DAY 3 – Exponential Relationships

1. Sketch each of the following exponential relations on the grid provided.

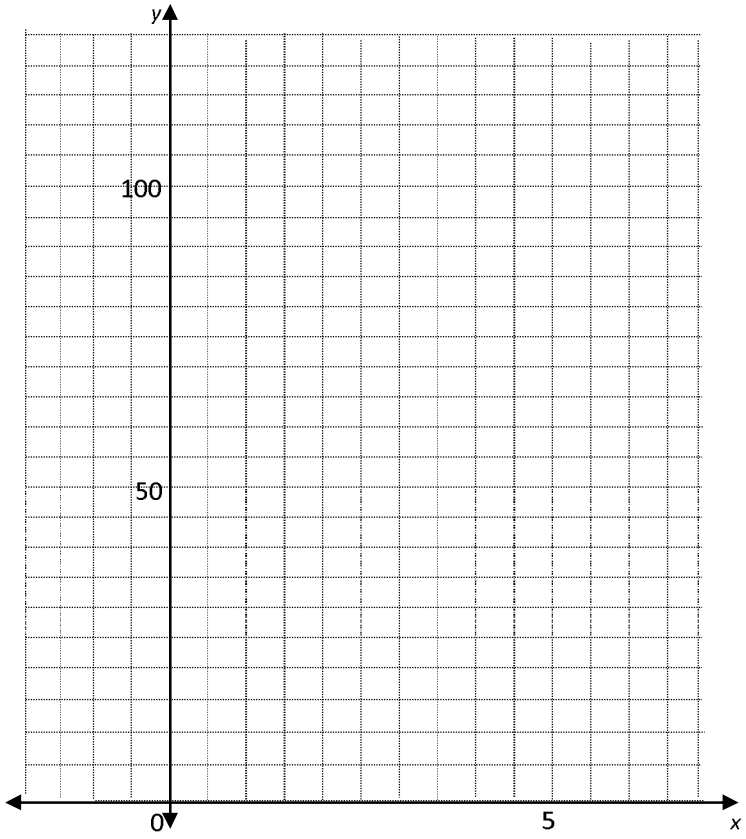
   a. $y = 5^x$ b. $y = 2^x$ c. $y = \left(\frac{1}{2}\right)^x$ d. $y = \left(\frac{1}{5}\right)^x$

x	5^x	y
–1	5^{-1}	$\frac{1}{5}$=0.2
0		
1		
2		
3		

x	2^x	y
–2		
0		
2		
4		
6		

x	$\left(\frac{1}{2}\right)^x$	y
–2		
–1		
0		
1		
2		

x	$\left(\frac{1}{5}\right)^x$	y
–2	$\left(\frac{1}{5}\right)^{-2} = \frac{1^{-2}}{5^{-2}} = \frac{5^2}{1^2}$	25
–1		
0		
1		
2		



2. Consider each graph from #1. How does the value of the base in each exponential relationship indicate what the graph will look like? Create a rule.

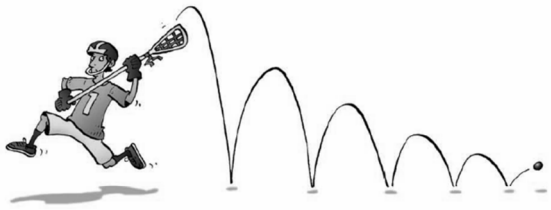
3. For each exponential relationship,

	Day / **# of Fruit Flies** / **1st ratios** 0 / 30 / 1 / 120 / 2 / 480 / 3 / 1920 /	**Number** / **Area** / **1st ratios** 0 / 500 / 1 / 100 / 2 / 20 / 3 / 4 /
a. state whether the relationship is growth or decay		
b. state the equation		

4. A rubber ball drops from a height of 200 cm and bounces several times. After each bounce, the ball rises to 80% of its previous height.

   a. Create a table of values to record the data for the first 5 bounces.

Number of Bounces	Height
0	
1	
2	
3	
4	
5	



   b. Write an equation to model the height, *h*, of the ball.

   c. Draw a graph to model the change in height of the ball.