A set of nine data points is shown below.

8, 11, 12, 10, 9, 7, 5, 3, 9

Which statement is true if a tenth data point of 45 is added to the data set?

A The mean and median will both increase.

B The mean will increase and the median will decrease.

C The mean will increase and the median will remain the same.

D The mean and median will both decrease.

The vertices of a rectangle are located at (1, 2), (5, 0), (2, $^{-}$6), and ($^{-}$2, $^{-}$4). What is the area of the rectangle?

A 20 square units

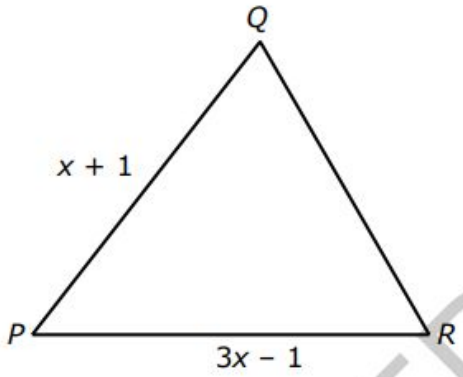
B 30 square units

C 35 square units

D 45 square units

1

The perimeter of the triangle below is $8x - 6$.



Which expression represents the length of $\overline{QR}$?

A $4x - 4$

B $4x - 6$

C $6x - 4$

D $6x - 8$

38 This is a paper/pencil copy of an online technology enhanced item.

Place (click and drag) one option from each of the lists below into its corresponding box to create an equation of the line that passes through the point $(1, -10)$ and is perpendicular to $y = -\frac{1}{3}x + 5$.

$y =$ [1] [2] [3]

1	2	3
$-\frac{1}{5}x$	+	1
$-\frac{1}{3}x$	−	5
$3x$		10
$5x$		13

Assignments:

- Geometry test corrections due today!
- Math One-Pagers are due on Monday
  - Four required for everyone for a formal grade
  - Seven will exempt your lowest FBF
  - Ten will replace your lowest FBF with a 10/10
- Last FBF is today! Code FBF4
- EOC on May 30th

Announcements

- All grades are up to date - if you think there is an error, talk to me or send me an email!
- May 20th - Chromebooks stay at school
- May 22nd - NO HOMEWORK
- Textbooks due Friday, May 24
- Hidden Figures books due Friday, May 24
- Calculator collection on Friday, May 24
- *Anything forgotten on Friday, May 24th can be turned in on Tuesday, May 28th*

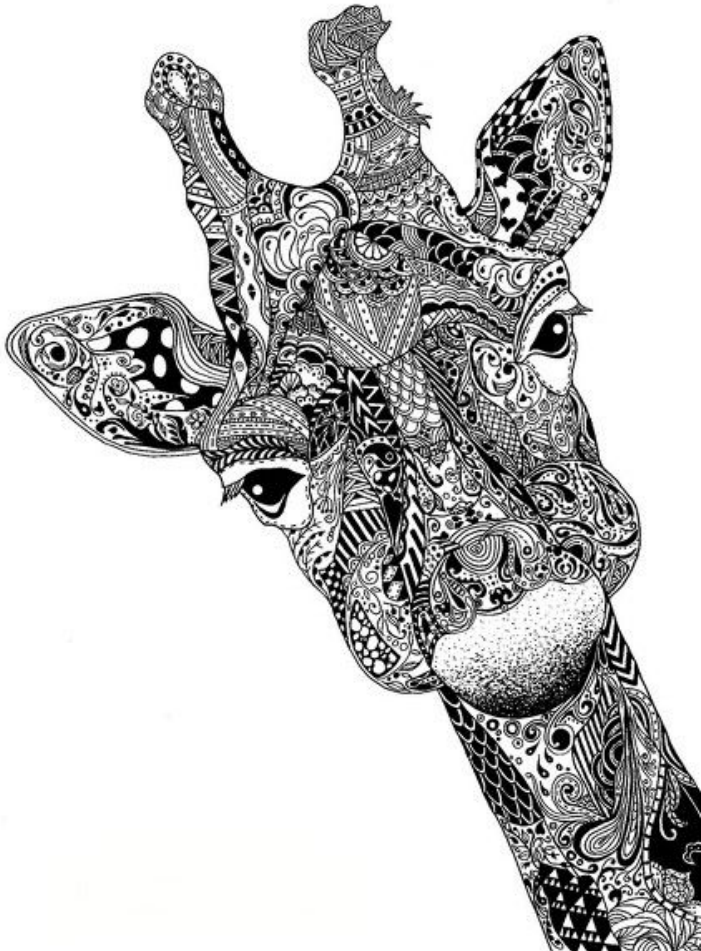
Your final formal / extra credit opportunity

Math One- Pagers!

EOC Review
Day 10

Unit 11-12 Review

5/17/2019



Unit 11

Exponential Functions

Exponential Growth

$y = a \cdot b^x$ and $a>0$ and $b>1$

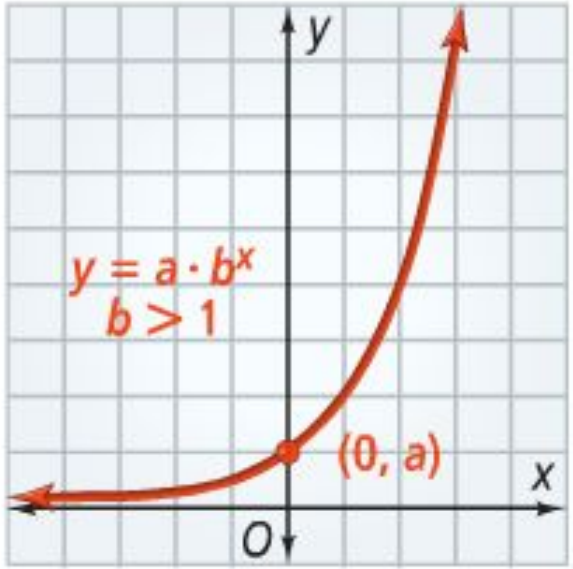
The base, b, is the growth factor which equals 1 plus the percent rate of change expressed as a decimal.

initial amount (when $x = 0$)

$y = a \cdot b^x$ ← exponent

The base, which is greater than 1, is the growth factor.

Graph



Economics Since 2005, the amount of money spent at restaurants in the United States has increased about 7% each year. In 2005, about $360 billion was spent at restaurants. If the trend continues, about how much will be spent at restaurants in 2015?

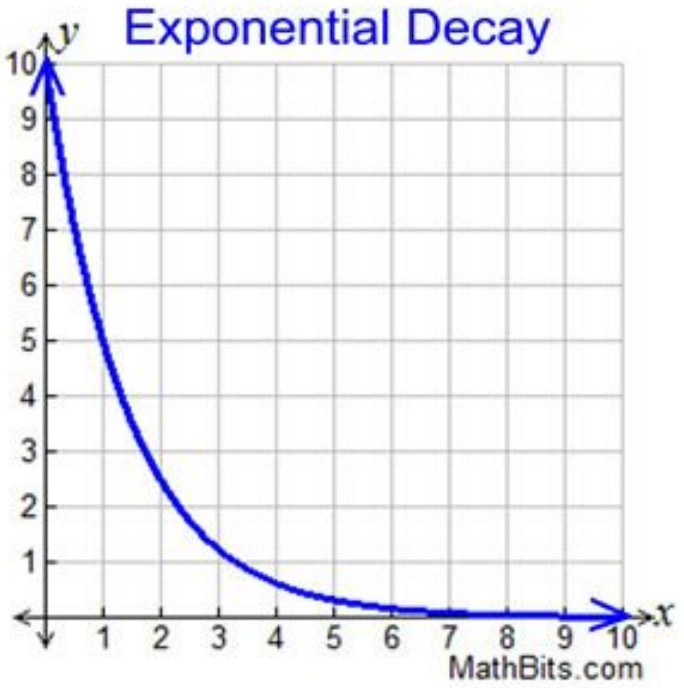
Exponential Decay

$y = a \cdot b^x$ and $a>0$ and $0<b<1$

The base, b, is the decay factor which equals 1 minus the percent rate of change expressed as a decimal.

initial amount (when $x = 0$)

$$y = a \cdot b^x \leftarrow \text{exponent}$$



Physics The kilopascal is a unit of measure for atmospheric pressure. The atmospheric pressure at sea level is about 101 kilopascals. For every 1000-m increase in altitude, the pressure decreases about 11.5%. What is the approximate pressure at an altitude of 3000 m?

Compound Interest ↠ $A = P(1+r/n)^{nt}$

A - Amount at time t

P - Principal amount invested

n - Number of times per year interest is compounded

r - Annual interest rate (written as a decimal)

t - Time in years

Compound Interest ↠ $A = P(1+r/n)^{nt}$

15. $4000 principal earning 6% compounded annually, after 5 yr

Half-Life ↠ $A = A_0(\frac{1}{2})^{t/h}$

A - Amount at time t

A_0 - Initial Amount

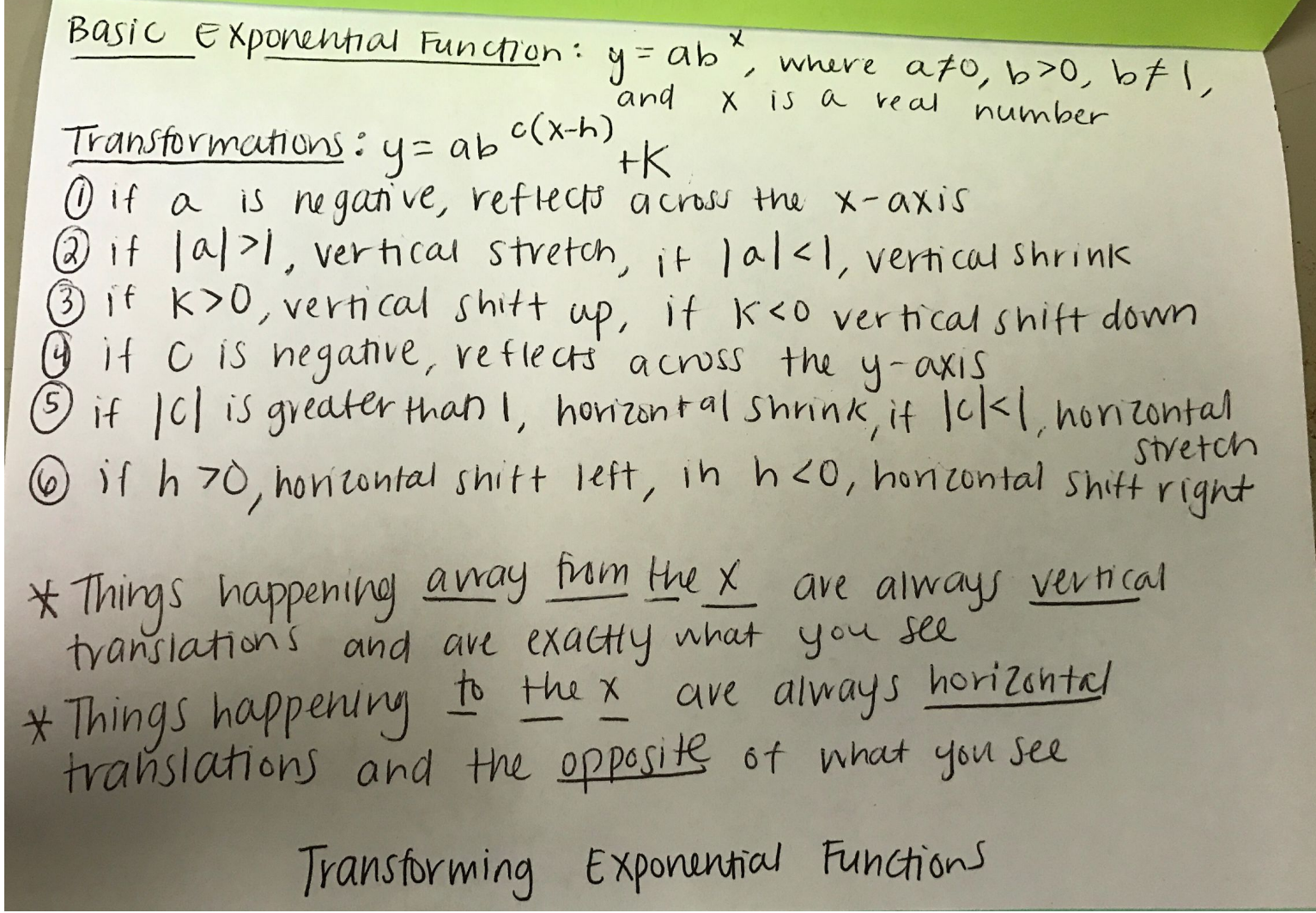
h - Half-life

t - Time

Half-Life ⇾ $A = A_0(\frac{1}{2})^{t/h}$

a. Iodine-131 is used to destroy thyroid tissue in the treatment of an overactive thyroid. The half-life of iodine-131 is 8 days. If a hospital receives a shipment of 200 g of iodine-131, how much I-131 would remain after 32 days?

Foldable


Basic Exponential Function: $y = ab^x$, where $a \neq 0$, $b > 0$, $b \neq 1$, and x is a real number
Transformations: $y = ab^{c(x-h)} + k$
① if a is negative, reflects across the x-axis
② if $|a| > 1$, vertical stretch, if $|a| < 1$, vertical shrink
③ if $k > 0$, vertical shift up, if $k < 0$ vertical shift down
④ if c is negative, reflects across the y-axis
⑤ if $|c|$ is greater than 1, horizontal shrink, if $|c| < 1$, horizontal stretch
⑥ if $h > 0$, horizontal shift left, if $h < 0$, horizontal shift right
* Things happening away from the x are always vertical translations and are exactly what you see
* Things happening to the x are always horizontal translations and the opposite of what you see
Transforming Exponential Functions

IXL Practice

http://bit.ly/2thS44

take note

Key Concept Scientific Notation

A number in **scientific notation** is written as the product of two factors in the form $a \times 10^n$, where n is an integer and $1 \leq |a| < 10$.

Examples 8.3×10^5 4.12×10^{22} 7.1×10^{-5}

Writing a Number in Scientific Notation

Physical Science **What is each number written in scientific notation?**

approximate distance between the sun and Saturn: 1,430,000,000 km

$1{,}430{,}000{,}000 = 1.43 \times 10^{9}$

Use 9 as the exponent.

Move the decimal point 9 places to the left.

Remove the zeros after the 3.

the radius of an atom: 0.0000000001 m

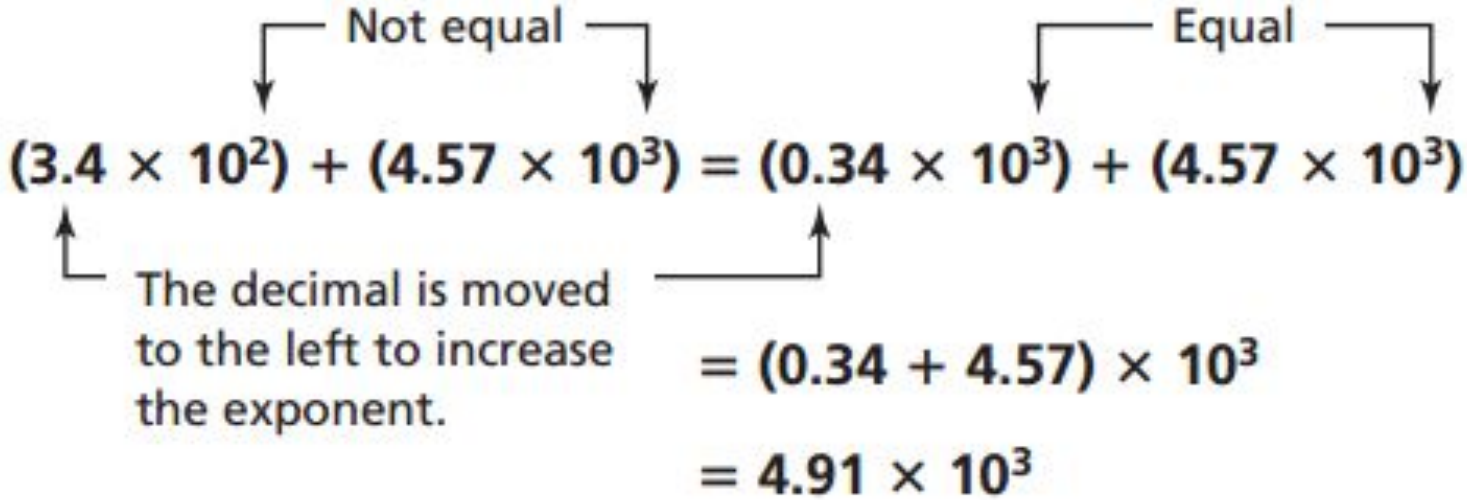
$0.0000000001 = 1 \times 10^{-10}$

Move the decimal point 10 places to the right and use -10 as the exponent. Remove the zeros before the 1.

Practice Adding and Subtracting Scientific Notation

Addition and Subtraction

Before numbers in scientific notation can be added or subtracted, the exponents must be equal.



Practice Multiplying and Dividing Scientific Notation

Division

When numbers in scientific notation are divided, only the number is divided. The exponents are subtracted.

$$\frac{9.60 \times 10^{7}}{1.60 \times 10^{4}} = \frac{9.60}{1.60} \times 10^{7-4}$$

$$= 6.00 \times 10^{3}$$

Unit 12

Polynomials

Important Vocabulary

Monomial:	A real number, a variable, or a product of a real number and one or more variables with whole-number exponents. examples: 18, z, $-4x^2$ $25xy^3$ a/3
Polynomial:	a monomial or a sum of monomials. example: 3x4 + 5x2 - 7x +1
Degree of a Polynomial:	The sum of all the exponents within the polynomial.
Standard form of a Polynomial:	The degrees of the monomial terms decrease from left to right.

Classifying Polynomials

Polynomial	Degree	Name Using Degree	Number of Terms	Name Using Number of Terms
6				
$5x+9$				
$4x^2+7x+3$				
$2x^3$				
$8x^4-2x^3+3x$				

To ADD – combine like terms

1. $(4a^2 + 7a - 12) + (9a^2 - 6 + 2a)$

2. $(3a^2 - 3ab - b^2) + (4ab + 6b^2)$

To SUBTRACT – distribute a –1 then combine like terms

$$(x^3 - 3x^2 + 5x) - (7x^3 + 5x^2 - 12)$$

Method 1 Subtract vertically.

$$\begin{array}{r} x^3 - 3x^2 + 5x \\ -(7x^3 + 5x^2 - 12) \\ \hline \end{array}$$

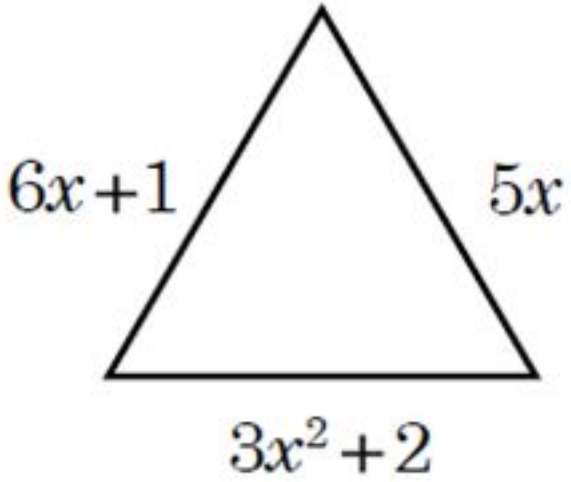
Line up like terms.

$$\begin{array}{r} x^3 - 3x^2 + 5x \\ -7x^3 - 5x^2 + 12 \\ \hline -6x^3 - 8x^2 + 5x + 12 \end{array}$$

Then add the opposite of each term in the polynomial being subtracted.

Application – Perimeter of Figures

7. Find the perimeter of the triangle below.



Multiplying Monomials with other Polynomials

2

Distribute first, then combine "like terms" (same variable, same exponent)

What is the product of each of the following expressions below?

a) $-7x(4x^2+7x-5)$

b) $-2x^3(6x^6+7x^4+x^2)$

6

What is the product of the following expressions?

a) $(x+2)(x+7)$

b) $(3x-2)(4x+6)$

c) $(7x^7+5x)(4x^2+2)$

a. $(x + 1)(x^2 + 3x + 4)$

b $(x^2 - 4)(x^2 + 6x + 5)$

c $(x - 3)(x^2 - 5x - 7)$

Unit 13

Factoring - Monday

Unit 14

Quadratics - Monday

Unit 15

Statistics - Tuesday

Unit 16

Geometry - Tuesday

Homework

1. Math One Pagers
2. Flashback Friday Code: FBF4
3. Charge your calculator/replace batteries
4. Find your textbook