

Curriculum Outcome

- (PR 5) Demonstrate an understanding of polynomials (limited to of degree less than or equal to 2).
- (PR 6) Model, record and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially and symbolically (limited to polynomials of degree less than or equal to 2).
- (PR 7) Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically.

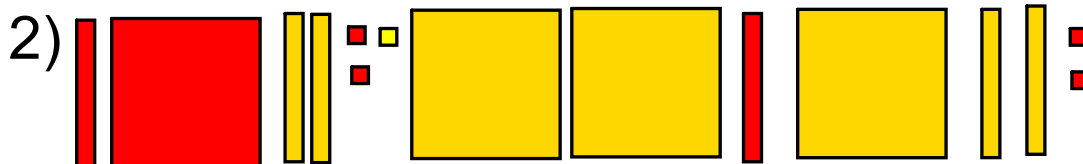
Student Friendly:

"How to add polynomials"

Warm Up

Simplify the following polynomial

1) $4x^2 + 7xy - 3x + 5x^2 - 6 - 5xy + x - 10$



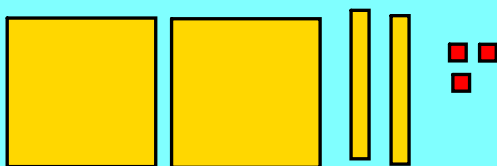
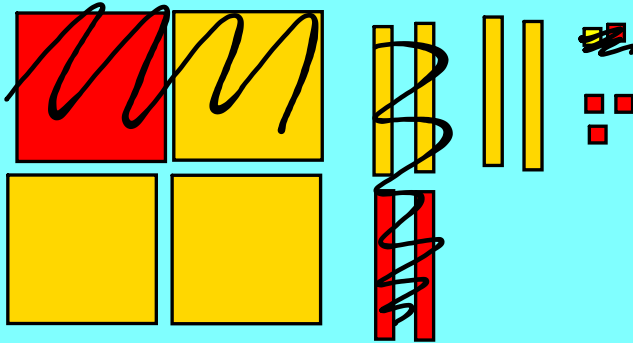
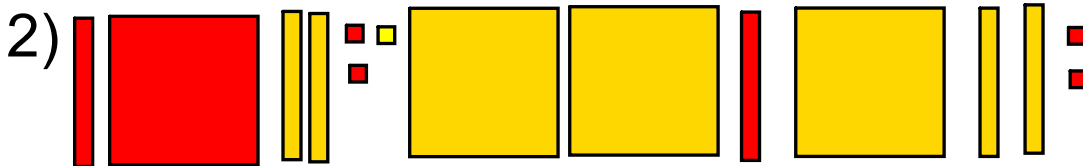
Warm Up

Simplify the following polynomial

$$1) 4x^2 + 7xy - 3x + 5x^2 - 6 - 5xy + x + 10$$

$$4x^2 + 5x^2 + 7xy - 5xy - 3x + x - 6 - 10$$

$$9x^2 + 2xy - 2x - 16$$



$$2x^2 + 2x - 3$$



Section 5.3

Adding Polynomials



Determine the sum of $6x^2 + 2x + 9$ and $-3x^2 + 4x - 5$

When we write the sum of two polynomials, we write each polynomial in brackets:

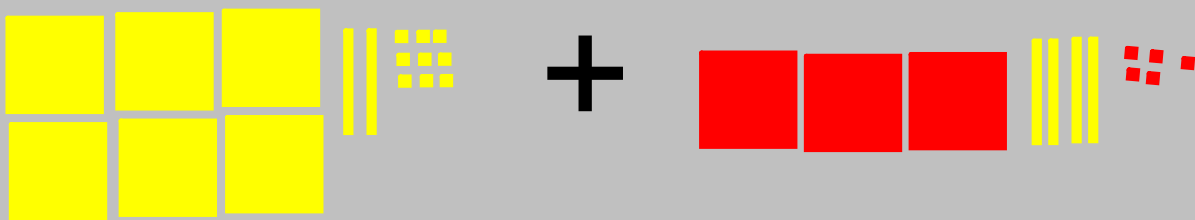
$$(6x^2 + 2x + 9) + (-3x^2 + 4x - 5)$$

Tiles

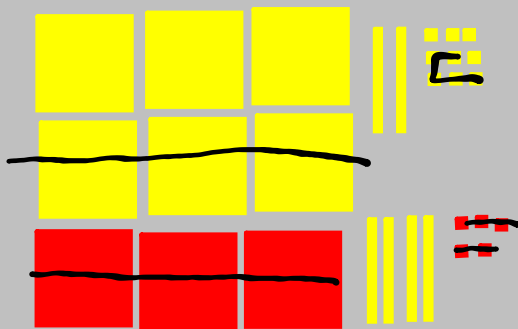
Don't copy down

We can solve the question with tiles.

$$(6x^2 + 2x + 9) + (-3x^2 + 4x - 5)$$



Combine the displays. (Group like Tiles)



Remove Zero Pairs.

The remaining tiles represent



$$3x^2 + 6x + 4$$

No Tiles**Copy Down**

We often do them without algebra tiles

$$(6x^2 + 2x + 9) + (-3x^2 + 4x - 5)$$

Drop brackets

$$6x^2 + 2x + 9 - 3x^2 + 4x - 5$$

$$6x^2 - 3x^2 + 2x + 4x + 9 - 5$$

$$3x^2 + 6x + 4$$

Adding Polynomials Without Tiles

understood +1 in front of second bracket so distribute through

$$\text{Add: } (5c - 11) + (-4c^2 + c + 7)$$

Method 1:

Add horizontally:

$$(5c - 11) + (-4c^2 + c + 7) \quad \text{Remove the brackets and Group like terms}$$

$$= 5c - 11 - 4c^2 + c + 7$$

$$= -4c^2 + 5c + c - 11 + 7 \quad \text{Combine like terms by adding their coefficients (remember that c has a coefficient of 1!)}$$

$$= -4c^2 + 6c - 4$$

Method 2:

Add vertically. Line up the like terms, then add their coefficients.

$$\begin{array}{r} 5c - 11 \\ + (-4c^2 + c + 7) \\ \hline -4c^2 + 6c - 4 \end{array}$$

$$\begin{array}{r} 3x^2 + 2x - 5 \\ + (2x^2 - 6x + 3) \\ \hline 5x^2 - 4x - 2 \end{array}$$



$$\begin{array}{r} 326 \\ + 452 \\ \hline 778 \end{array}$$

$$(3y^2 + 2y - 7) + (-5y^2 - 4y + 12)$$

$$3y^2 + 2y - 7 - 5y^2 - 4y + 12$$

$$3y^2 - 5y^2 + 2y - 4y - 7 + 12$$

$$-2y^2 - 2y + 5$$

Adding Polynomials in Two Variables

Add: $(3s^2 + s - 4c - 5cs + 2s^2) + (-5c^2 + 3cs + 6c - 4s + 7c^2)$

Remove Brackets.

$$= 3s^2 + s - 4c - 5cs + 2s^2 - 5c^2 + 3cs + 6c - 4s + 7c^2$$

Group like terms.

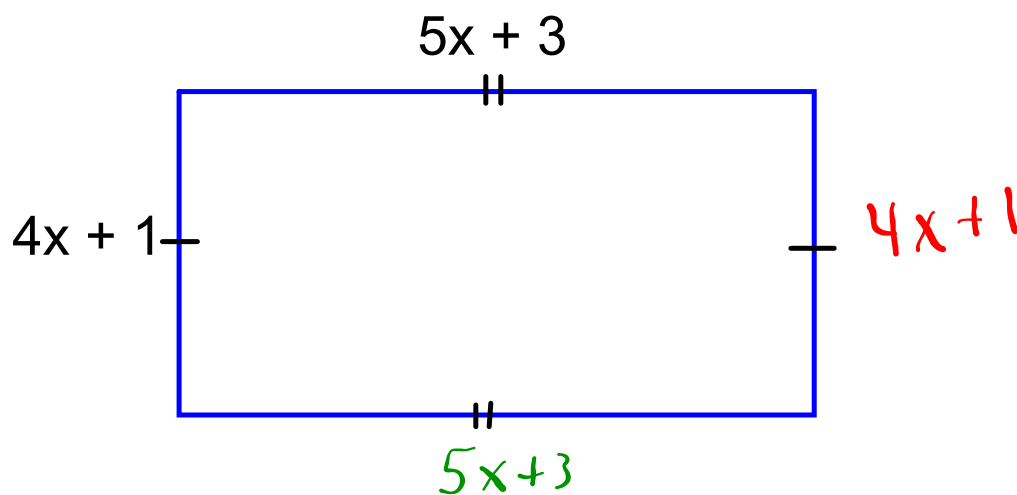
$$= 3s^2 + 2s^2 + s - 4s - 4c + 6c - 5cs + 3cs - 5c^2 + 7c^2$$

Combine like terms.

$$= 5s^2 - 3s + 2c - 2cs + 2c^2$$

Determining a Polynomial for the perimeter of a rectangle

- a) Write a polynomial for the perimeter of this rectangle.
Simplify the polynomial.



Perimeter = the sum of all sides

$$\begin{aligned}
 &= (4x + 1) + (4x + 1) + (5x + 3) + (5x + 3) \\
 &\quad 4x + 1 \quad + 4x + 1 \quad + 5x + 3 \quad + 5x + 3 \\
 &= 4x + 4x + 5x + 5x + 1 + 1 + 3 + 3 \\
 &= 18x + 8
 \end{aligned}$$

The perimeter is $18x + 8$.

Create a Polynomial that adds to give
 $4x^2 + 6x - 4$ when given $-2x^2 + 2x - 6$

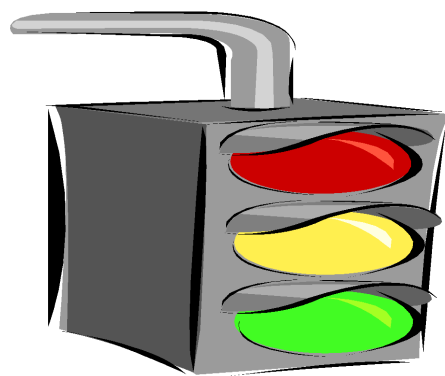
Think this:

$$\begin{array}{r} -2x^2 + 2x - 6 \\ + (6x^2 + 4x + 2) \\ \hline 4x^2 + 6x - 4 \end{array}$$

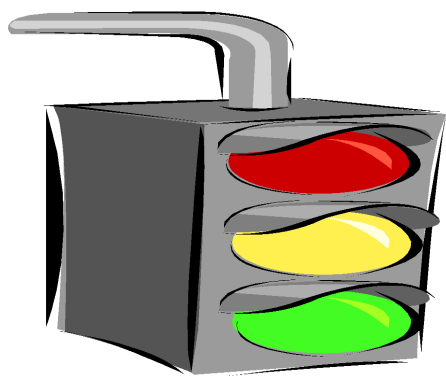
Create a Polynomial that adds to give
 $-x^2 - 3x + 8$ when given $-7x^2 + 4x - 5$

Think this:

$$\begin{array}{r} -x^2 - 3x + 8 \\ + (-6x^2 + 7x - 13) \\ \hline -7x^2 + 4x - 5 \end{array}$$



Now it is
time for
Home
Learning



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QUESTIONS

3 (ab) MUST USE ALGEBRA TILES

4 MUST USE ALGEBRA TILES

5 ac 12

6ac 14

8acefh 15ace

9acefh 16a

10a(i, iv)