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Too Hot to Handle?

Take Earth's Temperature with Mean, Median, and Mode

By Russell Bart

Feeling a little warm? According to the U.S. National Climatic Data Center, 2003 was the world's third-warmest year on record, behind only 2002 and 1998.

Scientists record the Earth's temperature each day at weather stations across the globe. At the end of the year, they report a **mean** (average) global temperature. The past decade has had the highest mean temperature since scientists began monitoring it in 1851.

Many scientists believe that **greenhouse gases**--gases that trap heat in the atmosphere--cause the temperature increase. These gases are produced when coal, oil, natural gas, or wood are burned by cars, refrigerators, air conditioners, and other machines.

But a warmer Earth isn't cool! A temperature increase of just a few degrees could cause droughts in some areas, and floods from melting ice in others.

DynaMath asked Gordon Hamilton, an expert at the Climate Change Institute at the University of Maine, what we can do about the temperature change. He told us, "We should explore other forms of energy that don't produce greenhouse gases, such as solar or wind power. Everyone can help by turning off lights, computers, or other appliances that are not in use."

Learn more about global temperature change using **mean, median, and mode**. It'll be no sweat!

How to Find a Mean:

- Add all the numbers in a set.
- Divide by the number of numbers in the set.

Example: 54.2, 55.5, 56.1, 55.1, 53.6, 55.5

Add: $54.2 + 55.5 + 56.1 + 55.1 + 53.6 + 55.5 = 330$

Divide: 330 divided by 6 = 55

Mean = 55

How to Find a Median or Mode:

- Order all the numbers in the set.
- The median is the middle number. (If there are two middle numbers, add and divide by 2.)

- The mode is the number that appears most often.

Ordered numbers: 53.6, 54.2, 55.1, 55.5, 55.5, 56.1

Median = 55.3

Mode = 55.5

What to Do:

Answer the questions below. All temperatures are in degrees ($^{\circ}$) Fahrenheit. Round all temperatures to the nearest tenth.

1. Find the mean, median, and mode for the set of temperatures for the first five years that global temperature records were tracked (1851 to 1855): **56.6 $^{\circ}$, 56.3 $^{\circ}$, 56.2 $^{\circ}$, 56.6 $^{\circ}$, 55.7 $^{\circ}$**

A. Mean: _____

B. Median: _____

C. Mode: _____

2. Find the mean, median, and mode for the set of global temperatures for the four-year period 1950 to 1953: **56.8 $^{\circ}$, 57.1 $^{\circ}$, 57.3 $^{\circ}$, 57.3 $^{\circ}$**

A. Mean: _____

B. Median: _____

C. Mode: _____

3. Find the mean, median, and mode for the global temperatures from 1994 to 2003: **57.3 $^{\circ}$, 57.5 $^{\circ}$, 57.2 $^{\circ}$, 57.6 $^{\circ}$, 58.0 $^{\circ}$, 57.3 $^{\circ}$, 57.4 $^{\circ}$, 57.8 $^{\circ}$, 58.4 $^{\circ}$, 57.9 $^{\circ}$**

A. Mean: _____

B. Median: _____

C. Mode: _____

4. Say for 2004 to 2008, the global temperature is different each year. If 57.0 $^{\circ}$ is the median, what do you know about the other 4 years's temperatures?

Testing 1-2-3

Try this standardized-test type question! For which set of temperatures are the mean, median, and mode all 56 $^{\circ}$?

A. (55 $^{\circ}$, 55 $^{\circ}$, 56 $^{\circ}$, 57 $^{\circ}$, 57 $^{\circ}$)

B. (54 $^{\circ}$, 56 $^{\circ}$, 55 $^{\circ}$, 59 $^{\circ}$, 56 $^{\circ}$)

C. (56 $^{\circ}$, 57 $^{\circ}$, 56 $^{\circ}$, 56 $^{\circ}$, 52 $^{\circ}$)

D. (52 $^{\circ}$, 56 $^{\circ}$, 60 $^{\circ}$, 58 $^{\circ}$, 54 $^{\circ}$)

Answer Bank

1a. 56.3

- b. 56.3
- c. 56.6

- 2a. 57.1
- b. 57.2
- c. 57.3

- 3a. 57.6
- b. 57.6
- c. 57.3

4. Two of the temperatures must be less than 57° , and two of the temperatures must be greater than 57° .

Testing 1-2-3: B
