

**Assign #12 Algebra MP 1 Real-Life Exp Growth/Decay (NO COMPOUNDING) F-LE.A.1**

**EXPONENTIAL GROWTH AND DECAY**

1. Grandma gives you a Benjamin (\$100) for your birthday and you put it into your brand new bank account that yields 4% annual rate of interest. Then you forget about it and leave it in there for 12 years. How much do you have to blow on that birthday 12 years later?
2. In 1995, South Amboy had 285 cell phone users...they were super-expensive and poor to use back then. But the amount of users increased by 75% each year as the market exploded. How many people were using cell phones in South Amboy in 2006?
3. Bacteria on the human body (which btw out numbers cells in your body...bacteria is way smaller...) doubles every hour by what is called binary fission (1 bacteria splits into 2). Taking one bacteria at noon, how many bacteria do you have at noon the next day?
4. The South Amboy Most-Irish-Irishman Contest on St. Patrick's Day starts with 2048 citizens. Each round consists of head to head match-ups, so half of the participants are eliminated after every round. How many are left after 7 rounds?
5. South Amboy has 9,035 citizens and increasing at a constant rate so it can be modeled as  $P = 9035(1.065)^t$ . What is current population? What is the percent increase to the population each year? How many people will live here in 2028?
6. I left my estate to my Algebra Class. I purchased it in 2009 for \$280,000. If I go to Davey Jones's Locker in 2030 and the value of the estate has increased 5% every year since the time I bought it, how much is your inheritance worth? (Enjoy the waterfall and rope swing...)
7. You inhaled smoke because you walked past that weird room at the airport where all the smokers cram in for a puff. As you breath, 12% of the smoky air you took in is replaced with each breath. So eventually the second hand smoke will clear your lungs. If you took in 500mL of smoke, How much is left in your lungs after 5 breaths? After 240 breaths??
8. The liver and kidneys can filter out 29% of the sugar a human takes in every hour. If you took in 400 mg of sugar, how much sugar is left in your body after 6 hours?
9. You buy a new car because you have been saving and you think that will make you cool...and maybe it does, but money is better than cool. Cars depreciate at a rate of about 25% every year (that means they lose their value...). If you spend \$20,000 on your Prius, what will your big investment be worth after 4 years?