Polynomials

Preview

$(4x+y)+(x+2y)$

I have also started adding detailed lesson plans to my units. Please leave feedback on if this addition is helpful to you!!

For Middle/High School Special Education

Polynomials Lesson Plan

Preparation

- Print out a vocabulary board for each student to use throughout unit
  - Laminate or place in page protector
- Book
  - Print out, laminate, and bind
  - OR your students can listen to the pre-recorded version
- Vocabulary cards
  - Print out a set of cards onto cardstock and laminate
  - Make one set for each student and also one for the teacher to use in I Spy games
- File Folder game
  - This unit comes with a file folder game for extra practice.
  - Follow the instructions included to assemble

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

Teaching Tips

1. *Color Coding*: this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding picture symbols the same colors. Becomes a color matching task.
   a. For more info, read more here: https://specialneedsforspecialkids.org/2015/09/05/using-color-coding-for-differentiation/
   b. I also have a blog post on differentiating one activity 3 ways: https://specialneedsforspecialkids.org/2018/10/22/differentiating-1-activity-3-ways-easily-and-effectively/
2. *Make you own copies of the activities*. Every day I review the activity we did yesterday. For that reason:
   a. I often complete the activity myself and often laminated it for easy review

Lesson Plans

20 days

Quick Look

Day	Activity	Day	Activity
1	• Read book • Introduce vocabulary • Worksheet set 1	11	• Read book • Group activity • Worksheet set 4
2	• Read book • Group activity • Worksheet set 1	12	• Read book • Group activity • Quiz 4
3	• Read book • Group activity • Quiz 1	13	• Read book • Group activity • Worksheet set 5
4	• Read book • Group activity • Worksheet set 2	14	• Read book • Group activity • Worksheet set 5
5	• Read book • Group activity • Worksheet set 2	15	• Read book • Group activity • Quiz 5
6	• Read book • Group activity • Quiz 2	16	• Read book • Group activity • Worksheet set 6
7	• Read book • Group activity • Worksheet set 3	17	• Read book • Group activity • Worksheet set 6
8	• Read book • Group activity • Worksheet set 3	18	• Read book • Group activity • Quiz 6
9	• Read book • Group activity • Quiz 3	19	• Read book • Group activity • Vocabulary cut and paste
10	• Read book • Group activity • Worksheet set 4	20	• Assessment

These lesson plans do NOT include subtracting polynomials. If you plan on teaching subtractions of polynomials, then include those pages of the book and add those activities/worksheets in as days 19-21.

Day 5

Activity	Notes	Materials
Read the book: *Polynomials* (10 minutes)	• Read through the story, asking lots of questions • Continue to make connections between book and vocabulary board	• Book • Vocabulary board
Polynomial Scavenger Hunt (10 minutes)	• Draw using either numbers or pictures of monomials, binomials, and trinomials • Tape around the room • Tell students to go and find as many as one type of polynomial that they can and bring them back to the table	• Index cards with various types of polynomials draw on them
Polynomial types review (5 minutes)	• Review the worksheets completed yesterday	• Types of polynomials • worksheet
Sorting polynomials (10 minutes)	• Do 1-2 of the worksheets in set 2: Sorting polynomials	• Worksheet
Sharing (10 minutes)	• Each student shares one of their finished worksheets with the group using the communication method of their choice	• Completed worksheets • Communication devices

A polynomial is really just a math expression with multiple terms. What are some of those terms?

A binomial expression has 2 terms.

$$3xy + 4$$

Normally it just means moving some things around. Look at these 2 polynomials. There are 2 variables: X and Y.

$$4y + 6x \qquad 2x + y$$

24 page book

Another part of a polynomial expression is the variable. Variables are usually represented by letters.

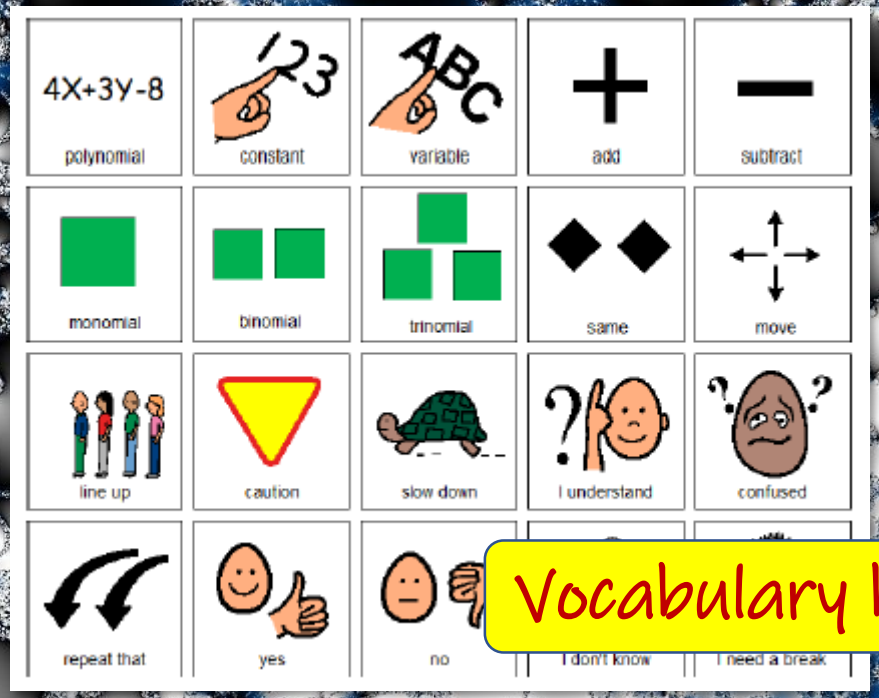
$$16y + 4 - 2x + 18$$

variables

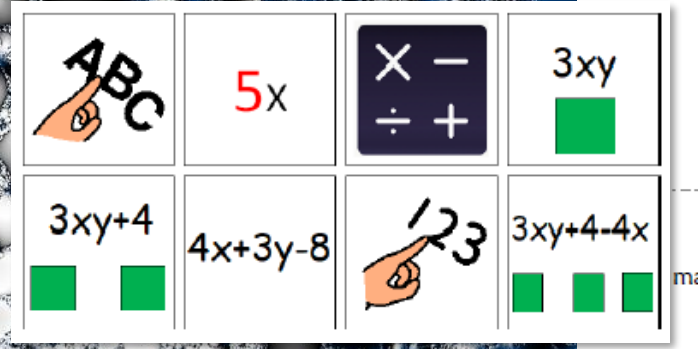
What if we want to add or subtract polynomials? Let's first look at adding polynomials. It is a lot like adding any set of numbers. But, there are a few things we need to do first.

The problem is we have the variable y on the left of the + sign in the first polynomial. But, it is after the + sign in the second polynomial. This makes it more difficult to go down the columns and add them.

$$\begin{array}{r} 4y + 6x \\ 2x + y \\ \hline ? \; + \; ? \end{array}$$



Vocabulary board



operator

Sign in the polynomial that tells you if you will add, subtract, multiply or divide.

monomial

A math expression with only one term.

binomial

math expression with 2 terms.

trinomial

A math expression with 3 terms.

40

8 vocab cards

polynomial

Math expression with multiple terms.

4X+3Y-8

constant

A number by itself in a polynomi

variable

A letter in a polynomial.

coefficient

The number in front of the variable (letter) in the polynomial.

5x

A letter in a polynomial.

Sign in the polynomial that tells you if you will add, subtract, multiply or divide.

A math expression with 3 terms.

A number by itself in a polynomial.

Cut & Paste

operator

monomial

3xy

binomial

3xy + 4

trinomial

3xy + 4 - 4x

44

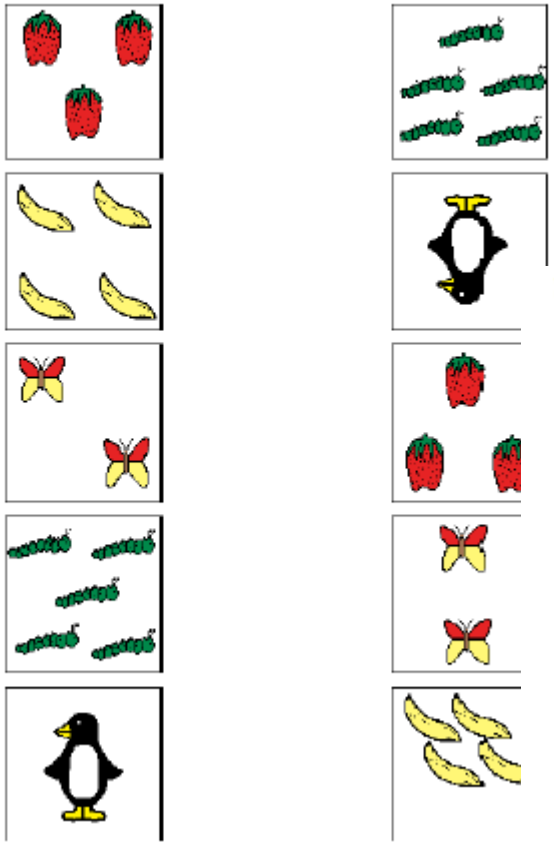
Sorting

monomial	binomial	trinomial

6x	3x+3y	9y
x+y	7+4x-8y	4z+6y
z+15+7y	14	9z-2+8x
11z+7	12-3x+4	12x
z	9x-1-8y	4+8x

#2

Draw a line between the 2 that are the same, or equal.



#1

Draw a line between the 2 that are the same, or equal.

7 + 5	7 + 10
9 + 2	5 + 7
1 + 2 + 3	2 + 16
10 + 7	8 + 4 + 2
16 + 2	2 + 9
4 + 2 + 8	3 + 6
6 + 3	3 + 2 + 1

6 Match equivalent expressions

Identifying terms

#3

Look at each polynomial.

- Underline the constants
- Circle the variables
- Draw a box around the coefficient

4 + 6x	9 – 4x
8z – 12	12z + 6 - 4y
2x + 3z	x – 3y + 2x
8z + 1	z + 4y – 2y
6 + 2x + 3y	4 + 5x – 1
2z – 6 – 4x	7z – 3x – 2y
9x	16 + 4z
10z + 3x - 16	5x - 12

Look at each polynomial. Write the answers to the questions identifying the terms. *IF there is not a number in front of the variable (x) then the coefficient is 1.*

8x – 2y + 3

constants: 3 variables: x,y coefficients: 8, 2

14 + 3x – 2y

constants: _____ variables: _____ coefficients: _____

6z – 4x + 10

constants: _____ variables: _____ coefficients: _____

2 + 3x + 9

constants: _____ variables: _____ coefficients: _____

7y – 4z – 3x

constants: _____ variables: _____ coefficients: _____

Identifying LIKE terms

#4

Look at each set of polynomials. Highlight any terms that are the same the same color. The first one is done as an example.

(8x + 4) + (3 -5x)

(7z + 2y – x) + (12x – 2z + y)

(3y + 4x) + (12x – 2y)

(5x + 7z – 3y) + (4z -3x + 8y)

4x + 3y – 6z +

6x + 9x + 2x –

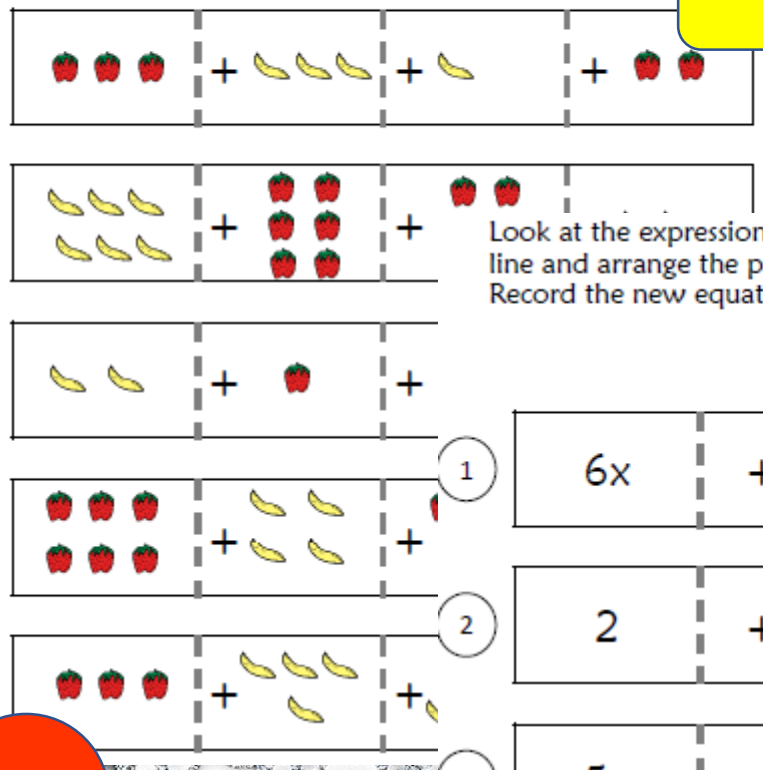
(3y – x) + (6x

(z + 9x + 5y) +

Use these cards for sorting into piles or put-in tasks.

y	2y
3y	4y
5y	6y
7y	8y
9y	10y

Look at the expression below. Cut it apart on the dashed line and arrange the pieces so the like terms are together.



Look at the expression below. Cut it apart on the dashed line and arrange the pieces so the like terms are together. Record the new equation on the recording sheet.

1	6x	+ 4y	+ 2x	+ 3y
2	2	+ 3x	+ x	+ 7
3	5y	+ 7x	+ 2y	+ 8x
4	x	+ y	+ x	+ y
5	6x	+ 2	+ 2x	+ 8

#5

Putting like terms together

#6

Adding polynomials

These polynomials already have the like terms together and lined up. Add the 2 polynomials together.

1. $2x + 2y$
   $3x + 3y$
   ____

2. $\_\_ + 2x$
   $z + 4x$
   ____

5. $7x + z$
   $x + z$
   ____

6. $6y + 7x$
   $2y + 2x$
   ____

7. $y + 4x$
   $3y + x$
   ____

8. $4z + 8x$
   $2z + 2x$
   ____

Add the polynomials.
1. Put the terms in the same order
2. Line them up on top of each other
3. Add like terms

$(2y + 6z) + (4z + 4y)$

1. ____ + ____

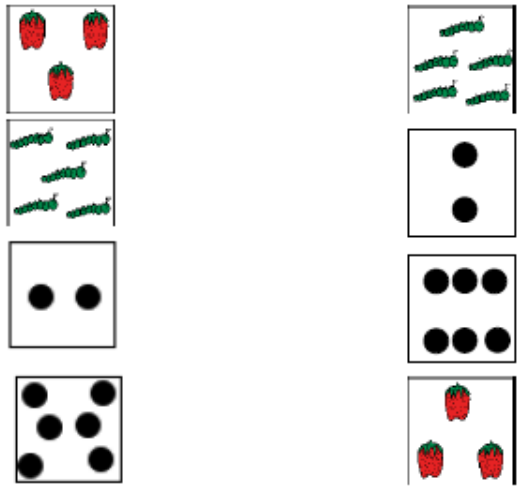
2. ____
   ____

3. ____
   \+ ____
   ____

Subtracting also included

#7

Draw a line between the 2 that are the same, or equal.



10 + 7	2 + 16
16 + 2	b + a
8x + 3y	7 + 10
a + b	3y + 8x

121

#1

Look at each set of polynomials. Highlight any terms that are the same the same color.

(9x + 8z – y) + (2x – 5y + z)

(9x + 3y) + (8y – 6x)

(x + 6z – 5y) + (4 -10x + 2y)

8y + 9x – 2z + 9z + 4x – 2y

#4

Add the polynomials.

x + 3y
3x + y
_____
_____

3x + 2z
5x + 2z
_____
_____

4z + 8x
2z + 2x
_____
_____

4y + 6x
3y + 4x
_____
_____

#6

(3y + 4z) + (2z + 7y)

_____
\+ _____
_____
_____

Quiz for each worksheet set

1. Circle all the things that can make up a polynomial:

2. In a polynomial, variables are often:

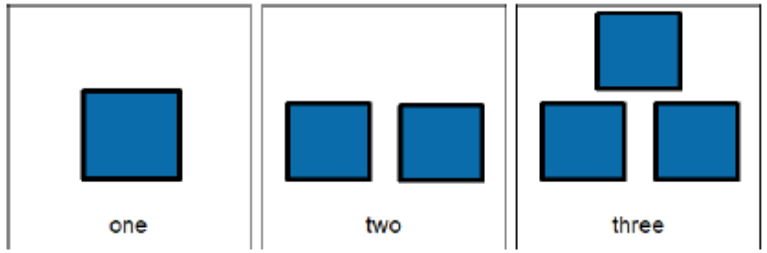
3. The coefficient is where in relation to the variable:

4. In this polynomial: 5x+3y+10, what is the constant?

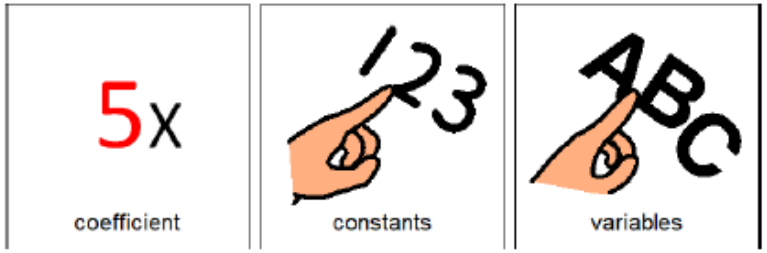
5. A binomial had how many terms:

7. Circle the expression that is the same as: 9x+4y:
   A. 4x+9y
   B. 4y+9x
   C. 4+x+9+y
8. What tells you if you are adding or subtracting?
   A. coefficient
   B. operator
   C. variable
9. A polynomial with 3 terms is called a:
   A. monomial
   B. binomial
   C. trinomial
10. True or false: A polynomial is an expression made up of one more terms.
   A. true
   B. false
   C. I don't know

Q 5



Q 6



Assessments : 3 versions

Also a file folder game included to give students practice putting like terms together and adding polynomials