

Population in 2020

What do you think the population will be in the year 2020?

Collect data on the population for the last 200 years to help you make your prediction. Give reasons for your estimate.

Exemplars

Population in 2020

Suggested Grade Span

6-8

Task

What do you think the population will be in the year 2020?

Collect data on the population for the last 200 years to help you make your prediction. Give reasons for your estimate.

Alternate Versions of Task

More Accessible Version:

Consider the population data over the past 3 years for the following states. Which state has had the biggest percent increase in population over that 3-year period?

State	2002 Population	2001 Population	2000 Population
Vermont	616,592	612,978	609,952
New York	19,157,532	19,084,350	18,999,760
California	35,116,033	34,600,463	34,010,375

More Challenging Version:

What do you think the population will be in the year 2020?

Collect data on the population for the last 200 years to help you make your prediction. Give reasons for your estimate.

Go to the following web site: <http://www.census.gov/population/www/intclock2.html>. Find information at the web site that is of interest to you. Think of a way to represent this information in a poster teaching others about an interesting trend or fact about the world's population.

Context

We had been solving problems that had patterns and could be connected to exponents. I wanted to give my students a real-world problem where exponential growth occurred. The discussions we had about how quickly the population has grown were very interesting. Most students were very concerned about the planet and overpopulation.

Exemplars

What This Task Accomplishes

This task asks students to find data about the population and graph this information, and find a way to predict future populations.

What the Student Will Do

The students went to the library to look up the population of the United States for the past 200 years. They graphed the results (needing to decide what scale to use) and then had to think of a way to predict a future population.

Time Required for Task

Two or three class periods, depending on outside time available to students.

Interdisciplinary Links

This task can be linked to a social studies unit on the United States or a science unit on pollution or overpopulation.

Teaching Tips

You might want to have a discussion about making a graph and deciding on a scale to use so there are equal increments and all the information can be presented.

Suggested Materials

- Different types of graph paper
- Reference materials (to find the population of the United States since 1700)

Possible Solutions

Answers will vary. Look for explanations of past growth patterns in determining the future population.

More Accessible Version Solution:

Vermont = 1.0768871474% change from 2000 to 2002

New York = 0.823550758% change from 2000 to 2002

California = 3.1485845796% change from 2000 to 2002

California had the biggest percent increase.

Exemplars

More Challenging Version Solution:

The products students create will vary.

Look for use of good mathematical representation, language and notation in the student's poster presentation.

Task Specific Assessment Notes

Novice

This student has not collected the correct information. His/her graph is not accurate. His/her estimate is lower than the current population. There is no reason for the solution.

Apprentice

This student is beginning to see increases in the population and indicates that there are small steps in the beginning and larger increases in the last 100 years, but there is no reason for their estimate. The scale on their graph could not accommodate the larger populations.

Practitioner

This student sees that the differences between the populations every 30 years increased at a constant rate, but his/her explanation for his/her estimation should be linked to his/her graph. However, his/her graph stops at 1989 and the reasoning loses some of its strength.

Expert

This student noticed that the difference between the populations every 30 years increased at a constant rate. His/her graph helped him/her to see that their prediction of 317 million in the year 2020 was reasonable. The curve on the graph is quite powerful.