

**Graphing  
Exponential  
Growth Functions  
with Parameters  
 $a$ ,  $h$ , and  $k$**

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### Instructions

Print or copy page 3 and 4 double sided.

Place the paper so the examples are face down.

Cut along the dotted lines to create flaps.

Flip and fold the flaps inwards.

Glue the foldable into notes or on a piece of construction paper.

Go through the foldable with your students.

**Effect of  
Parameter “+a”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “-a”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “+h”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “-h”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “+k”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “-k”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

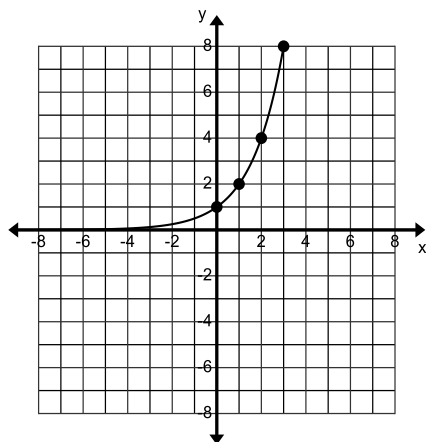
**Preview**

Graph  $g(x) = 2(2)^x$

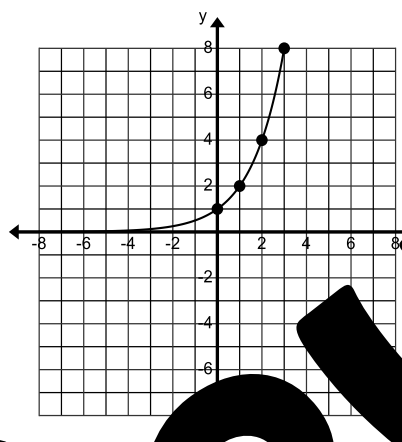
x	$g(x) = 2(2)^x$	y
-1		
0		
1		
2		

Effect +a:

$f(x) = 1(2)^x$



$f(x) = 1(2)^x$



Graph  $g(x) = -2(2)^x$

x	$g(x) = -2(2)^x$	y
1		
2		

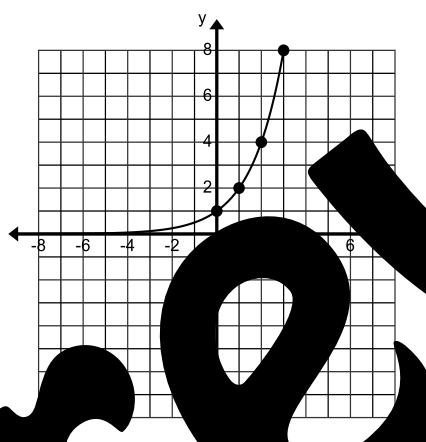
Effect

Graph  $g(x) = 1(2)^{x-4}$

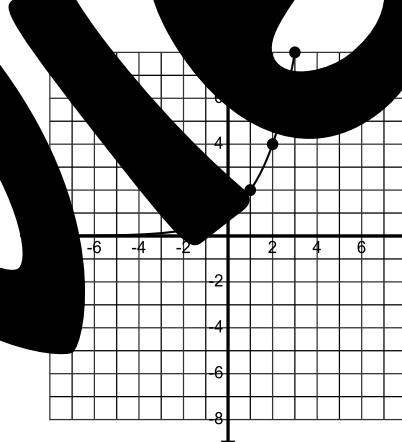
x	$g(x) = 1(2)^{x-4}$	y
4		
5		
6		
7		

Effect +h:

$f(x) = 1(2)^x$



$f(x) = 1(2)^x$



Graph  $y = 1(2)^{x+3}$

x	$g(x) = 1(2)^{x+3}$	y
-3		
-2		
-1		
0		

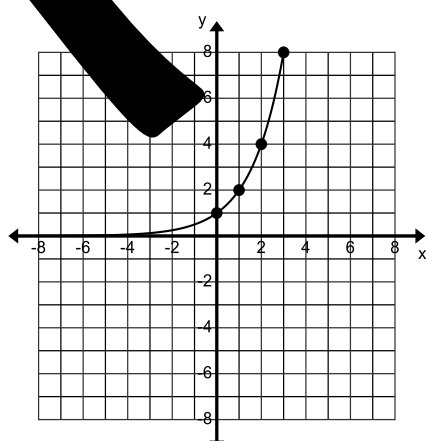
Effect -h:

Graph  $g(x) = 1(2)^{x+2}$

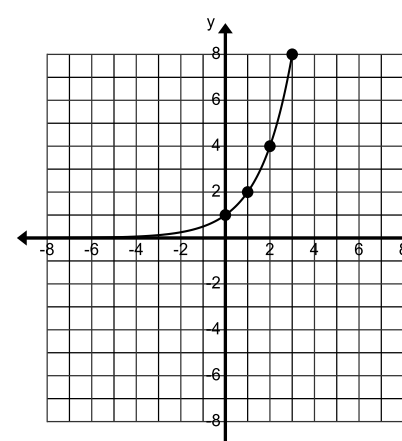
x	$g(x) = 1(2)^{x+2}$	y
-1		
0		
1		
2		

Effect +k:

$f(x) = 1(2)^x$



$f(x) = 1(2)^x$



Graph  $g(x) = 1(2)^x - 3$

x	$g(x) = 1(2)^x - 3$	y
0		
1		
2		
3		

Effect -k:

**Effect of  
Parameter “-a”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “+a”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “-h”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “+h”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Effect of  
Parameter “+k”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

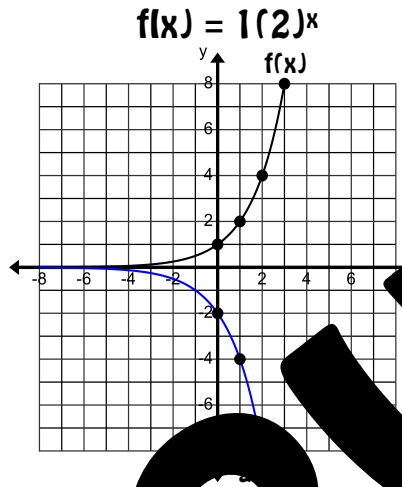
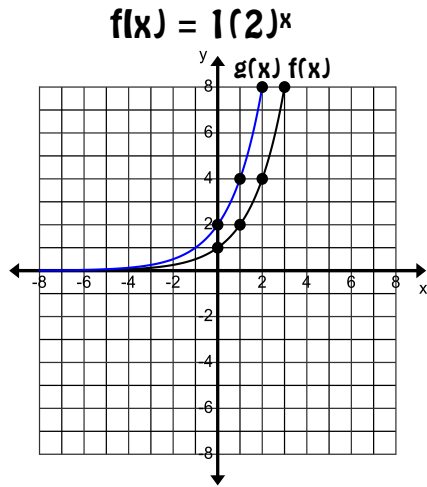
**Effect of  
Parameter “+k”  
in an  
Exponential  
Growth Function  
 $y = a \cdot b^{x-h} + k$**

**Preview**

**Graph  $g(x) = 2(2)^x$**

x	$g(x) = 2(2)^x$	y
-1	$2(2)^{-1} = 2(1/2)$	1
0	$2(2)^0 = 2(1)$	2
1	$2(2)^1 = 2(2)$	4
2	$2(2)^2 = 2(4)$	8

Effect +a: y-intercept changes graph gets steeper



**Graph  $g(x) = -2(2)^x$**

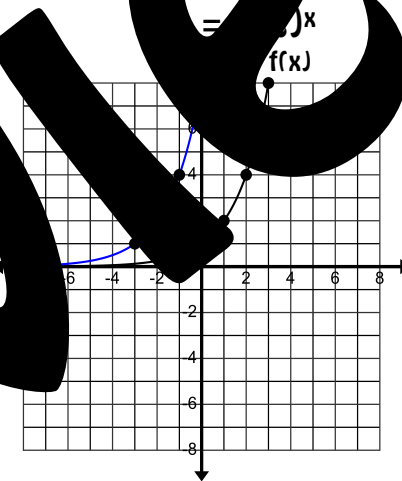
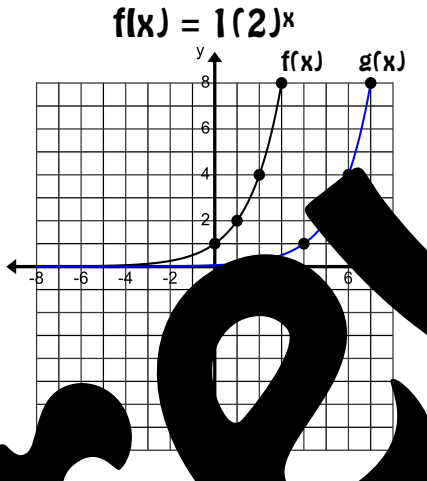
x	$g(x) = -2(2)^x$	y
1	$-2(2)^1 = -2(2)$	-4
0	$-2(2)^0 = -2(1)$	-2
-1	$-2(2)^{-1} = -2(1/2)$	-1
2	$-2(2)^2 = -2(4)$	-8

Effect -a: y-intercept changes graph decreases

**Graph  $g(x) = 1(2)^{x-4}$**

x	$g(x) = 1(2)^{x-4}$	y
4	$1(2)^{4-4} = 1(2)^0$	1
5	$1(2)^{5-4} = 1(2)^1$	2
6	$1(2)^{6-4} = 1(2)^2$	4
7	$1(2)^{7-4} = 1(2)^3$	8

Effect +h: Graph shifts right



**Graph  $y = 1(2)^{x+3}$**

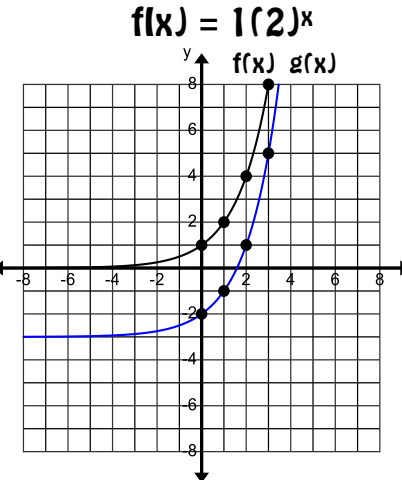
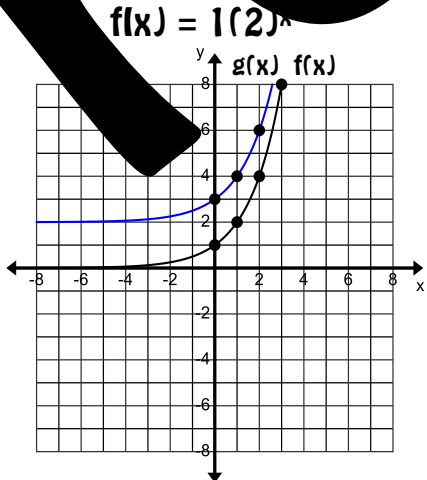
x	$g(x) = 1(2)^{x+3}$	y
-3	$1(2)^{-3+3} = 1(2)^0$	1
-2	$1(2)^{-2+3} = 1(2)^1$	2
-1	$1(2)^{-1+3} = 1(2)^2$	4
0	$1(2)^{0+3} = 1(2)^3$	8

Effect -h: Graph shifts left

**Graph  $g(x) = 1(2)^x + 2$**

x	$g(x) = 1(2)^x + 2$	y
-1	$1(2)^{-1} + 2 = 0.5 + 2$	2.5
0	$1(2)^0 + 2 = 1 + 2$	3
1	$1(2)^1 + 2 = 2 + 2$	4
2	$1(2)^2 + 2 = 4 + 2$	6

Effect +k: Graph shifts up



**Graph  $g(x) = 1(2)^x - 3$**

x	$g(x) = 1(2)^x - 3$	y
0	$1(2)^0 - 3 = 1 - 3$	-2
1	$1(2)^1 - 3 = 2 - 3$	-1
2	$1(2)^2 - 3 = 4 - 3$	1
3	$1(2)^3 - 3 = 8 - 3$	5

Effect -k: graph shifts down

**Review**