

Name:

Class Period:

POPULATION CALCULATION WORKSHEET

You will need to be familiar with these equations for this unit.

POPULATION DENSITY

$$\left(\frac{\text{population}}{\text{area}} \right) = \text{Population Density}$$

for example: $\left(\frac{270,000,000 \text{ people}}{9,166,605 \text{ sq. km.}} \right) = 29 \text{ people per square kilometer}$

BIRTH OR DEATH RATES:

$$\left(\frac{\text{\# of births or deaths per year}}{\text{Total population}} \right) = \text{Birth or Death Rate}$$

NOTE: to find Crude Birth/Death Rates(# per 1000 people), multiply the rate by 1,000

for example: $\left(\frac{23,452 \text{ births}}{942,721 \text{ people}} \right) = 0.025 = 2.5\% \text{ birth rate}$
25 = Crude Birth Rate (25 per 1000 people)

FINDING POPULATION GROWTH RATE/NATURAL INCREASE RATE (r):

(This does not include immigration or emigration)

$$\left(\frac{\text{crude births} - \text{crude deaths}}{10} \right) = r \%$$

for example: $\left(\frac{40 - 30}{10} \right) = 1.0\%$

FINDING THE DOUBLING TIME OF A POPULATION: THE RULE OF 70!!!

How many years will it take for a location's population to double??

$$\left(\frac{70\%}{r \text{ (in percent form)}} \right) \text{ or } \left(\frac{0.7}{r \text{ (in decimal form)}} \right) = \text{Doubling Time (dt) in years}$$

for example: $\left(\frac{70\%}{7\%} \right) \text{ or } \left(\frac{0.7}{0.07} \right) = 10 \text{ years}$...meaning that it will take 10 years for this population to double in size!

Population Problems – SHOW ALL WORK!!

Directions: Given the following information, answer questions 1-4.

Raccoonville is an island of 5000 square kilometres off the coast of Frisco. There are currently 250,000 inhabitants of the island. Last year, there were 12,000 new children born and 10,000 people were recorded as deceased.

1. What is the current population density?
2. What are the birth and death rates?
3. What is the pop growth/ natural increase rate?
4. In how many years will the population of the island double?

Directions: Given the following information, answer questions 5-8.

The country of Friscovania contains 2.3 million people (vampires not included) and covers 800,000 square miles. In the year after the last census, there were 109,000 new children born and 111,000 people died.

5. What is the current population density?
6. What are the birth and death rates?
7. What is the natural increase rate?
8. In how many years will the population of Friscovania double?

9. Given a 2015 world population growth rate of about 1.3% per year, how long would it take the **world's population** to double?

How old will you be when this doubling occurs?

10. Calculate the growth rates (natural increase rates) and doubling times for the countries listed below.

Country	Crude Birth Rate (2015)	Crude Death Rate (2015)	Growth Rate (r)	Doubling Time
United States	13	8		
Mexico	19	5		
Japan	8	9		
United Kingdom	13	9		
China	12	7		
India	23	7		
Nigeria	41	16		
South Africa	21	14		
Canada	11	7		
Italy	9	10		