Switch Off!!! - A Pollution Solution

Data Detective – Calculations Worksheet

Here are some calculations to help you analyse what you have observed about the idling of engines in your school zone. You will need to complete them twice, once after each round of Data Detectives.

Once you have completed these calculations you can use the graph worksheets to display your results and compare the before and after of your Switch Off! education blitz.

A. Percentage of drivers that sat idling = Total number of idling cars / Total number of cars observed

= _____

= _____

therefore 1 out of ____ or ____ % percent of drivers idled their engines in your school zone.

B. Average time vehicles were idling = Total number of cars idling / Total time idling

= _____

= _____

With the information recorded you can now calculate:

1. How much fuel was wasted by idling of engines in your school zone:

a) during your observations?

Total number of minutes idling x 0.0271 litres/min = Number of litres of fuel wasted

_____ x 0.0271 litres/min = _____

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b) during the school year?

Multiply your answer to 1a) by the number of school days in a year (approximately 185).

Number of litres of fuel wasted x 185 days = Number of litres of fuel wasted over the school year. _____ x 185 days = _____ litres

2. How much money was wasted by idling of engines in your school zone

a) **during your observations?**

Number of litres of gas wasted x current gas price* = $ Money wasted _____ x _____ = $_____

* Please note: the current gas prices for your province are available at http://dhsweb.tripod.com/gaswatch/canadagas.html just scroll down the page to your province.

b) during the school year?
Multiply your answer to 2 a) by the number of school days in a year (approximately 185)

$ of fuel wasted x 185 days = $ wasted of over the school year _____ x 185 days = $_____

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3. How much carbon dioxide (a greenhouse gas and ingredient of smog) was produced by engine idling in your school zone.

a) during your observations?

Every litre of fuel produces 2.4 kg of carbon dioxide when an engine is idling, Therefore Multiply litres of fuel x 2.4 kg to determine the amount of carbon dioxide produced

Number of litres of fuel wasted x 2.4 kg = _____kg

b) during the school year?

Multiply your answer in 3 a) by the number of school days in a year (approximately 185)

kg of carbon dioxide x 185 days = _____ kg
_____x 185 days = _____ kg

EXTRA!! EXTRA!!! You can also multiply your answers by the number of elementary schools in your community to calculate how much idling takes place in school zones in your community EXTRA!!! EXTRA!!! EXTRA!!! This could lead to running a Switch Off! challenge for elementary schools in your community for next year.

PLEASE REMEMBER:

You will need to make the above calculations twice, once after Round 1 of Data Detectives and again after Round 2. This way you can compare your results before and after your Switch Off! education blitz and see what impact it has had.

When you have completed these calculations you can use the information you have gathered to complete the graphing exercises in the next worksheet.