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# Graphing Temperature and Carbon Dioxide in the $20^{\text {th }}$ century 



| $\mathbf{D}$ | $\mathbf{T}$ | $\mathbf{E}$ | $\mathbf{C}$ |
| :---: | :---: | :---: | :---: |
| 1900s | -.29 | 7 |  |
| 1910s | -.26 | 9 |  |
| 1920s | -.16 | 10 |  |
| 1930s | -.03 | 11 |  |
| 1940s | +.02 | 14 |  |
| 1950s | -.01 | 22 |  |
| 1960s | -.01 | 33 | 320 |
| 1970s | +.02 | 49 | 331 |
| 1980s | +.19 | 57 | 346 |
| 1990s | +.31 | 66 | 361 |
| 2000s | +.55 | 82 | 380 |

This table is a general summary of measurements of temperature and carbon dioxide.

Column D-decade
Column T - average global temperature for ten years Column E-total $\mathrm{CO}_{2}$ emissions in decade (million tons) Column C-CO ${ }_{2}$ concentration at Mauna Loa (ppm)

The solid dots on the graph show the average temperature as measured in tenths of a degree difference from the "official" temperature average for the period 1950-1980.

Using the megaton scale to the right, add circles to show "the total emission of carbon dioxide each decade (millions of tons). The first seven circles are already done for you.

Using the ppm scale, add X's to show the concentration of carbon dioxide in the atmosphere. Scientists have been making these measurements only since 1959.
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1. Write a one-sentence generalization about the trends in temperature.
2. Write a one sentence generalization about the trends in carbon dioxide emissions and concentration in the atmosphere.
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3. What do you think is the most accurate causal statement about the trends? Why?
a. Upward change in temperature causes an upward change in carbon dioxide concentration.
b. Upward change in carbon dioxide concentration causes an upward change in temperature.
c. Upward changes are related, but is impossible to identify a cause based on this evidence.
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