 - 5z - 2)(3z^3 - 2z - 4)$