# 5 Subtracting Polynomials

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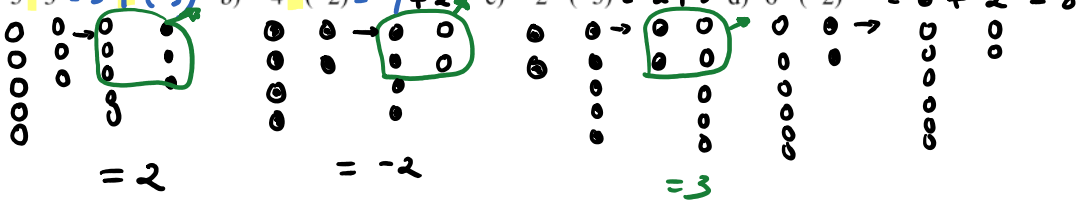
## 5.4 – Subtracting Polynomials

Focus: Use different Strategies to Subtract polynomials

**Recall:** Last year we used counters to add and subtract integers. Value: 1 Value: -1

Model the following differences using counters. Subtraction means Add the opposite!

a) $5-3 = 5+(-3)$ b) $-4-(-2) = -4+2$ c) $-2-(-5) = -2+5$ d) $6-(-2) = 6+2 = 8$




~~In some cases there aren't enough counters or any at all to take away.~~
~~In these cases we add zero pairs according to the second integer and subtract as needed.~~

To subtract integers without using models, change from a subtraction question to an addition question and evaluate using your knowledge of integer addition.

To subtract polynomials we will use the above properties of integer subtraction.

**Subtracting Polynomials**

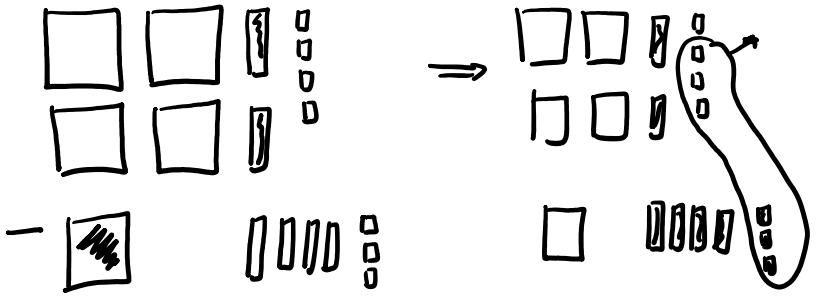
When we write the difference of two polynomials, we write each polynomial in brackets.

To subtract polynomials, we can use a few different methods.

1) *Using Algebra Tiles*
   - Model the first polynomial using tiles.
   - ~~Take away tiles according to the second polynomial~~ *flip the tiles of 2nd polynomial!
   - ~~If there are not enough or no tiles to take away, add zero pairs, then take the tiles~~ away.

2) *Combine like terms by subtracting their coefficients.*
   - To subtract coefficients, change to addition by adding the opposite.

**Ex. 1:** Subtract the following using algebra tiles. $(4x^2-2x+4)-(-x^2+4x+3)$



$= 5x^2 - 6x + 1$

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**Ex. 2:** Solve using algebra tiles and symbolically. $(-3y^2+3y+4)-(2y^2+4y-6)$

~~Algebra tiles~~

1) Change subtraction to "+"
Change the sign of each term in 2nd polynomial ("flip")!
2) Remove brackets
3) Combine like terms!
4) Add coefficients of like terms

Symbolically:

$(-3y^2+3y+4)+(-2y^2-4y+6)$

$-3y^2+3y+4-2y^2-4y+6$

$-3y^2-2y^2+3y-4y+4+6$

$-5y^2-y+10$

$-1y$

**Ex. 3:** Subtract $(2x^2-6x+4y-8xy+9y^2)-(-2y+3x+7x^2-5xy-4y^2)$
Check you answer using addition.

Remove to flip! →

$$\begin{array}{r} 2x^2-6x+4y-8xy+9y^2 \\ -7x^2-3x+2y+5xy+4y^2 \\ \hline -5x^2-9x+6y-3xy+13y^2 \end{array}$$

**HW Assignment**
Section 5.4 pg. 234 # 4, 6bc, 7 – 9, 12, 13, 15, 16
**Quiz next class on 5.1 to 5.4**

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