



Acceleration

STEM Sims

Lesson 4: How Does Acceleration Affect Carbon Dioxide Emissions?

Some scientists believe that changing carbon dioxide levels can affect the global annual temperature. Does how you drive a vehicle affect how much carbon dioxide the vehicle produces?

Doing the Science

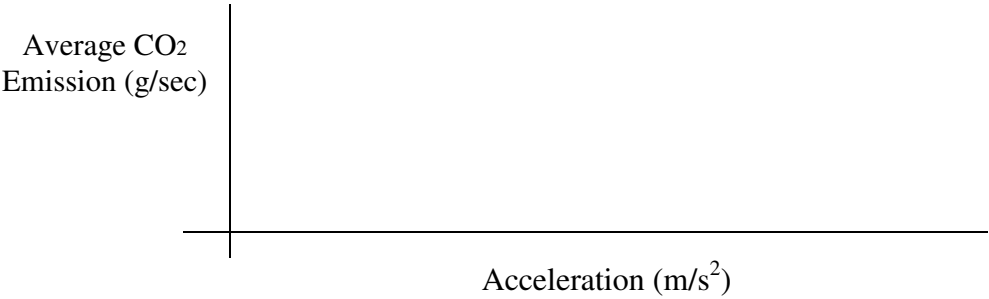
1. Start the Vehicle Simulation.
2. Select one of the three vehicles on the left side of the screen by clicking on the vehicle.
3. Select a speed of 10 m/s. Make sure to record your selected speed value.
4. Allow a couple of seconds for the vehicle to reach a constant speed. The Acceleration dialogue box appears when the vehicle reaches a constant speed.
5. Choose an acceleration value of “2 m/s².”
6. Select the “Display Data” option. Click on the “CO₂ Emission” graph tab.
7. Note and record the CO₂ Emission of the vehicle.
8. Select the “Restart” option.
9. Choose the same vehicle and speed as you did before.
10. Choose an acceleration value of 4 m/s².
11. Select the “Display Data” option. Click on the “CO₂ Emission” graph tab.
12. Note and record the CO₂ Emission of the vehicle.
13. Select the “Restart” option.
14. Repeat steps 9 – 12 with an acceleration of 6 m/s².

Table 1.

Trial	Speed (m/s)	Acceleration (m/s ²)	Average CO ₂ Emission (g/sec)
1	10	2	
2	10	4	
3	10	6	

Do You Understand?

1. Make a graph of the vehicle acceleration versus the amount of carbon dioxide emissions during each test.



2. What generalization can you make about how carbon dioxide emissions and acceleration are related?