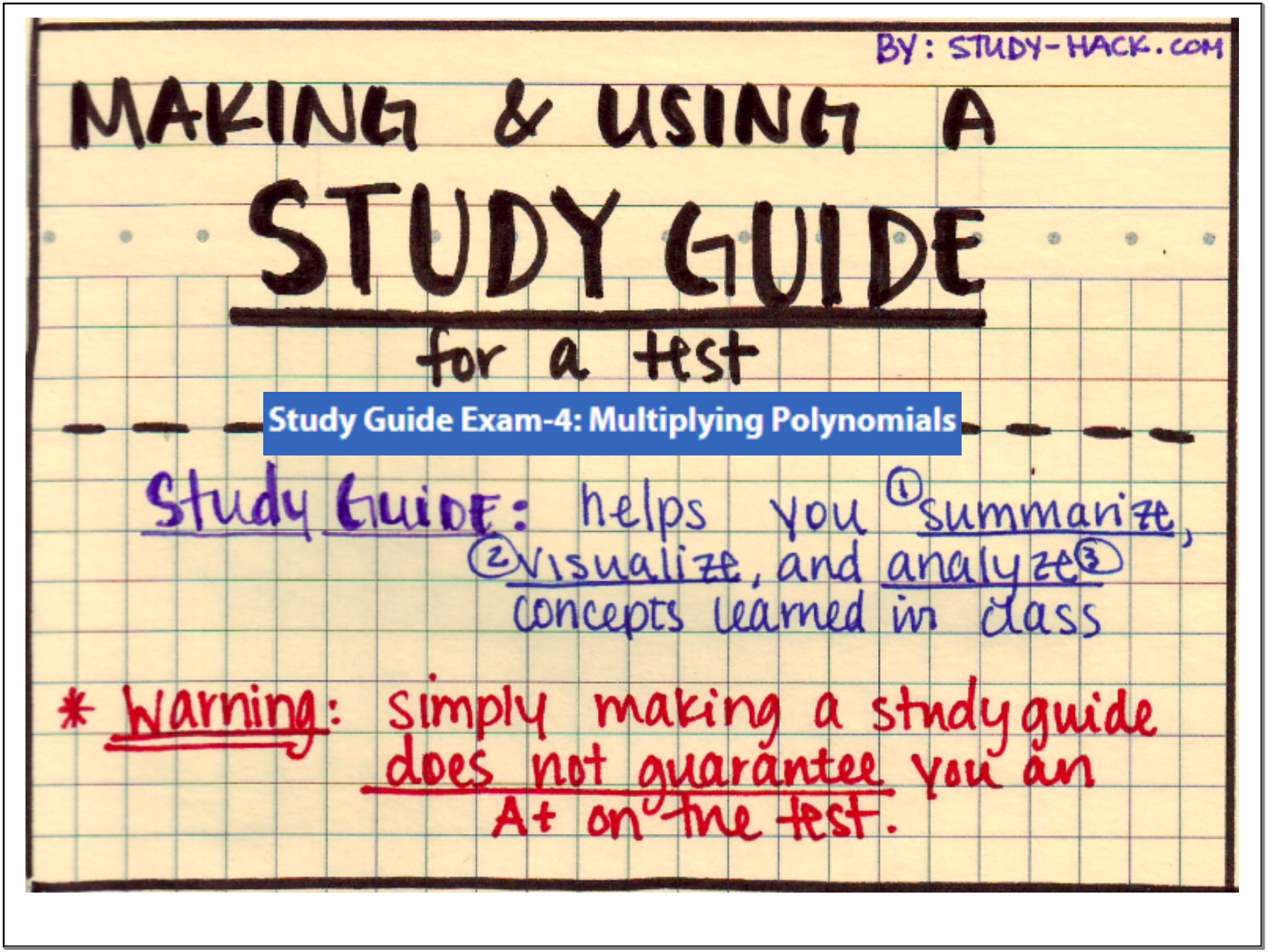
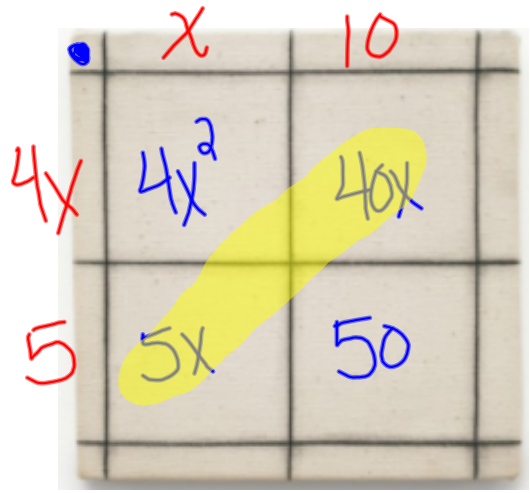

BY: STUDY-HACK.COM
MAKING & USING A
STUDY GUIDE
for a test
Study Guide Exam-4: Multiplying Polynomials
Study Guide: helps you ① summarize, ② visualize, and analyze ③ concepts learned in class
* Warning: simply making a study guide does not guarantee you an A+ on the test.

1 Find the product $(x + 10)(4x + 5)$.

$$(x + 10)(4x + 5) = \boxed{4}x^2 + \boxed{45}x + \boxed{50}$$



Step 1: Write one of the polynomial on the ***top*** and the other on the ***side*** of a box.
**It does not matter which goes where.*

Step 2: Multiply the ***edges*** (adding exponents) and together and fill in the corresponding spot.

Multiplying
Keep the base,
add the exponents.
$a^m \times a^n = a^{m+n}$

Keep the base and add the coefficient. Combine the like terms

Step 3: Add the ***diagonal*** products (like terms).

2

Find the product $(3x + 6)(3x - 6)$.

$(3x + 6)(3x - 6) = \boxed{9}x^2 - \boxed{36}$

use

Rule: **PRODUCT OF A SUM AND A DIFFERENCE**

$$(a+b)(a-b) = a^2 - b^2$$

$a = 3x \qquad b = 6$

$(3x)^2 - (6)^2$

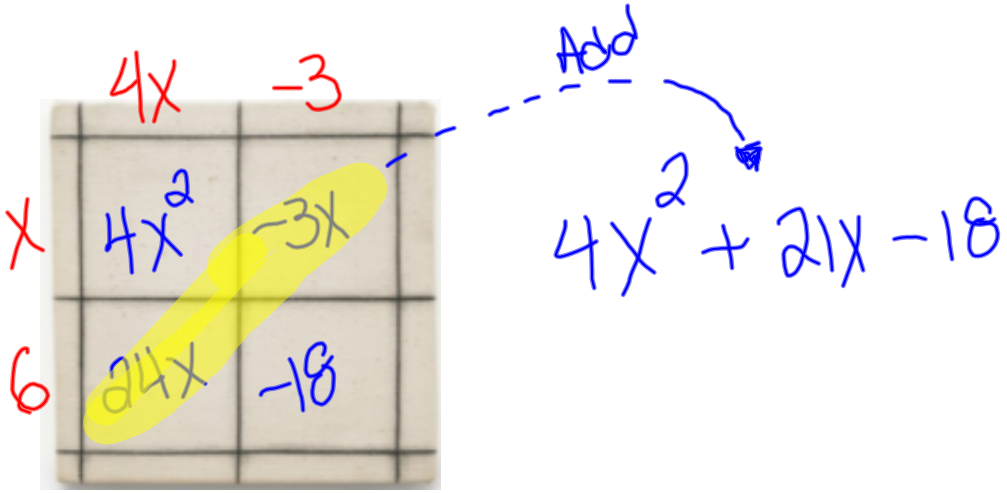
$9x^2 - 36$

3

Multiply. Identify the product as a perfect-square trinomial, a difference of squares, or neithe

$(4x - 3)(x + 6) =$ ☐

The product is neither ▼.



Multiplying

Keep the base, add the exponents.

$$a^m \times a^n = a^{m+n}$$

Keep the base and add the coefficient. Combine the like terms

4

Multiply. Identify the product as a perfect-square trinomial, a difference of squares, or neither.

$(4x + 6)^2 =$ ☐

The product is a perfect-square trinomial

Substitute

$a = 4x \quad b = 6$

$$(a + b)^2$$

$$a^2 + 2ab + b^2$$

$$(4x)^2 + 2(4x)(6) + (6)^2$$

$$16x^2 + 48x + 36$$

5

Multiply. Identify the product as a perfect-square trinomial, a difference of squares, or neither.

$(5y + 8)(5y - 8) =$ ☐

The product is a difference of squares ▾.

PRODUCT OF A SUM AND A DIFFERENCE

$$(a+b)(a-b) = a^2 - b^2$$

$a = 5y$ $\quad b = 8$

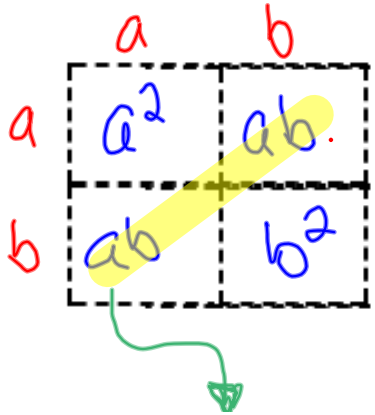
$= (5y)^2 - (8)^2$

$= 25y^2 - 64$

6

a perfect-square trinomial

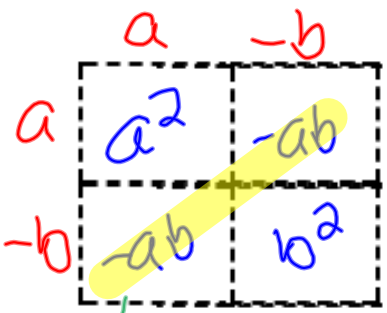
$(a+b)^2$



$a^2 + ab + ab + b^2$

$a^2 + 2ab + b^2$

$(a-b)^2$

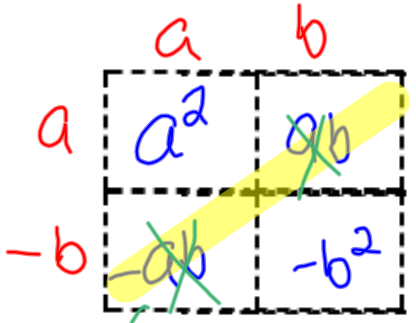


$a^2 - ab - ab + b^2$

$a^2 - 2ab + b^2$

a difference of squares

$(a+b)(a-b)$



$a^2 - ab + ab + b^2$

$a^2 - b^2$

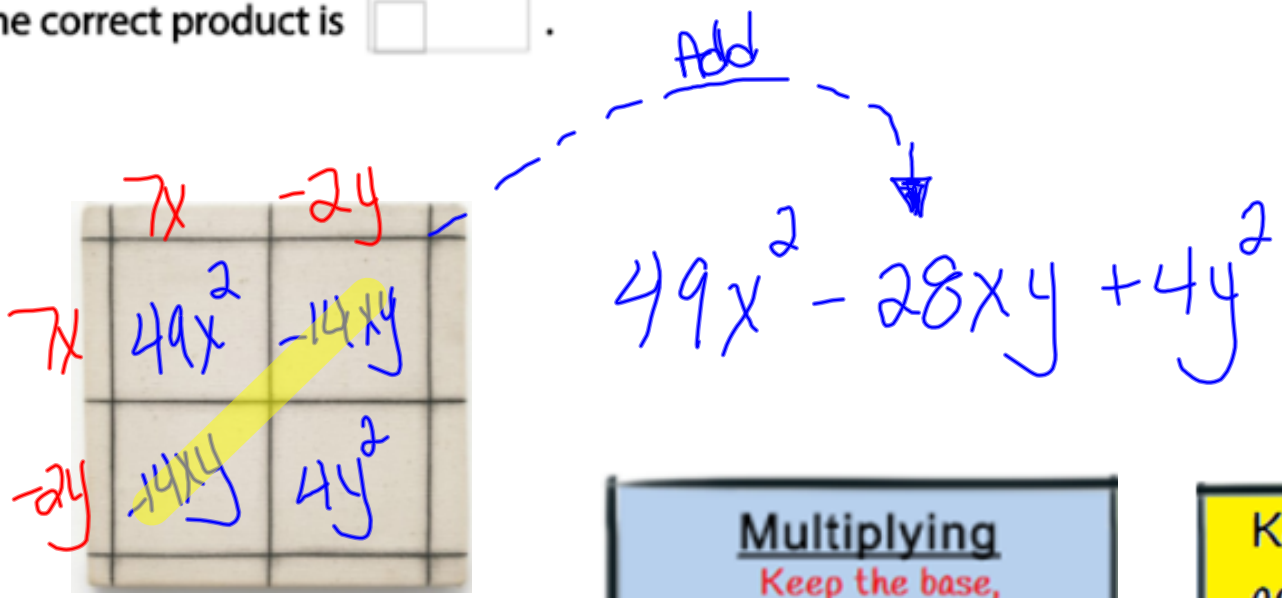
7

Marco wrote the expression $(7x - 2y)^2 = 49x^2 - 4y^2$. Complete the explanation and correct his error.

Marco may have confused a difference of the squares and the square of a binomial difference ▾.

He wrote the difference of the squares of the terms instead of the square of a binomial ▾ difference.

The correct product is ☐.



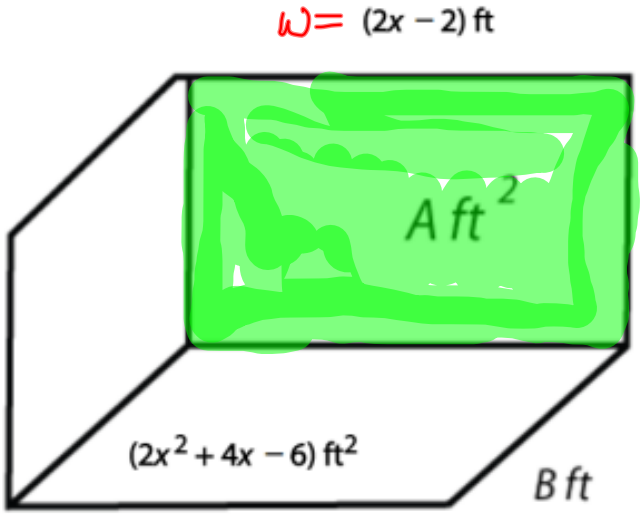
Multiplying
Keep the base,
add the exponents.

$$a^m \times a^n = a^{m+n}$$

Keep the base and add the coefficient. Combine the like terms

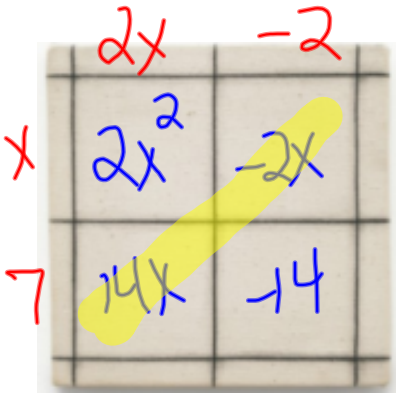
8

The width of the prism is $(2x - 2)$ ft, and its height is $(x + 7)$ ft.
The area of the base of the prism is $(2x^2 + 4x - 6)$ ft^2.



$A = \ell \cdot w$

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



$2x^2 + 12x - 14$

Enter a polynomial expression to represent the area of side A.

The expression to represent the area of side A is ☐ ft^2.

9 **Multiply.**

$(4x - 5y)^2 =$ ☐

↓

$(a - b)^2$

↓

$a^2 - 2ab + b^2$ → $(4x)^2 - 2(4x)(5y) + (5y)^2$

$a = 4x$ $b = 5y$

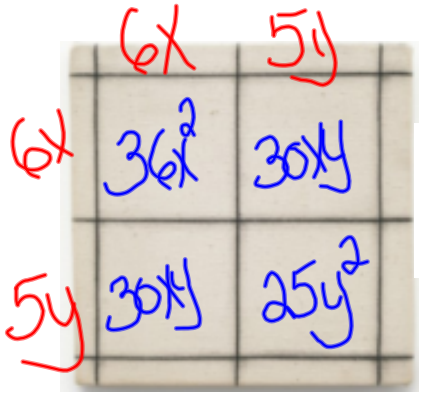
↓

$16x^2 - 40xy + 25y^2$

10

Multiply.

$(6x + 5y)^2 =$ ☐



"Box Method"

$= 36x^2 + 60xy + 25y^2$

OR

a perfect-square trinomial

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(6x + 5y)^2 = (6x)^2 + 2(6x)(5y) + (5y)^2$$

$$= 36x^2 + 60xy + 25y^2$$

11

Multiply.

$(7x + 2y)^2$

Expand the binomial sum.

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$\begin{aligned}(7x + 2y)^2 &= (7x)^2 + 2(7x)(2y) + (2y)^2 \\ &= 49x^2 + 28xy + 4y^2\end{aligned}$$

12

Multiply.

$$(8x - 6y)^2$$

Expand the binomial difference.

$$(a - b)^2 = a^2 - 2ab + b^2$$

$$(8x - 6y)^2 = (8x)^2 - 2(8x)(6y) + (6y)^2$$

$$= 64x^2 - 96xy + 36y^2$$

13 **Multiply.**

$$(9x - 7y)^2$$

Expand the binomial difference.

$$(a - b)^2 = a^2 - 2ab + b^2$$

$$(9x - 7y)^2 = (9x)^2 - 2(9x)(7y) + (7y)^2$$

$$= 81x^2 - 126xy + 49y^2$$

14 **Multiply.**

$(2x + 4)(2x - 4) =$ ☐

a difference of two squares.

$$(a + b)(a - b) = a^2 - b^2$$

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

$$= 4x^2 - 16$$

15

Multiply.

$$(6x + 4y)(6x - 4y)$$

$$(a + b)(a - b) = a^2 - b^2$$

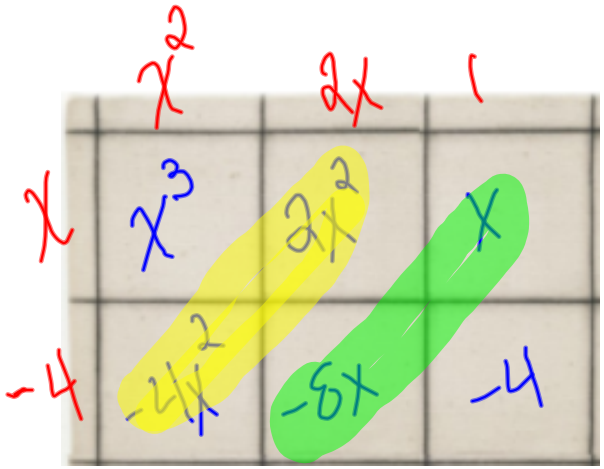
$$(6x + 4y)(6x - 4y) = (6x)^2 - (4y)^2$$

$$= 36x^2 - 16y^2$$

16

Multiply the polynomials.

$$(x-4)(x^2+2x+1) = x^3 - 2x^2 - 7x - 4$$



Multiplying

Keep the base,
add the exponents.

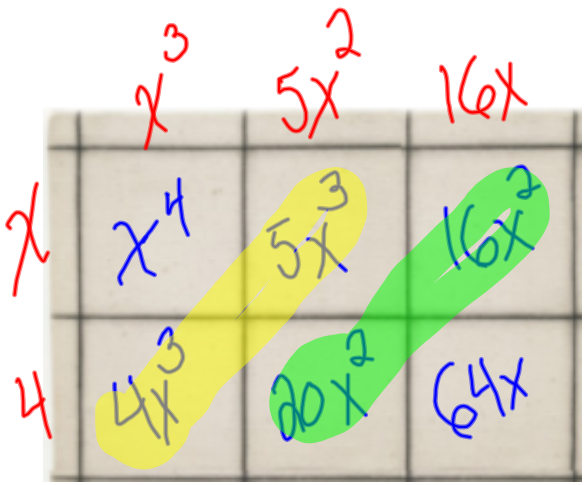
$$a^m \times a^n = a^{m+n}$$

Keep the base and add the coefficient. Combine the like terms

17

Multiply the polynomials.

$$(x+4)(x^3+5x^2+16x) = x^4+9x^3+36x^2+64x$$



Multiplying

Keep the base, add the exponents.

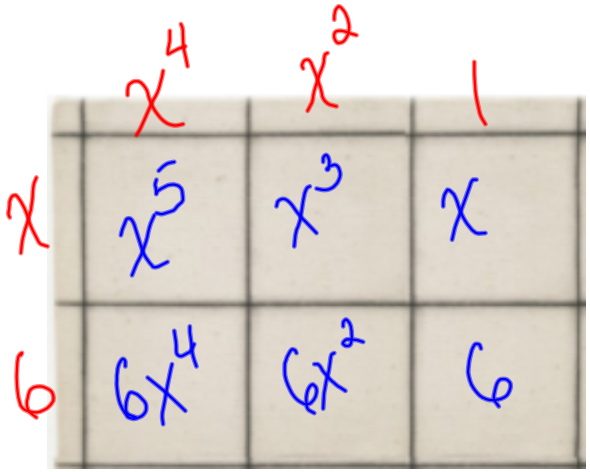
$$a^m \times a^n = a^{m+n}$$

Keep the base and add the coefficient. Combine the like terms

18

Multiply the polynomials. Enter your answer in standard form.

$(x+6)(x^4+x^2+1) =$ $x^5+6x^4+x^3+6x^2+x+6$

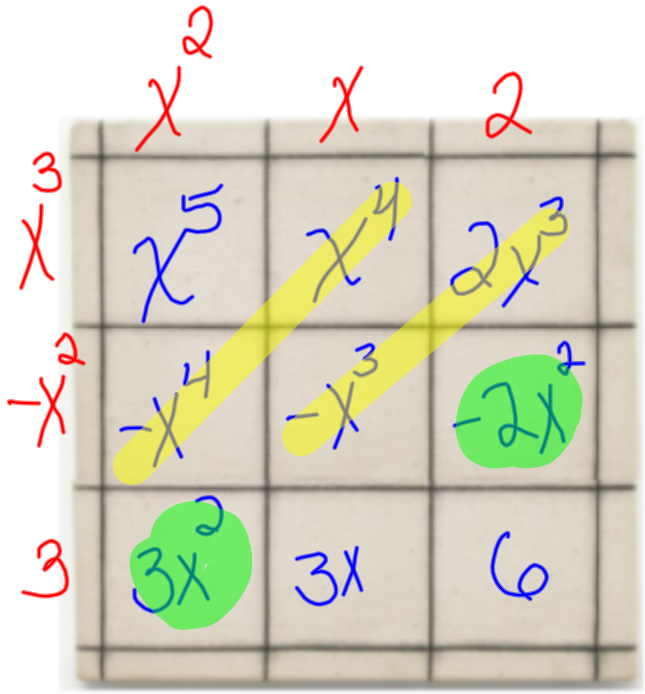


there are NO Like Terms to ADD!!

19

Multiply the polynomials. Enter your answer in standard form.

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

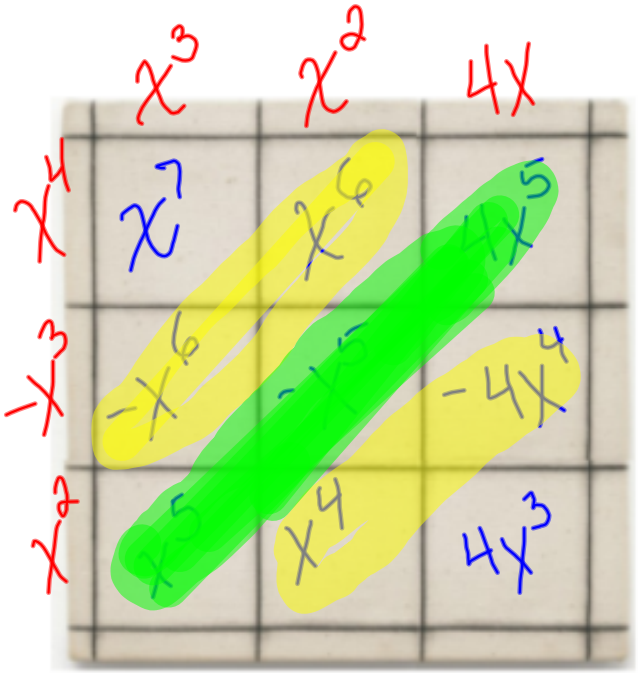


$$x^5 + x^3 + x^2 + 3x + 6$$

20

Multiply the polynomials. Enter your answer in standard form.

$$(x^3+x^2+4x)(x^4-x^3+x^2) = x^7+4x^5-3x^4+4x^3$$



Multiplying

Keep the base, add the exponents.

$$a^m \times a^n = a^{m+n}$$

Keep the base and add the coefficient. Combine the like terms

21

Drag and drop the first term of each product next to its corresponding product.

$(4x+1)(2x+4)$ — $8x^2$

$(x^3+x^2)(3x^8+x^{11})$ — $3x^{11}$

$x(x+9)$ — x^2

$(x^2+9)(4x+4)(2x+8)$ — $8x^4$

$(x^2+4)(x^3+8)(x+7)$ — x^6

$x^2(4x) = 4x^3(2x) = 8x^4$

22 **Find the product.**

$$\left(x^4+6y^3+7xy\right)\left(9xy\right)=$$ ☐

$$= 9x^{4+1}y^{0+1}+54x^{0+1}y^{3+1}+63x^{1+1}y^{1+1}$$ Distribute.

$$= 9x^5y+54xy^4+63x^2y^2$$ Simplify.

23

Multiply the polynomials.

$$(4x + 1)(x^3 + 3x^2 - 8) = \square$$

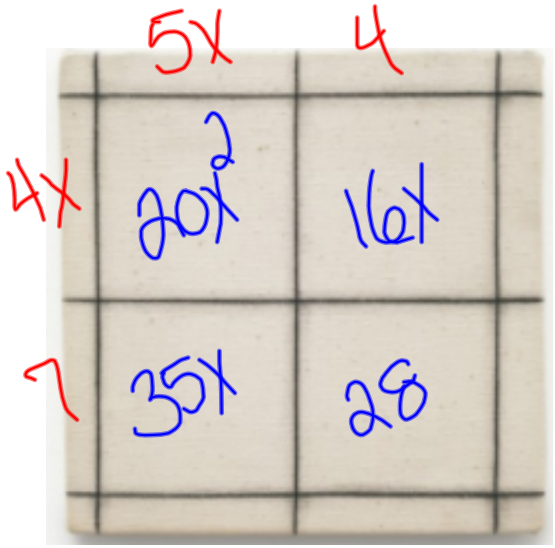
	x^3	$3x^2$	-8
$4x$	$4x^4$	$12x^3$	$-32x$
1	x^3	$3x^2$	-8

$$4x^4 + 13x^3 - 29x^2 - 8$$

24

Multiply by using the FOIL method.

$(5x + 4)(4x + 7) =$ ☐

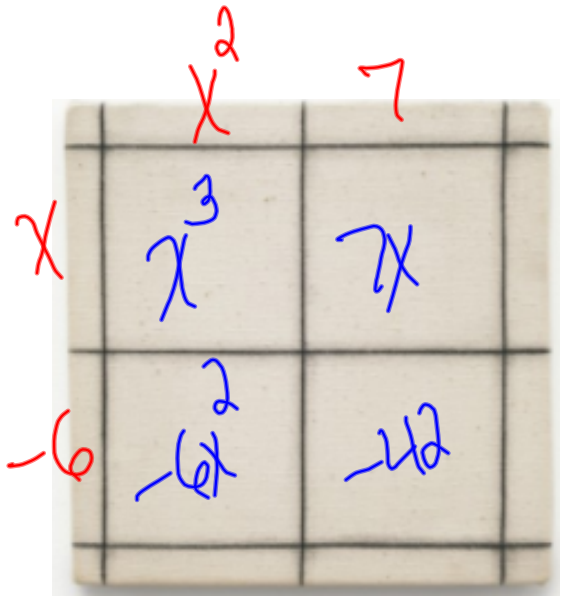


$20x^2 + 51x + 28$

25

Multiply by using the Distributive Property.

$(x^2 + 7)(x - 6) =$ ☐



$x^3 - 6x^2 + 7x - 42$