1 Modeling Polynomials

May 4, 2021 6:53 PM

5.1 – Modelling Polynomials

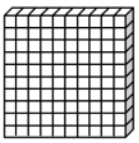
Focus: Learn vocabulary associated with polynomials and represent and identify polynomials using models

Recall: Last year when we added and subtracted integers, we used integer chips.

Value: +1

Value: -1

In Arithmetic we used 10 blocks to model whole numbers.



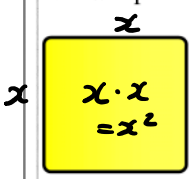
Value: 100

Value: 10

Value: 1

To **model Polynomials** we will use **algebra tiles.**

Yellow represents **positive** tiles.



Value: x^2

Value: x

Value: 1

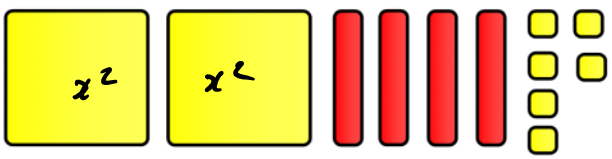
Red represents **negative** tiles.

Value: $-x^2$

Value: $-x$

Value: -1

Ex. 1: The following tiles represent what expression?



3 x 5 :(
(3)(5)
3·5

$2x^2 - 4x + 6$

1

Do the 'Investigate'

Investigate

Use algebra tiles.

➤ Model each expression. Sketch the tiles.
How do you know which tiles to use?
How do you know how many of each tile to use?

- $x^2 + x - 3$
- $-2x^2 - 3$
- $2x^2 + 3x$
- $-2x^2 - 3x + 1$
- $-3x + 3$

➤ Write your own expression.
Have your partner model it with tiles.
Model your partner's expression with tiles.

We must be able to identify vocabulary associated with Polynomials.

Let us examine the expression, $2x^2 - 4x + 12$.

1. What is a **variable?** letter representing a number that can vary

   Ex: x, y

2. What is a **Coefficient?**

   number that multiplies the variable

   Ex: 2 in $2x^2$

   -4 in $-4x$

3. What is a **Constant?**

   # that doesn't multiply with a variable (doesn't change!)

   Ex: 12

$\boxed{2x^2}$ $\boxed{-4x}$ $+\boxed{12}$

4. What are terms?

- coefficient multiplying with a varible
- constant (#)

5. What is a Polynomial?

sum of 1 or more terms

6. What is the degree of the polynomial?

highest exponent

$3x^2$ degree 2
$+5x^3$ degree 3
$+4x^1$ degree 1

degree of polynomial 3

A polynomial's terms are usually written in order of decreasing degree.

Ex: $5x^3 + 3x^2 + 4x$

many!

Polynomial

Monomial	Binomial	Trinomial
1 term	2 terms	3 terms
5	$2x^2+6$	$3x^2+6x-4$
$2x$	$3x-5$	
$-6x^2$		

Polynomial

Defn:	Use
1 or more terms	· shortcut in math! · algebra!!
Examples	**Non-Examples**
5 $2x+6$ $3x^2-4x+9$	$\frac{5}{x}$ can't have x in denominator x^{-1} negative $x^{\frac{1}{2}}$ fraction $=\sqrt{x}$

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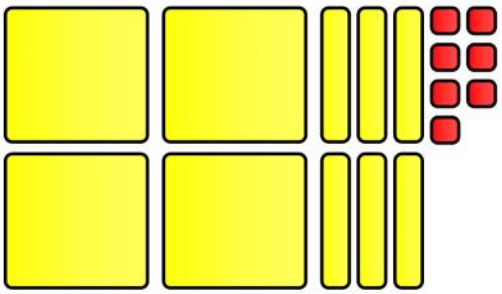
Ex. 2: State the polynomials modeled by the algebra tiles and also the following:
i. the Degree, *ii.* The Constant term, *iii.* The Type of polynomial (monomial, binomial, trinomial)

a)



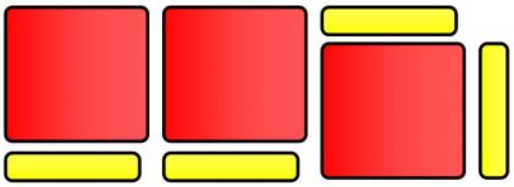
i. Degree: 2

ii. Constant: −7

iii. Type: trinomial

Polynomial: $4x^2 + 6x - 7$

b)



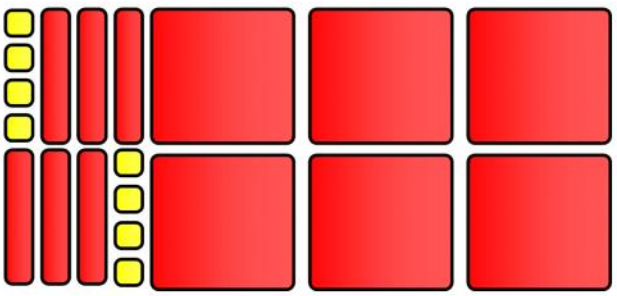
i. Degree: 2

ii. Constant: 0

iii. Type: binomial

Polynomial: $3x^2 + 4x$

c)



i. Degree: 2

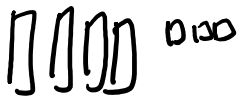
ii. Constant: 8

iii. Type: tri

Polynomial: $-6x^2 - 6x + 8$

Ex. 3: Model the following polynomials using algebra tiles. State the degree and classify the polynomial (monomial, binomial, trinomial).

a) $4x^1+3$



degree: 1

~~classification~~ type: binomial

b) $-5c^1$

degree: 1

classification: monomial

c) $5a-4a^2-3$

$-4a^2+5a-3$

degree: 2

classification: trinomial

Assignment:

Sec 5.1, p. 214: ☆ 4, 5abc,

☆☆ 9abc (make a chart: polynomial, coefficients, variable, degree, constant), 11ace (sketch), 12, 13

☆☆☆ 15, 16, 18

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