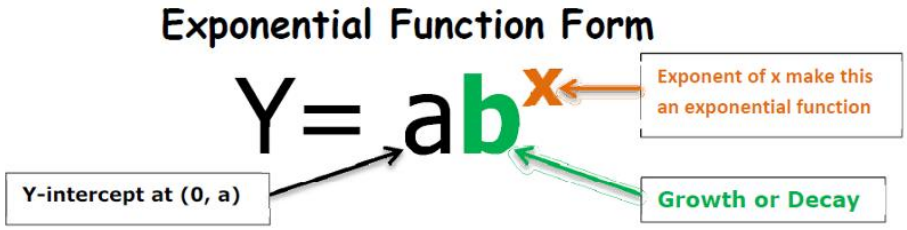
MM Algebra
Ms. Peng/ Mr. Villegas

Name _____
Date:_____

Exponential (Growth/Decay) Feb 10



a = Initial Value **(b = 1 ± rate(r) *express as a decimal*)**

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1) A high school sponsored a handball tournament. After each round, 50% of the players were eliminated. If there were 64 players at the start of the tournament.

a) Determine ***the initial count (a)***, ***the rate (r)***, and ***growth or decay factor (b)***.

a =_____ **r = _____** **b = (1 ± r) = _____**

b) Write a function that models the change in the number of players left after any round.

c) What would be the number of players left after 4 rounds?

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2) Marc bought a new laptop for $1250. He kept track of the value of the laptop over the next three years, as shown in the table below.

Years After Purchase	Value in Dollars
1	1000
2	800
3	640

a) Determine ***the initial count (a)***, ***the rate (r)***, and ***growth or decay factor (b)***.

a =_____ **r = _____** **b = (1 ± r) = _____**

b) Write a function that can be used to determine the value of the laptop for *x* years after the purchase.

c) What would be the value of the laptop 5 years after it was purchased?

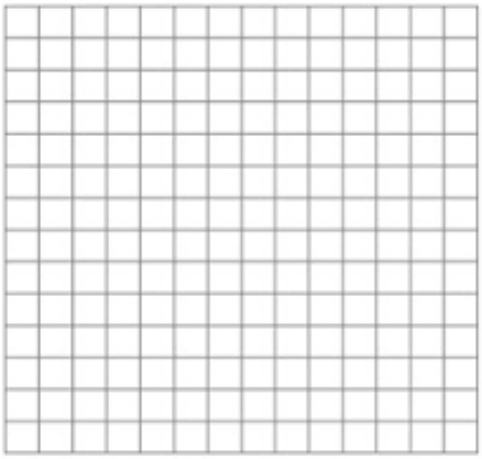
3) The equation V(t) = 12, 000 (0,75) represents the value of a motorcycle t years after it was purchased.

a) Identify **the *initial count (a)*, *the rate (r)*, and *growth or decay factor (b)*.**

a =_____ r = _____ b = (1 ± r) = _____

b) What would be the value of a motorcycle 7 years after it was purchased?

c) Graph the function. Estimate the number of years until the motorcycle would be worthless.



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4) Materials *A* and *B* decay over time. The function for the amount of material *A* is $A(t) = 1000(0.5)^{2t}$ and for the amount of material *B* is $B(t) = 1000(0.25)^{t}$, where *t* represents time in days.

(**Hint:** Please complete the following table and compare the values of the two materials)

DAY	**Material A** $A(t) = 1000(0.5)^{2t}$	**Material B** $B(t) = 1000(0.25)^{t}$
1		
2		
3		
4		
5		
6		

On which day will the amounts of material be equal? Explain.