# The *Sizzling* Southwest
## Too Many People?
## a Lesson on Measuring Population Growth and its Impact on the Landscape

**INTRODUCTION:**
Mathematics can be used for many purposes in "the real world." One important use is keeping track of statistics. For example, every ten years the United States Census Bureau counts how many people are living in our country. They collect data on age, education, race, ethnicity, and much more. In this lesson you are going to look at some of this data from the southwestern part of the country and interpret it.

**PART ONE:** *Percent of Population Increase*
One useful statistic is the percent of increase of the population. This helps us see changes in different parts of the country.

*Example:* The population of the state of Nevada increased from 1,201,833 (April 1990) to 1,998,257 (April 2000). What is the percent of increase for Nevada's population? Round your answer to the nearest *tenth of a percent*.

**FORMULA:** $\quad\quad$ <u>new population — old population</u> $\quad$ x $\quad$ 100%
$\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad$ old population

**SUBSTITUTION:** $\quad$ _____ $\quad$ x $\quad$ _____

**ANSWER:** $\quad\quad\quad\quad\quad\quad\quad$ _____ %

On the top of the *next* page is a chart of percent of population increase for six southwestern states plus four states from other parts of the country (for comparison purposes). Most of the data is given to you, except for Nevada. Write the result you got for the example above on the chart now.

You will make a kind of thematic map called a ***choropleth*** to show this data in graphic form. You will do this by coloring in the states using five different colors. Make the scale here:

| | |
|---|---|
| [ ] | 0 - 0.9%  population growth |
| [ ] | 1.0 - 4.9% |
| [ ] | 5.0 - 9.9% |
| [ ] | 10.0 - 25% |
| [ ] | over 25% |

*\* Now color the US map (which your teacher will provide to you) using your color scheme.*

| STATE | PERCENT OF POP. INCREASE |
| --- | --- |
| Arizona | 40.0% |
| California | 13.8 |
| Kansas | 8.5 |
| Maine | 3.6 |
| Mississippi | 10.5 |
| Nevada | |
| New Mexico | 20.1 |
| North Dakota | 0.5 |
| Ohio | 4.5 |
| Pennsylvania | 3.4 |
| Texas | 22.8 |
| Utah | 29.6 |

The states of Pennsylvania, Maine, North Dakota, Kansas, Mississippi and Ohio were chosen because they are representatve of a region of the country. **Compare** the growth of the Southwest to those other regions of the United States: _____
_____.

Below is a choropleth map  showing the Hispanic Population in 1990.



The three states with the highest percentage of Hispanics are _____ , _____ and _____.

What do you think is one of the causes of the rapid growth of the Southwest's population from 1990 to 2000? _____
_____.

What other possible explanations are there for the high percent of population increase in the Southwest? _____
_____.

## PART TWO: *Graphing Ethnic Diversity*

The Southwest is becoming very ethnically diverse, with many different racial groups, speaking many different languages. This is true for California especially. Below are some statistics from Census 2000 about California's ethnic make-up.

### TABLE OF ETHIC DIVERSITY FOR CALIFORNIA

| Ethnic Group | Population | Percent of Population | Degrees of the Circle Graph |
|---|---|---|---|
| White/ Non-Hispanic | 14,637,000 | | |
| Hispanic | 10,262,000 | | |
| Asian | 3,698,000 | | |
| African-American | 2,264,000 | | |
| Pacific Islanders | 117,000 | | |
| Native Americans | 333,000 | | |
| Other Races | 953,000 | | |
| Multi-racial | 1,608,000 | | |
| TOTAL | | 100 % | 360° |

Find the *Percent of Population* for each group. How is that done? _____
_____.

**Show your work here:**

Next you need to determine how many degrees of the circle graph each "slice" will be. How is this accomplished? _____
_____.

Show your work here and write the results in the last column of the **Table of Ethnic Diversity**.

Use a protractor and draw the Circle Graph here:

**Ethnic Groups of the State of California**
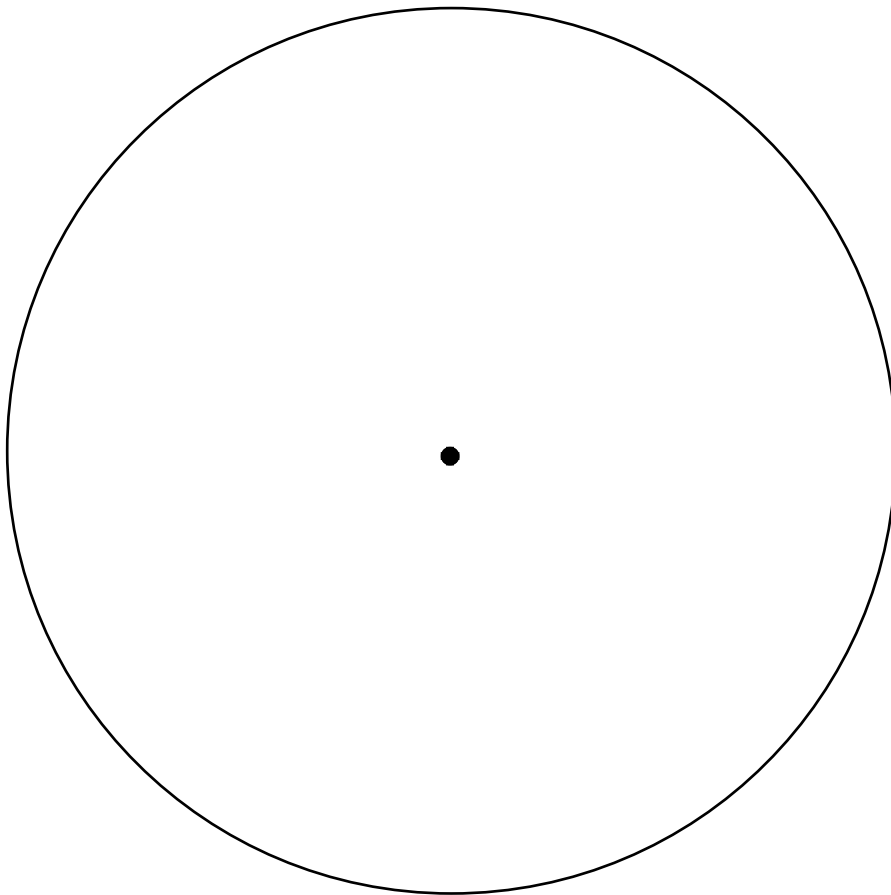
California is the first state that has no ethnic majority. What does that mean? _____
_____.

Other states in the Southwest are following a similar path, which means that they have a rapidly
growing population and no group has more than _____ of the total population.

## PART THREE: *the Amazing Growth of Las Vegas*

Nowhere in the Southwest is there more explosive growth than the city of Las Vegas. It has become
more than a party town or a gambler's paradise. People want to live there permanently. To show its
rapid growth, you will make *line graph* of Las Vegas's population from 1920 to 2000.

Here is the data:

| Year | Population |
|---|---|
| 1920 | 2,304 |
| 1930 | 5,165 |
| 1940 | 8,422 |
| 1950 | 24,624 |
| 1960 | 64,405 |
| 1970 | 125,787 |
| 1980 | 164,674 |
| 1990 | 258,295 |
| 2000 | 478,434 |

On the graph paper provided, make a **line graph** of Las Vegas population.
What does the steepness of the line tell you? _____
The most rapid growth occurred between the years _____ to _____.
What do you predict for 2000-2010? _____
_____.
Why do you think the graph begins at 1920 and no sooner? _____
_____.

## LAS VEGAS GROWTH (as seen from outer space):

All these new people have to live somewhere. Las Vegas is ballooning out into the Nevada desert. You can see this growth by looking at images taken by satellites.

Load the CD-ROM titled *Earthscapes in Time.* Use the menu and go to the section on Las Vegas.

Click on the image for the map. This will help you locate some geographic sites.
The large body of water is _____ which is formed by damming the _____ River. The name of the dam is _____.
Las Vegas is found _____ of the lake. To the east of Las Vegas are _____
Mountains. All around the city is mostly empty space, since Nevada is a desert state.
Click on the image for 1972. It shows a satellite image for this region. You can zoom in. What do
the colors tell you? brown _____ green _____
blue-purple _____ black _____
Click on the magnifying class and set it to 1992. What do you observe as you drag the magnifier
over the 1972 image? _____
_____
_____.

Where is most of the growth of Las Vegas occuring? _____
_____.

Since the rapid growth is continuing, what will Las Vegas look like in  2012? _____
_____.

**WRAP - UP:** Geographers need to know math! If you were a city planner for Las Vegas, you
would need to know how many new people to expect so you can be prepared. What will these new
people need? Make a list here: _____
_____
_____
_____

Since Las Vegas (and other Southwest cities) are located in deserts, what impact on the environ-
ment will their rapid growth have? _____
_____
_____