

## Calculating Future World Populations

Name: \_\_\_\_\_

To calculate the future world population at any given year you will need to use the following formula:  $N = N_0 e^{kt}$

$N$  is the future population value which is what you are trying to find

$N_0$  is the present population value which is \_\_\_\_\_ and it is easier to put this value in scientific notation so it is \_\_\_\_\_  $\times 10^9$

$e$  is a constant value of 2.71828

$k$  is the rate of population increase 1.14% as a decimal which is 0.014

$t$  is the number of years over which growth is to be measured

**For example:** It is 2014 and to find the world population for 2020.....

$N_0$  is 7,239,082,431 which is  $7.2 \times 10^9$  in scientific notation and  $t$  would be 6 years

Then look at the formula, plug in what you know, and solve.....

$$N = N_0 e^{kt}$$

$$N = (7.24 \times 10^9)(2.71828^{0.014 \times 6})$$

$$N = (7.24 \times 10^9)(2.71828^{0.084})$$

$$N = (7.24 \times 10^9)(1.087)$$

$$N = 7.87 \times 10^9$$

$$N = 7.87 \text{ Billion}$$

Part A: Use the formula to find the population of these given years:

1. 2050

2. 2100

3. 2150

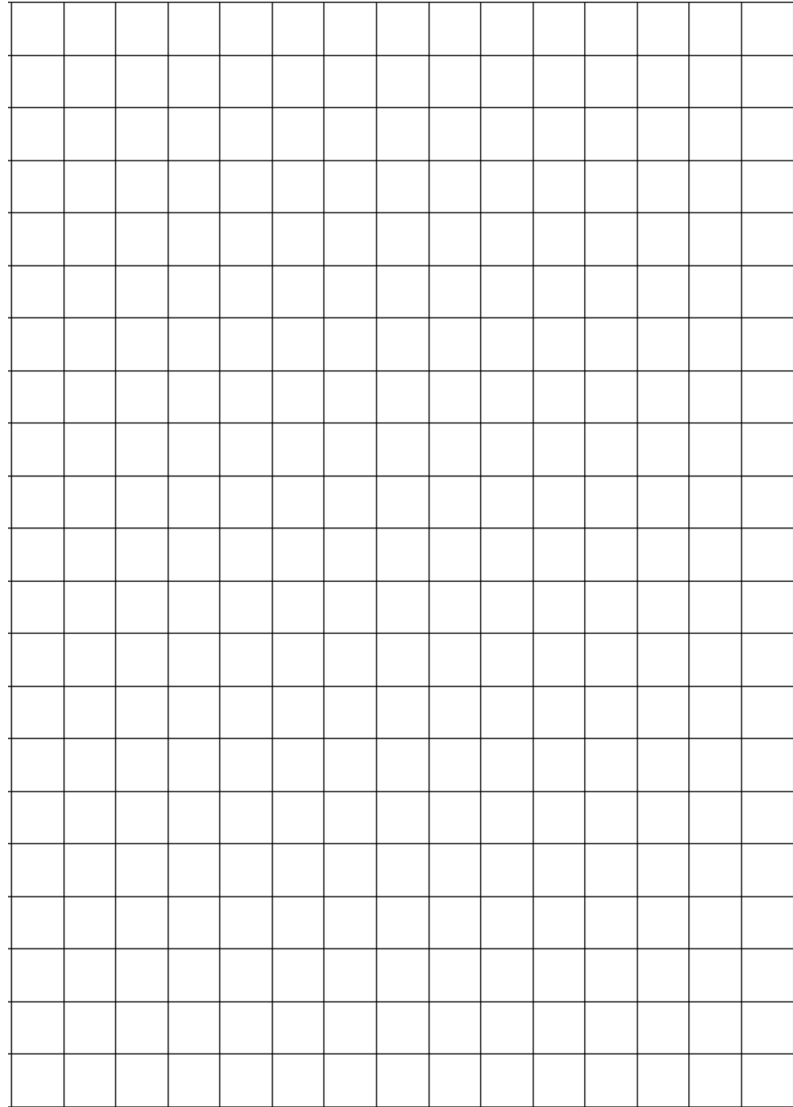
4. 2200

5. 2250

6. 2300

Part B: graph your results below:

### Projected Future World Population in Billions



2050      2100      2150      2200      2250      2300

Year