Lesson 8: Adding and Subtracting Polynomials

Classwork

Exercise 1

* 1. How many quarters, nickels, and pennies are needed so the value of the coins are ?

b. Find each sum or difference by combining the parts that are alike.

* 1. = \_\_\_\_\_ hundreds + \_\_\_\_\_ tens + \_\_\_\_\_ ones + \_\_\_\_\_ hundreds + \_\_\_\_\_ tens + \_\_\_\_\_ ones

= \_\_\_\_\_ hundreds + \_\_\_\_\_ tens + \_\_\_\_\_ ones.

b.

Exercise 2

Now let’s be as general as possible by not identifying which base we are in. Just call the base x.

Consider the expression: , or equivalently: .

* 1. What is the value of this expression if ?
  2. What is the value of this expression if

**Polynomials**

**Adding and Subtracting**

|  |  |  |
| --- | --- | --- |
| **Monomial** | **Binomial** | **Trinomial** |
| 3y2  2abc2  -9  14m | 4x – 7  2x + 9y  3x2 – 11xy  2 + 3x | a + 2b + 4c  x2 + 8x + 9  x2 + 2xy + y2  3a – 7b2 – 4c |

A **monomial** is a term that represents just a number, just a variable or a product of numbers and variables.

A **polynomial** is a monomial or a sum or difference of monomials.

A **binomial** is the sum or difference of two monomials.

A **trinomial** is the sum or difference of three monomials.

The **degree** of a polynomial is the degree of the monomial term with the highest degree.

To find the sum of polynomials add the like terms.

1. (9x2 – 7x + 5) + (-3x2 + 8x – 8) 2. (3a2 + 3ab – b2) + (4ab + 6b2) 3. (7x2 + 7x + 8) + (2x2 – 4x + 3)

|  |  |
| --- | --- |
| Polynomial | Additive Inverse |
| 4x – 7 |  |
| 3x2 + 11xy – y |  |
| -2x + 9y – 2z |  |
| 2x2 – 4x + 3 |  |

To subtract you add the opposite.

1. (9x2 – 7x + 5) – (-3x2 + 8x – 8) 2. (3a2 + 3ab – b2) – (4ab + 6b2) 3. (7x2 + 7x + 8) – (2x2 – 4x + 3)

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**Remember: To add or subtract polynomial**

* Group like terms
* To subtract find the additive inverse and then add.

Exercise 3

a.

b. 2

Problem Set

1. What is the value of when ? How much money is nickels and pennies?

2. What number is represented by if ?

3. What number is represented by if or if?

4. Celina says that each of the following expressions is actually a binomial in disguise:







For example, she sees that the expression in (i) is algebraically equivalent to , which is indeed a binomial. (She is happy to write this as , if you prefer.)

Is she right about the remaining four expressions? ***Simplify the remaining ones to find out.***

5. Find each sum or difference by combining the parts that are alike. Put final answer next to the given expression.

b.

d.

f.

h.

j.