Exam Review

Day 4:

Chapter 5 (Polynomials)

Jan 14-8:26 AM

Polynomials

A **polynomial** is one term or the sum of terms whole variables have whole number exponents

$$5x^2 + 1$$

Jan 23-3:33 PM

Terms with polynomials

Remember:

Monomial: one term x, 7

Binomial: two terms $x+2$, $-y-4$

Trinomials: three terms $x+y-4$

Variables: Letters

Coefficients: Numbers out in front of letters

Constant: the number all by itself

Degree: the highest exponent on a variable

Feb 1-9:22 AM

Warm Up

Copy warm-ups into your notebooks

1) Classify the following polynomials as either monomials, binomial or trinomial

Monomial	$9x^2y$	$v + 2t$	Binomial
Monomial	11	n	Monomial
Triomial	$k - 7 + b$	$3 + g^{10}$	Binomial

2) What is the degree of the following polynomial? degree 15

$$8x^5 - 6 + 10x - 9x^{15} + 10x^{14}$$

3) Rewrite the above in decending order

$$-9x^{15} + 10x^{14} + 8x^5 + 10x - 6$$

Feb 1-8:26 PM

$5x^3+7x^8-3x+3x^2+9$

This polynomial has a degree of 8, because the greatest exponent is 8.

The term "+9" has a degree of 0, because there is no variable with it. It is called a "constant", because this term will never change in value.

Certificate 1

Polynomials are written in descending order.

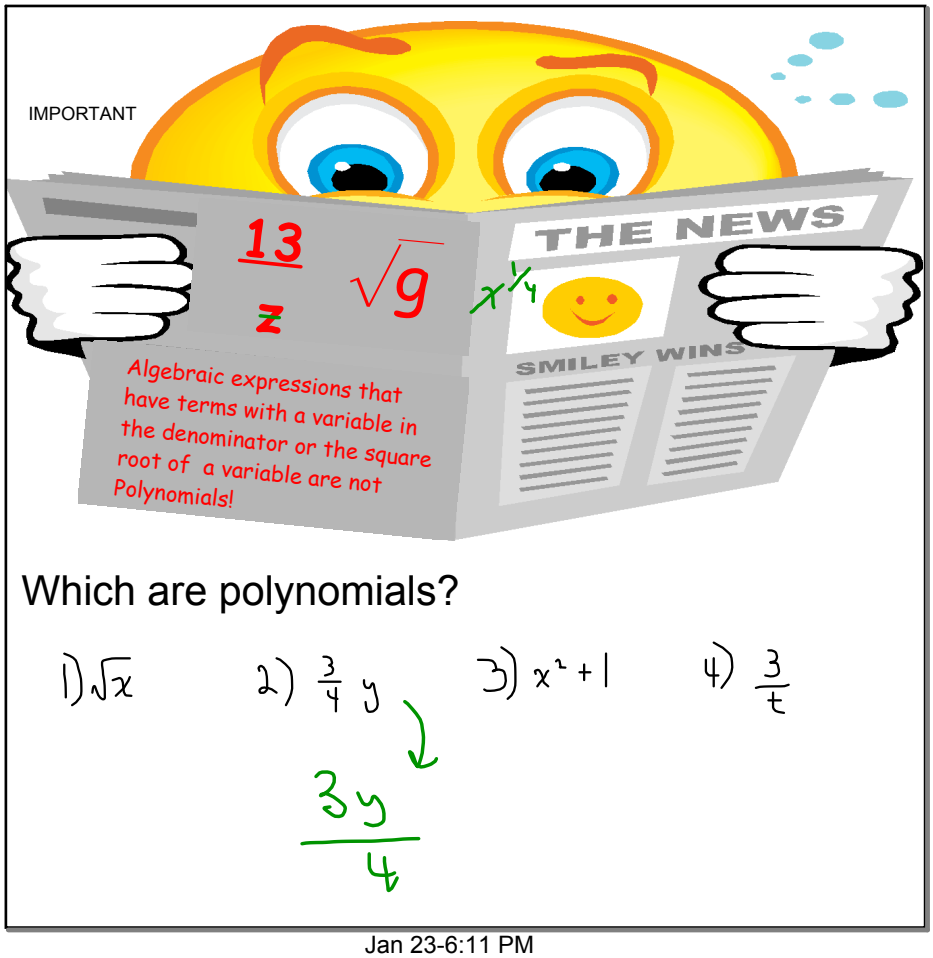
Each term is written from the highest degree to the lowest.

$5x^3-3x^4-x+7+4x^2$

will be written as...

$-3x^4+5x^3+4x^2-x+7$

Jan 23-6:22 PM



Which are polynomials?

1) $\sqrt{x}$ 2) $\frac{3}{4}y$ 3) x^2+1 4) $\frac{3}{t}$

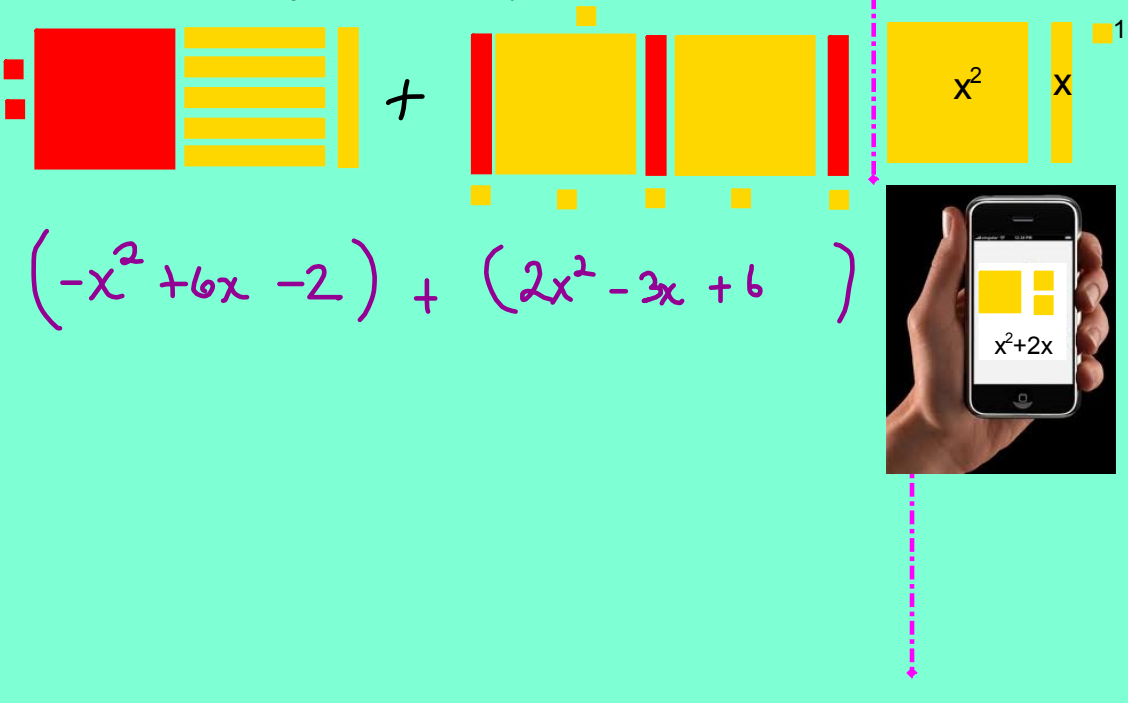
$\frac{3y}{4}$

Jan 23-6:11 PM

Modelling Polynomials

Write the algebraic expression that represents each model.

Don't forget to write it properly!



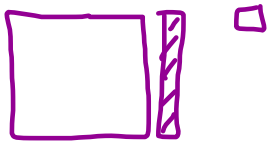
$(-x^2+6x-2)+(2x^2-3x+6)$

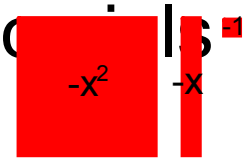
Jan 23-6:38 PM

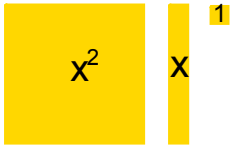
Modelling Polynomials

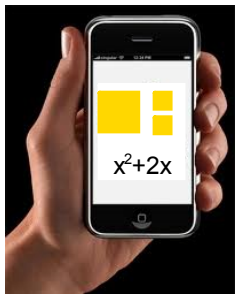
$-5x^2 + 2x - 3$

$x^2 - x + 1$

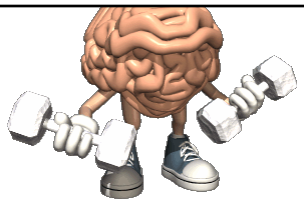








Jan 23-6:38 PM



Warm Up

Copy warm-ups into your notebooks

1) Classify the following polynomials as either monomials, binomial, trinomials or none.

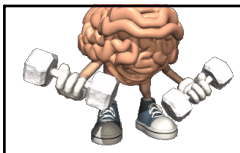
$3x^2 + 6y$ | $\frac{4x^7}{z}$ | $9x$ | $2x^2 - 5x - 1$

2) What is the degree of the following polynomial?_____

$$13x^7 - 11x^{12} + 8x^9 - 9x^{11} - 5$$

3) Rewrite the above in decending order

Feb 1-8:26 PM



Warm Up

Copy warm-ups into your notebooks

4) Fill in the following

a) $-4x^6 - 7x^4 + 12$

Variables: x

Coefficients: −4, −7

Constants: 12

b) $5x^2 + 6y$

Variables: x, y

Coefficients: 5, 6

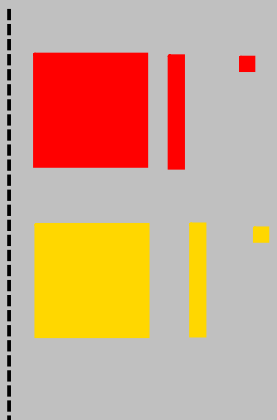
Constants: ∅

Feb 1-8:26 PM

Warm Up

5) Write the polynomial for the following algebra tiles.

6) Model the following Polynomial
$-5x + 2x^2 - 9$



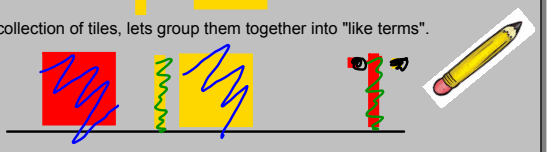
Jan 24-10:07 AM

TILES

Like Terms:

are algebra tiles with the same shape and size (Don't worry about colour ⟶signs)

Here is a collection of tiles, lets group them together into "like terms".



Always collect like terms

Once you collected like terms you have to simplify the tiles

HOW????

Remove the "zero pairs"

Copy what is left over

See see it from the on line textbook

$1x^2 + 1x - 3$

Jan 24-1:55 PM

Polynomial Expressions

Like terms are $-3x^2$ and $4x^2$
(same letter with the same numerical exponent)

Unlike Terms are $-x^2$ and x or are y^2 and t^2
(either different letters and/or different numerical exponent)

Simplified Form
*fewest algebra tiles possible
*contains only one term of each degree and no terms with a zero coefficient

Always simplify any polynomial by grouping like terms.

Simplify the following polynomial

Example: $-3x^2 + 2x - 7 + 10x + 5 - 4x^2$

Step 1) Group like terms

Always start with the largest exponent

$2x^2 - 4x^2 \quad -3x + 10x \quad -7 + 5$

$-2x^2 + 7x - 2$

Ex) $3+4y+y+7$

Ex) $4x^2 + 4x^3 + 2x^2$

Jan 24-2:16 PM

$-5x$

$2x^2$, $3x$, $4xy$

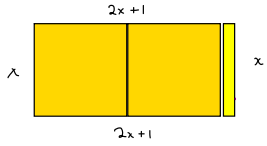
$-2x$, $3x^2$, $5x$

Jan 15-8:53 AM

Perimeter - is the distance around an object
- to calculate you add the length of each side

Write a polynomial to represent the perimeter of the rectangle.

Example 2) Write a polynomial to represent the perimeter of each rectangle.



$P = (2x+1) + (2x+1) + x + x$

$= 2x + 2x + x + x + 1 + 1$

$= 6x + 2$

$A = b \times h$

$= x(2x+1)$

$= 2x^2 + x$

$x = 5$

$P = 6(5) + 2$

$= 32$

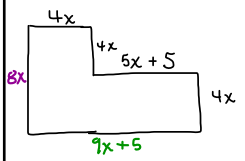
$A = 2(5)^2 + 5$

$= 2(25) + 5$

$= 55$

Jan 24-2:48 PM

Perimetre



$P = 4x + 4x + 5x + 4x + 9x + 8x + 5 + 5$

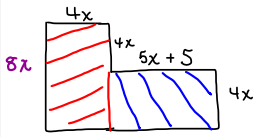
$P = 34x + 10$

$x = 2$

$P = 34(2) + 10$

$= 78$

Area



$A = 4x(8x)$

$= 32x^2$

$A = 4x(5x + 5)$

$= 20x^2 + 20x$

$TSA = 32x^2 + 20x^2 + 20x$

$A = 52x^2 + 20x$

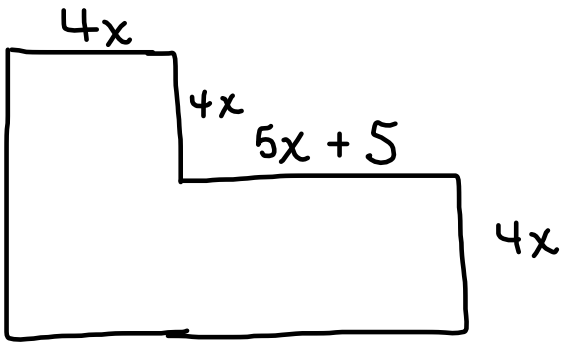
$x =$

$A = 52(2)^2 + 20(2)$

$= 52(4) + 40$

$= 248$

Jan 21-8:36 AM



Jan 21-8:36 AM

Section 5.3
Adding Polynomials

$(6x^2 + 2x + 9) + (-3x^2 + 4x - 5)$

$6x^2 + 2x + 9 - 3x^2 + 4x - 5$

$6x^2 - 3x^2 + 2x + 4x + 9 - 5$

$3x^2 + 6x + 4$

Feb 5-9:45 PM

don't copy

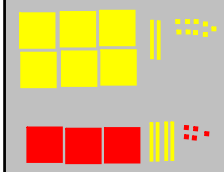
We can solve the question with or without algebra tiles.

Tiles

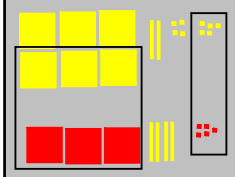
Display: $6x^2 + 2x + 9$

Display: $-3x^2 + 4x - 5$

Combine the displays. (Group like Tiles)



Remove Zero Pairs.



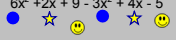
The remaining tiles represent

$3x^2 + 6x + 4$

No Tiles

The sum is:
$(6x^2 + 2x + 9) + (-3x^2 + 4x - 5)$

This is written as:
$6x^2 + 2x + 9 - 3x^2 + 4x - 5$



Group like terms:
$6x^2 - 3x^2 + 2x + 4x + 9 - 5$

Combine like terms:
$3x^2 + 6x + 4$

Feb 5-9:48 PM

$(3x^2 + 6x - 5) - (-2x^2 + 10x - 2)$

$3x^2 + 6x - 5 + 2x^2 - 10x + 2$

Jan 10-11:18 AM

Copy

Adding Polynomials Without Tiles

understood +1 in front of second bracket so distribute through

Add: $(5c - 11) + (-4c^2 + c + 7)$

We can add the polynomials by adding the coefficients of the like terms.
We can do this in two different ways:

Method 1:

Add horizontally:

$(5c - 11) + (-4c^2 + c + 7)$ Remove the brackets.

$= 5c - 11 - 4c^2 + c + 7$ Group like terms.

$= -4c^2 + 5c + c - 11 + 7$ Combine like terms by adding their coefficients
(remember that c has a coefficient of 1!)

$= -4c^2 + 6c - 4$

Feb 5-10:27 PM

skip this

Method 2:

Add vertically. Line up the like terms, then add their coefficients.

$$\begin{array}{r} 5c - 11 \\ +\ -4c^2 + c + 7 \\ \hline -4c^2 + 6c - 4 \end{array}$$

So, $(5c - 11) + (-4c^2 + c + 7) = -4c^2 + 6c - 4$

Feb 6-11:32 AM

Adding Polynomials in Two Variables

Add: $(3s^2 + s - 4c - 5cs + 2s^2) + (-5c^2 + 3cs + 6c - 4s + 7c^2)$

Remove Brackets.

$= 3s^2 + s - 4c - 5cs + 2s^2 - 5c^2 + 3cs + 6c - 4s + 7c^2$

Group like terms.

$= 3s^2 + 2s^2 + s - 4s - 4c + 6c - 5cs + 3cs - 5c^2 + 7c^2$

Combine like terms.

$= 5s^2 - 3s + 2c - 2cs + 2c^2$

Feb 5-10:28 PM

Create a Polynomial that

adds to give $4x^2 + 6x - 4$

When given:

$$-2x^2 + 2x - 6$$

Feb 8-8:51 AM

Warm Up

1) If the sum of two polynomials is $3x^3 - 5x + 7$ and one polynomial is the following, determine the other polynomial.

a) $-7x^2 + 6x - 2$

b) $12x^2 - 18x$

2) Make two shapes that corresponds to each given perimeter

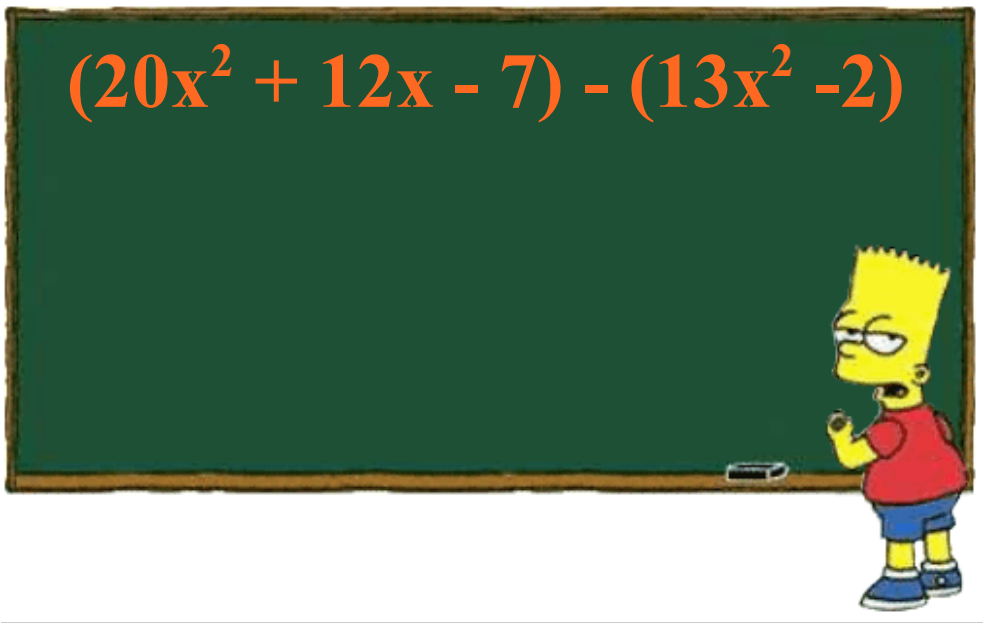
a) P= 3x +11

b) P= 12x + 10

Feb 8-8:08 PM

Feb 8-8:24 PM

You Try

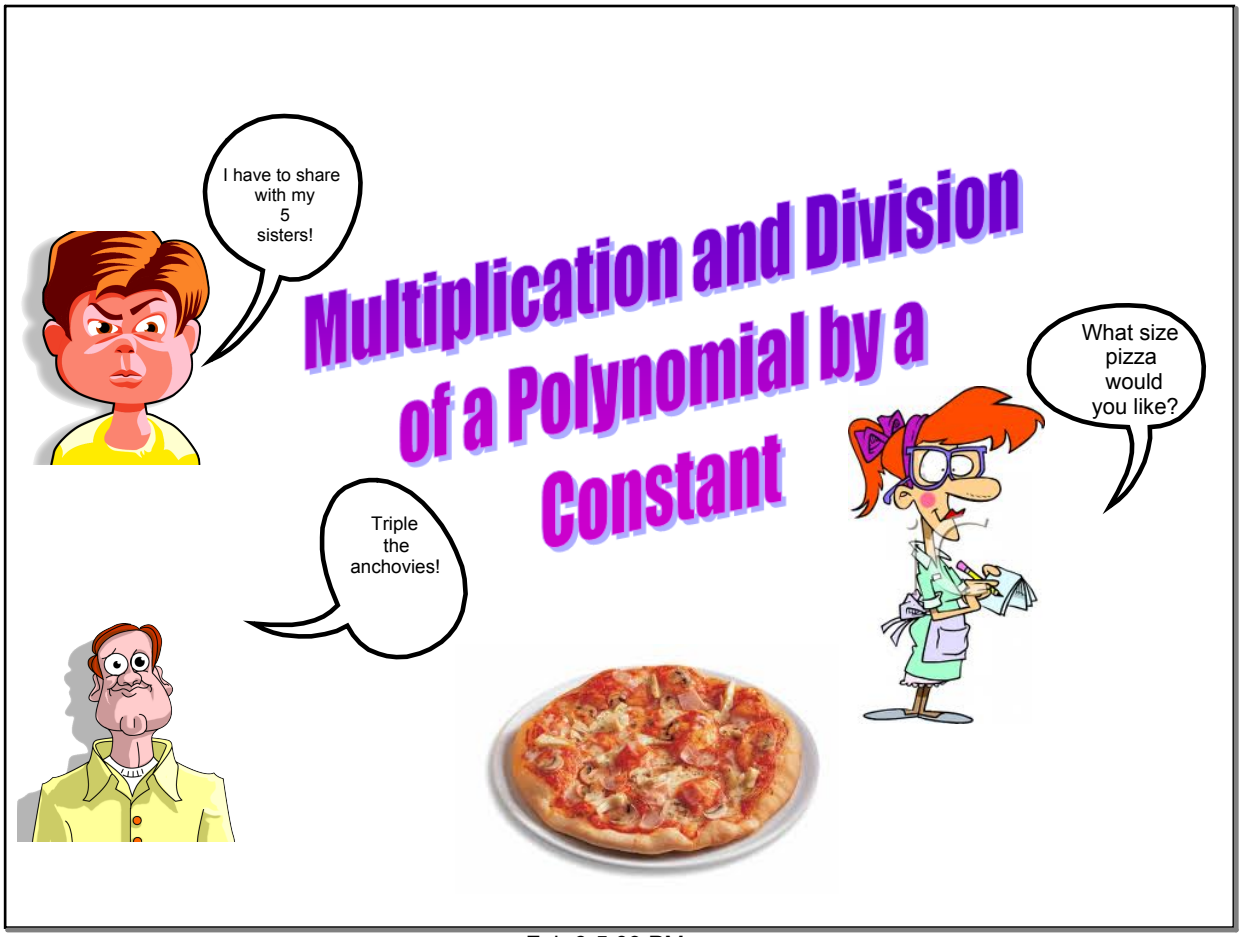


Feb 8-7:37 PM

Try This!

$(6x^2-4x+2)-(-8x^2-9x+2)$

Feb 8-6:35 PM



Feb 6-5:09 PM

Try these:

$3(2x - 6y + 2z)$

$6x - 18y + 6z$

$\frac{36p + 45q - 81}{9}$

$\frac{36p}{9} + \frac{45q}{9} - \frac{81}{9}$

$4p + 5q - 9$

$(30m - 15a + 9t - 54h) \div (-3)$

$(6z - 9)$

$(11y^2 - 8y + 10)(5)$

$(49t^2 - 7) \div (7)$

Feb 6-6:25 PM

$(-2x^1)(-3x^4 + 5x^3 - 7)$

$6x^5 - 10x^4 + 14x$

$\frac{36xy + 12xy^2 - 15x^2y}{3xy}$

$\frac{36xy}{3xy} + \frac{12xy^2}{3xy} - \frac{15x^2y}{3xy}$

$12 + 4y^1 - 5x^1$

Jan 10-11:29 AM

Class/Homework

Pg 259 - 261

#6
#9
#12 a, d
#14 a
#15 a, b, c, d
#19 a
#22 a,c,h,k,l
#26 a,c,e,g
#28 b, d, f

Check Answers in back of textbook

Feb 21-9:58 AM

$$\frac{-12x^5 + 6x^2}{3x^2}$$

Jan 10-11:33 AM

$3x^4 \rightarrow$

$2x^1 \rightarrow$

$7 \rightarrow$

Jan 10-11:35 AM

$$\frac{1+5}{2} = \frac{1}{2} + \frac{5}{2}$$

Jan 10-11:28 AM

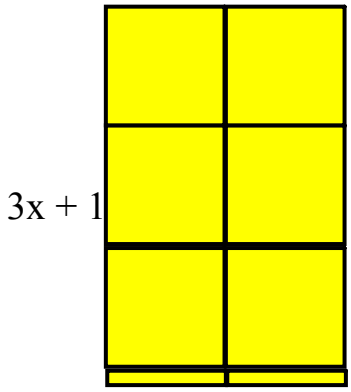
Section 5.6

Multiplying and Dividing a Polynomial by a Monomial

(2x) (3x + 1)

Is this possible?

Area = L x W



Feb 7-8:34 PM

SOME REVIEW

Laws of Exponents

Remember... b^x → "b raised to the power of x" where, b – base, x – exponent

#1. PRODUCT - when multiplying...

"if the base is the same, then ADD the exponents."

Example: $(2^6)(2^5)$

$$b^m \times b^n = b^{m+n}$$

example: $(x^6)(x^5)$

#2. QUOTIENT - when dividing...

"if the base is the same, then SUBTRACT the exponents."

$$\frac{b^m}{b^n} = b^{m-n}$$

example: $\frac{(2^7)}{(2^4)} =$

example: $\frac{(x^7)}{(x^4)} =$

$(x^2)(x) =$

Feb 7-9:09 PM

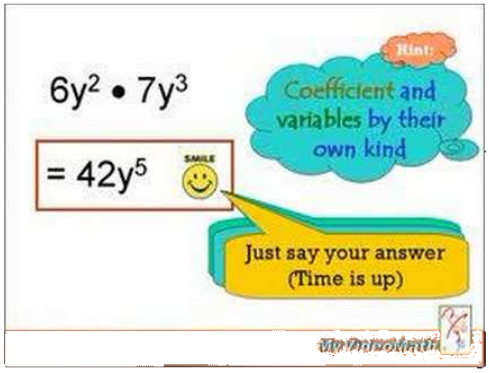
Multiplying a Monomial by a Monomial

Note:

Multiply coefficients with coefficients and variables with variables

Follow exponent laws for variable with the same base

$(11)(5y^2)$ $(-7n)(5n)$ $(8m^5)(4m^2x)$



Feb 7-9:16 PM

Dividing a Monomial by a Monomial

Note:

Divide coefficients with coefficients and variables with variables

Follow exponent laws for variable with the same base

1) $\frac{-8x^2}{2x}$

2) $\frac{150y^5}{25y^2}$

Feb 7-8:51 PM

You Try!

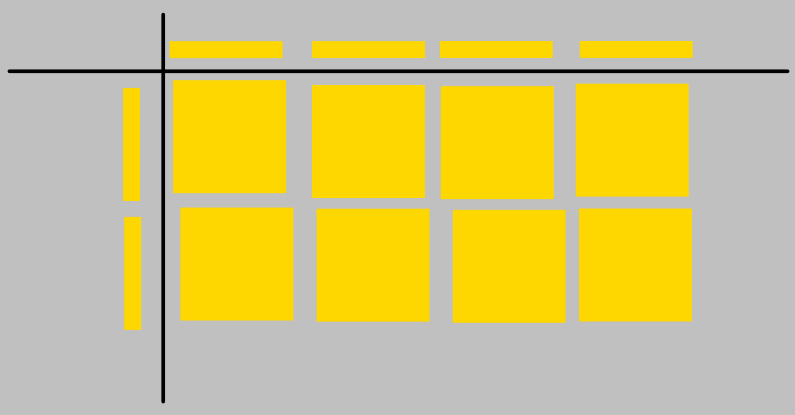
1) $\dfrac{72x - 48x^2}{12x}$

Feb 13-11:25 PM

Algebra Tiles

Multiplication

$(2x)(4x) = 8x^2$

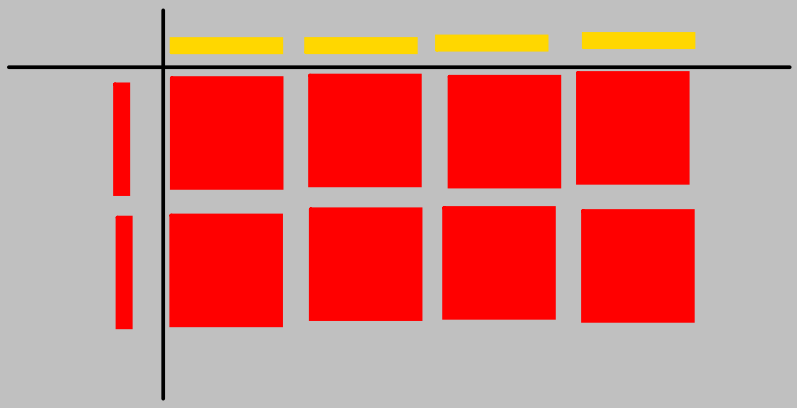


Feb 12-3:18 PM

Algebra Tiles

Multiplication

$$(-2x)\,(4x)$$

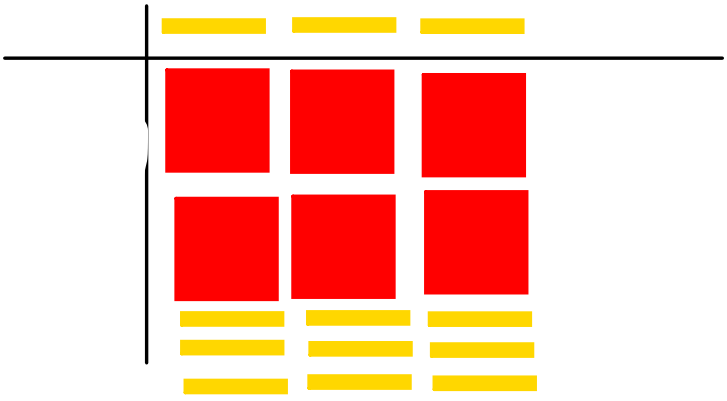


Feb 12-3:18 PM

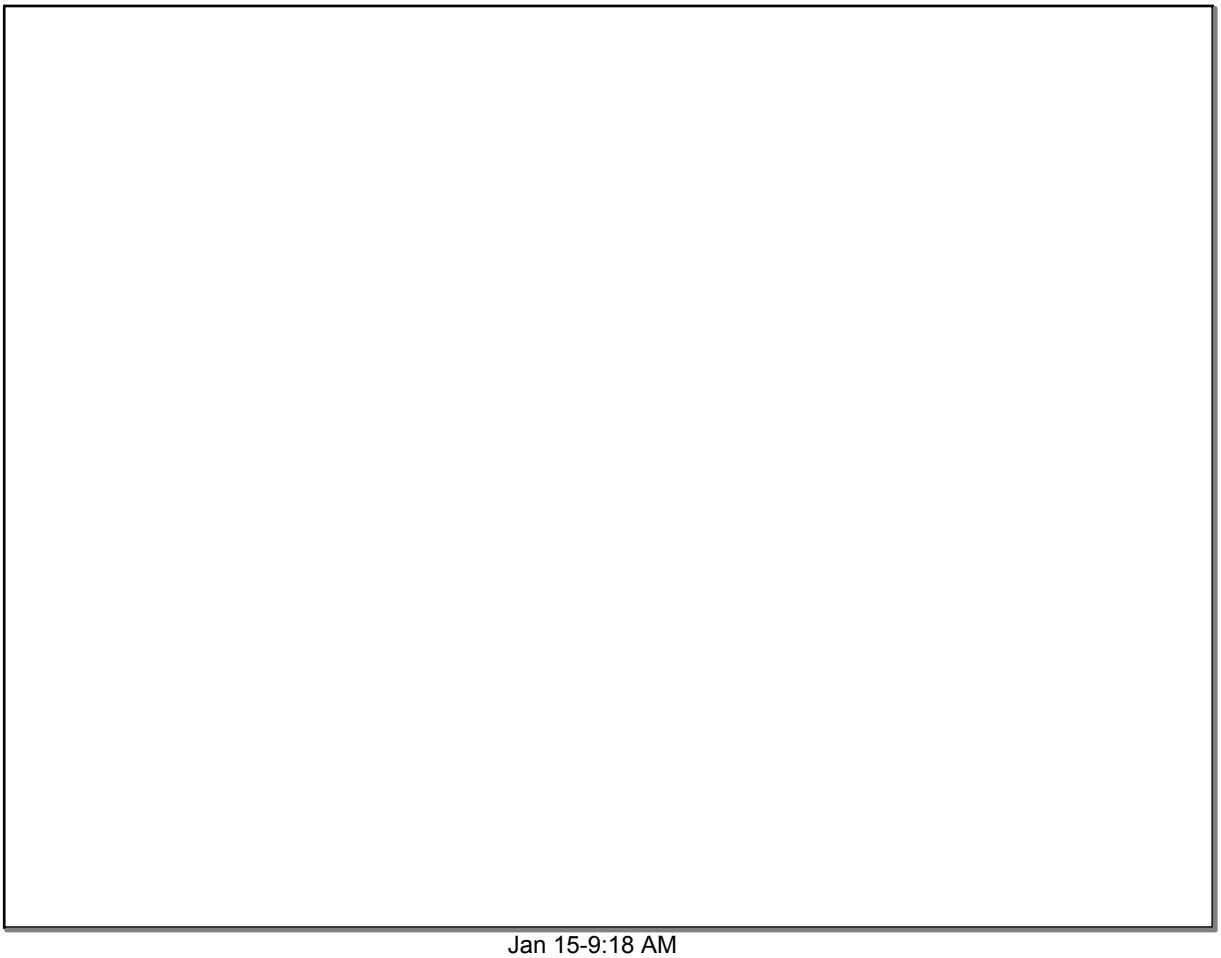
Algebra Tiles

Division $\dfrac{(-6x^2 + 9x)}{(3x)}$

?



Feb 12-3:18 PM



Jan 15-9:18 AM