

# 9.5

## Operate a Vehicle

### Student Text Pages

489–495

### Suggested Timing

80–160 min

### Tools

- computers with Internet access

### Related Resources

BLM 9-9 Section 9.5 Operate a Vehicle

BLM 9-10 Section 9.5 Achievement Check Rubric

### Link to Prerequisite Skills

Students should have completed all questions in Prerequisite Skills.

#### Warm-Up

1. What is the current price of a litre of gasoline?
2. Why do younger drivers generally pay more for vehicle insurance than older drivers?
3. What is the total cost of a 4-year car loan with monthly payments of \$317.99?

#### Warm-Up Answers

1. Answers will vary.
2. On average, younger drivers are involved in more collisions than older drivers.
3. \$15 263.52.

### Teaching Suggestions

#### Warm-Up

- Write the Warm-Up questions on the board or on an overhead. Have students complete the questions independently. Then, discuss the solutions as a class.

#### Investigate

- For Investigate 1, once pairs of students have had an opportunity to list, and estimate the amount of, some fixed and variable costs related to operating a vehicle, have students share their lists with the class.
- Students may need extra time to complete Investigate 2. Depending which website is used, students may need to state that they are fully licenced drivers in order to obtain an insurance quote.

### Investigate Answers (page 489)

#### Investigate 1

Fixed costs: loan payments (about \$168 per month if she pays her loan over 2 years at 4.5% interest compounded monthly), insurance (about \$135 per month), licence plates (about \$75 per year).

Variable costs: gasoline (about \$600 per year), maintenance and repairs (about \$600 per year).

#### Investigate 2

1. Depending on the rating of the driver, and the type of vehicle insured, there is a wide variation in insurance premiums. By law, all drivers in Ontario must have Basic Insurance Coverage. This includes a minimum of \$200 000 in third-party liability coverage, accident benefits coverage, property damage coverage, and uninsured automobile coverage. You may wish to purchase more liability coverage (\$1 000 000 to \$2 000 000 are common amounts). Depending on the value of your car, you may wish to purchase comprehensive coverage rather than collision.
2. Some factors that affect the cost of insurance are driver's age and gender, years of driving experience, driving record, and type of vehicle.

### Examples

- Have students work through the Examples as a class before proceeding to the Discuss the Concepts. Alternatively, have students complete the Examples independently or in small groups before reviewing them as a class.
- There are a number of different types of calculations in this section. Depending on the strength of the class, it may be necessary to work through one example at a time, assigning the relevant Practise (A) questions as necessary.

### Key Concepts

- Ensure students understand the difference between fixed costs and variable costs, and the meaning of depreciation.

### Discuss the Concepts

- Give students time to talk about their answers to these questions before discussing them as a class.

### Discuss the Concepts Suggested Answers (page 492)

- D1.** According to statistics, young male drivers are involved in more at-fault collisions and engage in riskier driving behaviours than young female drivers.
- D2.** This vehicle may be an asset because it is rare and in excellent condition.

### Practise (A)

- Encourage students to refer to the Examples before asking for assistance.
- You may wish to have students work in pairs or small groups to complete the Practise questions.
- Some students may have difficulty working with fuel efficiencies in **questions 3, 4, and 10**.
- **Question 6** is a Literacy Connect. Literacy Connect questions offer the opportunity to explore literacy issues within the context of mathematics.

### Apply (B)

- **Question 11** links to the Chapter Problem. Remind students to keep the solution to this question handy as it may help them with the Chapter Problem Wrap-Up.
- **Question 13** is an Achievement Check question. It can be used as a diagnostic or formative assessment, or assigned as a small summative assessment piece. You may wish to use **BLM 9-10 Section 9.4 Achievement Check Rubric** to assist you in assessing your students.

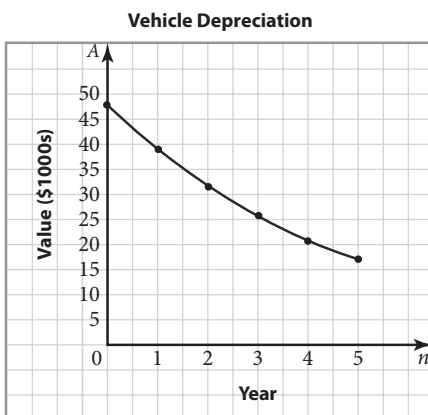
### Extend (C)

- Assign the Extend questions to students who are not being challenged by the Apply questions.
- As an extension to **question 14**, have students create a spreadsheet to calculate the unknown values.

#### Achievement Check Answer (page 495)

13. a) \$17 795.51

b)  $A = 48\,000(0.82)^n$



After 10 years, the SUV is worth about \$6598.

c)  $A = 48\,000(0.82)^{10}$   
 $\approx 6597.51$

d) The purchase of almost any vehicle is an expense because vehicles generally lose value over time.

### Literacy Connections

- Have students provide a summary of their research for **question 12** and write a report to explain the demographics of scooter use.

### Mathematical Process Expectations

| Process Expectation                          | Questions            |
|--|----------------------|
| Problem Solving                              | 11                   |
| Reasoning and Proving                        | 6, 11, 13            |
| Reflecting                                   | 2                    |
| Selecting Tools and Computational Strategies | 1, 3–5, 7–11, 13, 14 |
| Connecting                                   | 3, 13                |
| Representing                                 | 13                   |
| Communicating                                | 2, 6, 13             |

### Common Errors

- Some students may have difficulty understanding fuel efficiency ratings.
- R<sub>x</sub> Have students sketch a car and a line representing a 100 km distance. Alternatively, students can use a road map to determine the driving distances between cities or towns with which they are familiar.

### Accommodations

**Gifted and Enrichment**—suggest that students research vehicles to determine which vehicle has the best fuel economy in a certain class.

**Perceptual**—list fixed and variable costs in different colours

**Spatial**—provide a template for completing the calculations for percent depreciation

**Motor**— reduce the number of assigned homework questions.

**Language**—give students the opportunity to read the problems aloud and explain what they are to do in their own words

### Ongoing Assessment

- While students are working on the Investigates, circulate to see how well each student works. This may be an opportunity to observe and record individual students' learning skills: group work, work habits, organization, and initiative.

### Extra Practice

- Use **BLM 9-9 Section 9.5 Operate a Vehicle** for remediation or extra practice.