

# Pros and cons of hybrid cars



**GRADE**  
**7**

Hybrid cars are increasingly popular. In this lesson, students investigate the costs and benefits of using hybrid cars over gasoline-powered cars by comparing the cost and environmental impact of both types of vehicles.

**Prerequisite knowledge:** Students should have been introduced to the carbon cycle.



## **Subject**

Science

## **Suggested timing**

40 minutes

## **Financial literacy objectives**

At the end of this class, students will:

- gather information about the current cost of goods;
- compare prices of items in the community through comparison shopping exercises.

## **Curriculum expectations**

Science and Technology, grades 1 to 8 (2007 revised)  
Science

### **Interactions in the environment**

- 1.1 Assess the impacts of human activities and technologies on the environment and evaluate ways of controlling these impacts.
- 1.2 Analyze the costs and benefits of selected strategies for protecting the environment.

## **Assessment**

Collect hybrid vehicles: Cost vs. benefits worksheet (Appendix A).

## **What you need**

- Computers with Internet access OR schedule a library session (it may help to pull some relevant books, articles, video clips etc. for the class ahead of time)
- Hybrid vehicles: Cost vs. benefits worksheet (Appendix A)
- Calculators

**Minds on**

Ask students the following question: “Does driving a hybrid vehicle really save you money?”

Students share current knowledge of hybrid vehicles and their effects on the environment.

**Action****Cooperative group work**

- Organize students into groups of 2-3 (depending on the number of accessible computers) and assign each group a computer workstation.
- Distribute a copy of the worksheet to each student.
- Explain that the purpose of this lesson is to assess the environmental and financial impacts of purchasing and using a hybrid car. If possible, show a short video clip on the hybrid car and/or encourage students to share any knowledge they have about these kinds of cars.
- Provide students with tips on how to perform research on the Internet about hybrid cars and provide some suggested websites.
- Ask students to work on section A in their groups. Explain that the class will move on to section B in approximately 20 minutes.
- Once the class is ready to move on to the next section, have each group explain its position to the class on the impact of hybrid cars based on their research thus far (question 3).
- Once complete, have students work on section B of the worksheet in their groups by leaving the computer workstation or turning off their computer screen.

**Consolidation/  
debrief**

Groups share their findings regarding the cost effectiveness of the hybrid vehicles they researched.

Discuss with the class the following questions:

1. In what way(s) can driving a hybrid car (instead of another kind of car) protect the environment?
2. Think about the costs of owning and driving a hybrid car compared to other kinds of cars; what are the financial benefits and challenges of owning a hybrid car based on your family’s needs and activities?
3. Based on your findings, which kind of car would you purchase and why?

# Hybrid vehicles: Cost vs. benefits

Hybrid vehicles are cars that run on a combination of electricity (from a battery) and conventional gasoline. Since they use electric power, they are widely believed to be better for the environment. In this worksheet you will research hybrid cars and give your take on the environmental and financial benefits and drawbacks to hybrid cars.



### Section A: The environment

1. Using the Internet and/or resources provided to you (and your knowledge of the carbon cycle), explain why a hybrid car could be better for the environment.

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2. Hybrid cars use batteries as an energy source. What information can you find regarding the environmental effects of building, using and discarding batteries?

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3. Consider your responses to questions 1 and 2. Overall, do you believe hybrid cars are helping the environment, hurting it or making no difference? Explain your answer.

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# Hybrid vehicles: Cost vs. benefits (cont'd)

## Section B: The financial considerations

4. Consider the information below (the values are average numbers for an entry-level sedan by a major car manufacturer).

Engine	Price	Extra cost for hybrid	Average L/100km	Gasoline price/L	km driven per year	Litres used per year	\$ spent on gas per year
Gasoline	\$24,390		6.2	\$1.20/L	15,000		
Hybrid	\$27,350		4.3	\$1.20/L	15,000		

Given the information in the chart, calculate:

- a. The extra upfront cost for purchasing a hybrid vehicle (put in chart).
- b. The number of litres used per year using the formula:

$$\text{Litres per year} = (\text{km driven}) \div 100 \times (\text{Average L/100km})$$

Gasoline	Hybrid

c. Money spent per year on gas using the formula:

$$\text{Money spent on gas per year} = (\text{Litres per year}) \times (\text{Gasoline price per litre})$$

Gasoline	Hybrid

