



Concept: Subtracting Expressions

Name: _____

COMPUTER COMPONENT

Instructions: Select the computer program *Understanding Algebra* (Neufeld)
Follow the instructions to the Main Menu.
Select *Subtracting Expressions* from the Main Menu.



Work through all sections of the following topics **in order**:

- *Our Problem*
- *Subtracting Expressions With x and y Tiles*
- *Subtracting Expressions With x -Squared Tiles*
- *Subtracting Expressions Without Tiles*
- *Practice Questions With Tiles*
- *Practice Questions Without Tiles*

Recommended Materials: *Pencil, colored pencils, ruler*



As you work through the computer exercises, make notes in your notebook/math journal.

When you reach the end of the section *Practice Questions Without Tiles* on the computer, move on to the **OFF COMPUTER EXERCISES** below.

OFF COMPUTER EXERCISES

We know that...

When we subtract integers, we simply _____ the opposite.

1. Use the above rule to answer the following (the first one is done for you):

(a) $(+3) - (+4)$

= $(+3) + (-4)$

= $+3 - 4$

= -1

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

=

=

=

(c) $(+4) - (-10)$

=

=

=

(d) $(-3) - (-5)$

=

=

=

(e) $(+8) - (+8)$

=

=

=

(f) $(+9) - (-1)$

=

=

=

2. Answer the *two* questions below by completing the chart. **Tip:** Use tiles and their drawings to help you visualize the subtracting of expressions.

FIRST

(a) Represent the expression $3x - 2$ by using tiles. Draw your tiles in the space to the right.	
(b) Represent the expression $4x + 1$ by using tiles. Draw your tiles in the space to the right.	
(c) Before we can subtract (b) from (a), we need to add more tiles without changing the value. (the zero property) Re-draw your answer to (a).	
(d) Re-draw the expression $4x + 1$ from 1(b). -	
(e) Now subtract (d) from (c). Remember that opposite tiles will cancel each other. $(3x - 2) - (4x + 1)$ =	
(f) Write the algebraic expression to (e)	

SECOND

(a) Represent the expression $2x^2 - x + 3$ by using tiles. Draw your tiles in the space to the right.	
(b) Represent the expression $x^2 + 3x - 4$ by using tiles. Draw your tiles in the space to the right.	
(c) Before we can subtract (b) from (a), we need to add more tiles without changing the value. (the zero property) Re-draw your answer to (a).	
(d) Re-draw the expression $x^2 + 3x - 4$ from 2 (b). -	
(e) Now subtract (d) from (c). Remember that opposite tiles will cancel each other. $(2x^2 - x + 3) - (x^2 + 3x - 4)$ =	
(f) Write the algebraic expression to (e)	

3. Use your 'Brilliant Brain Matter' to simplify the following expressions. Test yourself and resist the temptation to use tiles this time.

Remember: We know that...

When we subtract integers, we simply add the opposite.

$$\begin{aligned}
 \text{Example: } & (6p + 3pq - 3p) - (3p - 5pq - 4p) \\
 &= (6p + 3pq - 3p) + (-3p + 5pq + 4p) \quad \text{Add the opposite} \\
 &= 6p + 3pq - 3p - 3p + 5pq + 4 \\
 &= 6p - 3p - 3p + 4p + 3pq + 5pq \quad \text{Rearrange and group like terms} \\
 &= 4p + 8pq \quad \text{Simplify}
 \end{aligned}$$

(a) $(5x + 4) - (3x + 5)$

=

=

=

=

(b) $(y^2 - 3y + 5) - (2y^2 + 3y - 9)$

=

=

=

=

(c) $(9 - 2b + 3b^2) - (-3b^2 - b + 4)$

=

=

=

=

(d) $13a - (7a - 4)$

=

=

=

=

(e) $(3m^2 + 6m - 3) - (4m^2 - m + 1)$

=

=

=

=

(f) $(5x + 4xy - 2x) - (6x - 2xy + 4)$

=

=

=

=

3. (continued)

(g) $(k^2 - 3k + 3) - (3k^2 + 5k - 2) - (k^2 + 1)$

=

=

=

=

(h) $(-2w^2 - w + 8) - (3w^2 + 4) + (w^2 - 2w + 5)$

=

=

=

=

(i) $6d - (-3d^2 - 2d + 1) + (4d^2 - d) - (4d^2 + 5d + 9)$

=

=

=

=