

Measuring Carbon Dioxide Emissions Answer Key

Carbon dioxide is a colorless gas (CO_2). It is released into our atmosphere when fossil fuels (oil, natural gas, and coal) and wood or wood products are burned. It is also released when animal or vegetable matter rots and when animals, including humans, exhale. It is absorbed from the air by plants during photosynthesis. CO_2 is one of the main greenhouse gases.

Most scientists believe that human activity, such as burning fossil fuels and cutting down forests, is responsible for the increase in CO_2 in our atmosphere. This increase, they believe, plays a major role in global warming.

Directions: Review what you have learned about global warming and the effects of greenhouse gases. Then solve the following word problems.

1. A bus releases about $\frac{3}{4}$ pounds of carbon dioxide for every mile it is driven. Suppose you ride on a bus to and from school 50 miles each week. How many pounds of carbon dioxide are released in one week? 37 $\frac{1}{2}$ pounds
2. If the average school year is 40 weeks long, what is the yearly total amount of carbon dioxide emissions for your bus ride? 1,500 pounds
3. Replacing 3 regular light bulbs with energy-efficient fluorescent light bulbs can eliminate about 750 pounds of carbon dioxide emissions per year. How many regular light bulbs would you have to replace in your school to eliminate 30,000 pounds of carbon dioxide emissions per year? 120 regular light bulbs
4. Jonathan rides a train to and from work five days per week. The distance from his house to his office is 13 miles. For every mile he rides on the train, about $\frac{1}{2}$ pound of carbon dioxide emissions are released. Jonathan's friend Louise drives her car to work. Her total weekly mileage is 200 miles.

The average American car releases about 1 pound of carbon dioxide for every mile driven. What is the approximate ratio of Jonathan's CO_2 emissions to Louise's CO_2 emissions from their weekly commute by train and car?

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Measuring Carbon Dioxide Emissions Answer Key (continued)

5. Americans on average produce 15,000 pounds of carbon dioxide emissions per year. Sam, an eighth-grade student, calculates his yearly CO₂ emissions to be roughly 12,000 pounds. He wants to reduce this amount by 20% over the next year. If he succeeds, how much CO₂ will he release? 9,600 pounds
6. Scientists estimate that 1 tree absorbs about 6 pounds of CO₂ in a year. How many trees would Sam have to plant in order to absorb the 12,000 pounds of CO₂ he currently emits? 2,000 trees
7. One way Sam hopes to conserve energy is by turning off his computer, part of the time. He estimates that by leaving it on all the time he is emitting about 3,240 pounds of CO₂ per year. What percentage of Sam's average yearly CO₂ emissions comes from his computer? 27%