Transformations of Functions (does not include trigonometric functions)

General Equation in function notation: $f(x) = af(b(x-h)) + k$

Transformations for each letter

If *a* is negative: reflect over x-axis

$a =$ vertical dilation

If *b* is negative: reflect over y-axis

$b =$ horizontal dilation

$h =$ horizontal translation

$k =$ vertical translation

Transformations of Functions (does not include trigonometric functions)

General Equation in function notation:

Transformations for each letter

If *a* is negative:

$a =$

If *b* is negative:

$b =$

$h =$

$k =$

Vertical transformations are letters __a__ , __k__

Horizontal transformations are letters __b__ , __h__

Vertical reflections and dilations __multiply__ to y-values.

Horizontal reflections and dilations __multiply__ to x-values, but using the __opposite__ __operation__

Vertical translations __add__ or __subtract__ to the y-values.

Horizontal translations __add__ or __subtract__ to the x-values, but using the __opposite__ __operation__

Transformations must be done in this order.

Parent	
x	$f(x)$

Reflections	
$-x$	$-f(x)$

Stretches/ Compressions	
$\frac{x}{b}$	$af(x)$

Translations (Shifts)	
$x+h$	$f(x)+k$

Vertical transformations are letters _____ , _____

Horizontal transformations are letters _____ , _____

Vertical reflections and dilations _____ to y-values.

Horizontal reflections and dilations _____ to x-values, but using the _____ _____.

Vertical translations _____ or _____ to the y-values.

Horizontal translations _____ or _____ to the x-values, but using the _____ _____.

Transformations must be done in this order.

Parent	
x	$f(x)$

Reflections	
x	$f(x)$

Stretches/ Compressions	
x	$f(x)$

Translations (Shifts)	
x	$f(x)$