**Population Math Practice** – *How do I do this?!*

Please put this handout in your notebook and solve the problems there!

Don’t use a calculator… you may estimate!

**How do I calculate a population’s growth rate?** Growth rate = [b – d] + [i – e]

**How do I calculate a population’s net annual percentage growth?** Growth rate x 100 = \_\_\_\_%

Total Population

**How do I determine how long it would take a population to double?** Rule of 70 (see intro to APES notes)

**How do I determine population growth?**

Brentwood has a population of 55,000. Let’s say you have an annual growth rate of 10%. You want to know what the new population of Brentwood will be after 1 year.

Current population x Growth Rate (in decimal form) = number of people being added

Current population + number of people being added = New population

(If you wanted to know for two years… you’d have to go through the math twice!)

1. If a city of population 10,000 experiences 100 births, 40 deaths, 10 immigrants, and 30 emigrants in the course of a year, what is its net annual percentage growth?

Net annual percentage growth = Growth rate x 100 = (b – d) + (i – e) x 100= (100-40) + (10-30) x 100 = **0.4%**

Total popn 10,000 10,000

1. The current global human population is about 6.1 billion and is growing at an annual rate of 1.35 percent. If world population were to grow at this rate for the next year, approximately how many people would be added?

Current population x growth rate = number of people being added

6.1 billion x 0.0135 = **8.2 x 107 people**

1. If a population grows at a rate of approximately 5 percent per year, how many years are required for the population to double?

Rule of 70… time it takes population to double = 70 = 70/5 = **14 years**

Growth rate

1. If a population of 100,000 experiences 2,000 births, 1,600 deaths, 200 immigrants, and 100 emigrants in the course of one year, what is its net annual percentage growth rate?

(2000 – 1600) + (200 – 100) x 100 = **0.5%**

100,000

1. The current US population is approximately 300 million. If its annual growth rate is 1.0% and continues to grow at this rate for one year, approximately how many people will be added?

300 million x 0.01 = **3 million (3 x 106) people**

1. If the % annual growth rate is 8%, what is the doubling time in years? 70/8 = **8.75 🡪 9 years**
2. If the doubling time is 7 years, what is the % annual growth rate?

70/x = 7 x = **10%**

1. A bank advertises doubling your investment money is 12.3 years. What percent simple interest will it be paying?

70/x = 12.3 x = **5.7 (6%)**

1. The world population grows at a rate of 1.2% annually.
   1. What is the doubling time for the world population? 70/1.2 = **58.33 (58 years)**
   2. What would be the doubling time if the growth rate is cut to 1%? 70/1 = **70 years**
   3. Assuming the growth rate stays constant (at 1.2%), how many doublings would take place in a 500-year period? 500 years/ 58 years = **8.6 (round down to 8)**
   4. What would the world’s population be in 500 years if there are currently 7 billion people? (Think: one doubling is how long? So after that time you’d have 14 billion. Then you’d have 28 billion after a second doubling time had passed… etc.)

7 x 2 = 14 x 2 = 28 x 2 = 56 x 2 = 112 x 2 = 224 x 2 = 448 x 2 = 896 x 2 = **1792 billion (1.792 trillion)**

* 1. If there are currently 7 billion people in the world, what year will there be 14 billion?

Takes 58 years to double… 2015 + 58 = **2073**

* 1. Extension Opportunity: Assuming you live to your life expectancy (78.7 years), what will the population be in the year you die? **Answers will vary**