

SECTION 9-3 Purchasing a Used Vehicle

Section Objective

Figure out the average retail price of a used vehicle.

Vehicle dealers usually advertise used vehicles for prices that are higher than what they expect you to pay. **Used-vehicle guides** published monthly by the National Automobile Dealers Association (NADA) or Vehicle Market Research (VMR) give the average prices for vehicles that were purchased from dealers during the previous month. The information can help you make decisions about how much to pay for a used vehicle. Remember to ask yourself this question:

Important Question	What Formula Do I Use?
How do I find the average retail price of a used car?	$\begin{array}{l} \text{Average Retail Value} \\ + \text{Additional Options} \\ - \text{Options Deductions} \\ - \text{Mileage Deduction} \\ \hline \text{Average Retail Price} \end{array}$

Living in the Real World

A Hard One to Pick

Do Yourself a Favor: Be Smart about It Like any good consumer, Gomez did a lot of research before going to the car dealership. For information about used trucks, she read used-vehicle guides published by the National Automobile Dealers Association (NADA) and Vehicle Market Research (VMR).

Draw Conclusions Why is it smart to do research on a car before buying the first one you see?

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Example 1

Jackie Morris would like to purchase a four-year-old Palamino V8 four-door car, which is advertised for \$15,450. It has no air conditioning. It has power seats, premium sound system, leather seats, and a power sunroof. It has been driven 51,760 miles. The used-vehicle guide indicates that \$575 should be subtracted if the mileage is from 45,001 to 52,500 miles. What average retail price should Morris keep in mind when she makes an offer for the vehicle?

Figure 9.2

Palamino Four-Year-Old Vehicles	Average Retail Value	Average Wholesale Value
V6 Four-Door	\$13,050	\$11,090
V8 Four-Door	14,675	11,740
V8 Sport	15,000	12,000
Deduct w/o Air-Conditioning	800	675
Add Power Seats	125	100
Add Premium Sound System	200	175
Add Leather Seats	340	300
Add Sunroof—Manual	225	200
Add Sunroof—Power	450	375
Add Aluminum Wheels	125	100

Need Help? Go to...

- ▶ **Workshop 4:**
Adding Decimals,
page 10
- ▶ **Workshop 5:**
Subtracting
Decimals, page 12
- ▶ **Skill 5:** Adding
Decimals, page 732
- ▶ **Skill 6:** Subtracting
Decimals, page 733
- ▶ **Application C:**
Tables and Charts,
page 762

STEP: Find the average retail price.

Average Retail Value	+	Additional Options	-	Options Deductions	-	Mileage Deductions
\$14,675	+	(\$125 + 200 + 340 + 450)	-	\$800	-	\$575
\$14,675	+	\$1,115	-	\$800	-	\$575
= \$14,415 average retail value						



$$125 + 200 + 340 + 450 + 1115 = 14675$$

$$14675 + 1115 - 800 - 575 = 14415$$

CONCEPT CHECK

SELF-CHECK

Complete the problem, then check your answer at the end of this chapter.

1. Using **Figure 9.2**, find the average retail price for a four-year old V6 four-door vehicle that has air conditioning, power seats, leather seats, manual sunroof, and aluminium wheels. It has been driven only 36,500 miles. The used-vehicle guide indicates that \$525 should be added if the mileage is from 30,001 to 37,500 miles. What is the average retail price for this vehicle?

Example 2

Using **Figure 9.2**, find the average wholesale price for a four-year-old V8 Sport that has no air conditioning, but does have the premium sound system and a power sunroof. It has 63,580 miles. The used-vehicle guide indicates that \$1,400 should be deducted if the mileage is from 60,001 to 67,500 miles. What is the average wholesale price for this vehicle?

STEP: Find the average wholesale price.

Average Wholesale Value	+	Additional Options	-	Options Deductions	-	Mileage Deductions
\$12,000	+	(\$175 + 375)	-	\$675	-	\$1,400
= \$12,000	+	\$550	-	\$675	-	\$1,400
= \$10,475 average wholesale price						

CONCEPT CHECK

SELF-CHECK ✓

Complete the problem, then check your answer at the end of this chapter.

- Use Figure 9.2 to find the average wholesale price for a used V8 Sport, with air conditioning, power seats, leather seats, power sunroof, and aluminium wheels. It has 65,500 miles so you must deduct \$1,400 for excessive mileage.

SECTION 9-3 PRACTICE

Use Figure 9.2 on page 321 to find the average retail price. All the vehicles have from 37,501 to 45,000 miles for which there is zero adjustment.

Model	Average Retail Value	A/C	Power Seats	Premium Sound System	Leather Seats	Power Sunroof	Aluminum Wheels	Retail Price
3. V6 4-dr	a.	Yes	No	Yes	No	Yes	No	b.
4. V8 Sport	a.	No	Yes	No	Yes	No	Yes	b.
5. V8 4-dr	a.	Yes	Yes	Yes	Yes	No	Yes	b.

- Three-year-old hatchback.
Average retail value is \$16,750.
Add \$175 for tilt steering wheel.
Add \$800 for air-conditioning.
Deduct \$550 for manual transmission.
Deduct \$450 for excessive mileage.
What is the average retail price?
- One-year-old sedan.
Average retail value is \$19,100.
Add \$200 for CD player.
Deduct \$800 for no air-conditioning.
Deduct \$525 for excessive mileage.
What is the average retail price?
- Sue Soto owns a used four-door sedan that she wants to sell so she can purchase a new vehicle. One used-vehicle guide shows that the average retail value for it is \$3,900. She adds \$50 for having a vinyl top, \$125 for a cassette player, \$25 for power windows, and \$25 for power locks. Soto deducts \$175 for having no air-conditioning. She adds \$450 for having less than the expected mileage. What is the average retail price for her vehicle?
- Use Figure 9.2 on page 321 for Kordell Bryant who owns a four-year-old Palamino V6 four-door. The four-door has power leather seats, premium sound system, manual sunroof, aluminum wheels, and no air conditioning. There are 26,540 miles on Bryant's vehicle, which means it falls in the 22,501 to 30,000 category and calls for a deduction of \$450. What is the average retail price for Bryant's vehicle?

MAINTAINING YOUR SKILLS

Need Help? Go to...

- ▶ Skill 3: Adding Whole Numbers, page 730
- ▶ Skill 4: Subtracting Whole Numbers, page 731

Add.

10. $4,225 + 1,200 + 375 + 245$

11. $4,060 + 225 + 3,950 + 325 + 75$

Subtract.

12. $8,450 - 475$

13. $3,890 - 2,530$

14. $2,205 - 225$

SECTION 9-5 Operating and Maintaining a Vehicle

Section Objective

Compute the total cost per mile of operating and maintaining a vehicle.

Many costs are involved in operating and maintaining a vehicle. You'll need to take these costs into consideration.

- **Variable costs** (such as gasoline and tires) increase the more you drive.
- **Fixed costs** (such as vehicle insurance, registration fees, and depreciation) remain about the same regardless of how many miles you drive.
- **Depreciation** is a decrease in the value of your vehicle because of its age and condition.

Remember that:

$$\text{Cost per Mile} = \frac{\text{Annual Variable Cost} + \text{Annual Fixed Cost}}{\text{Number of Miles Driven}}$$

Living in the Real World

A Hard One to Pick

Don't Forget about the Other Fees Involved Gomez continues to shop for various trucks at Tucker Motors. She keeps in mind the true cost of the truck is more than the just the sticker price and insurance.

Draw Conclusions What are some of the other costs she needs to take into consideration before buying a vehicle?

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Example 1

Ann Jones purchased a used vehicle for \$4,000 one year ago. She drove 9,000 miles during the year and kept a record of all her expenses. She estimates the vehicle's present value at \$3,200. What was the cost per mile for Jones to operate her vehicle last year?

Variable Costs		Fixed Costs	
Gasoline	\$745.24	Insurance	\$ 385.40
Oil changes	71.85	License/registration	76.25
Maintenance	114.36	Depreciation	800.00
New tire	41.75	(\$4,000 - \$3,200)	
Total	\$973.20	Total	\$1,261.65

Need Help? Go to...

- ▶ **Workshop 7:** Dividing Decimals, page 16
- ▶ **Workshop 2:** Rounding Numbers, page 6
- ▶ **Skill 11:** Dividing Decimals, page 738
- ▶ **Skill 2:** Rounding Numbers, page 729

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STEP: Find the cost per mile.

$$\begin{aligned} & \left(\begin{array}{c} \text{Annual} \\ \text{Variable Cost} \end{array} + \begin{array}{c} \text{Annual} \\ \text{Fixed Cost} \end{array} \right) \div \begin{array}{c} \text{Number of} \\ \text{Miles Driven} \end{array} \\ & (\$973.20 + \$1,261.65) \div 9,000 \\ & \quad \quad \quad \$2,234.85 \div 9,000 \\ & = \$0.24831 \text{ or } \$0.25 \text{ per mile} \end{aligned}$$



$$\begin{aligned} 973.2 & + 1261.65 = \\ 2234.85 & \div 9000 = 0.248316666 \end{aligned}$$

CONCEPT CHECK

SELF-CHECK ✓

Complete the problems, then check your answers at the end of this chapter. Find the total cost and the cost per mile.

	Variable Cost	Fixed Cost	Miles Driven
1.	\$1,900.00	\$1,700.00	10,000
2.	\$2,137.26	\$2,491.24	12,000

Example 2

Lucas Perry purchased a new four-door car 2 years ago at a price of \$21,750. *Kiplinger* estimates it is worth \$13,920 today. The *Complete Car Cost Guide* computes the annual variable cost to be \$595.20 per year with insurance costing \$1,461 per year. Perry paid \$112.60 for license and registration fees and drove 16,500 miles during the year. After computing the depreciation and the total annual cost, find the cost per mile.

STEP 1: Find the depreciation.

$$\begin{aligned} & \frac{\text{Purchase Price} - \text{Today's Worth}}{\text{Number of Years Owned}} \\ & \frac{(\$21,750.00 - \$13,920.00)}{2} \\ & \frac{\$7,830.00}{2} = \$3,915.00 \end{aligned}$$

STEP 2: Find the total annual cost.

$$\$595.20 + (\$1,461.00 + \$3,915.00 + \$112.60) = \$6,083.80$$

STEP 3: Find the cost per mile.

$$\begin{aligned} & \left(\begin{array}{c} \text{Annual} \\ \text{Variable Cost} \end{array} + \begin{array}{c} \text{Annual} \\ \text{Fixed Cost} \end{array} \right) \div \begin{array}{c} \text{Number of} \\ \text{Miles Driven} \end{array} \\ & \quad \quad \quad \$6,083.80 \div 16,500 \\ & = \$0.3687 \text{ or } \$0.37 \text{ per mile} \end{aligned}$$

CONCEPT CHECK

SELF-CHECK ✓

Complete the problem, then check your answers at the end of this chapter.

- Sylvia McDowell purchased a new car 3 years ago for \$23,500.00. It's estimated worth now is \$18,700.00. Annual variable costs this year were \$995.60. This year insurance cost \$2,350.00, registration was \$132.50, and loan interest totalled \$1,080.00. She drove 13,540 miles this year. Compute the depreciation, annual costs, and cost per mile.

SECTION 9-5 PRACTICE

Find the total annual cost and the cost per mile to the nearest cent.

$$\left(\begin{array}{c} \text{Annual} \\ \text{Variable Cost} \end{array} + \begin{array}{c} \text{Annual} \\ \text{Fixed Costs} \end{array} = \begin{array}{c} \text{Total} \\ \text{Annual Cost} \end{array} \right) \div \begin{array}{c} \text{Miles} \\ \text{Driven} \end{array} = \begin{array}{c} \text{Cost per} \\ \text{Mile} \end{array}$$

4. $\$1,000.00 + \$1,250.00 = \mathbf{a.}$ $\div 9,000 = \mathbf{b.}$
5. $\$1,530.00 + \$1,275.00 = \mathbf{a.}$ $\div 11,000 = \mathbf{b.}$
6. $\$2,114.00 + \$3,786.00 = \mathbf{a.}$ $\div 14,700 = \mathbf{b.}$
7. $\$1,584.00 + \$ 934.35 = \mathbf{a.}$ $\div 6,800 = \mathbf{b.}$
8. $\$2,312.50 + \$4,321.90 = \mathbf{a.}$ $\div 20,415 = \mathbf{b.}$
9. A student drove 9,500 miles in his car last year.
Fixed costs totaled \$1,215.
Variable costs totaled \$1,985.
a. What was the total annual cost?
b. What was the cost per mile?
10. A salesperson drove 34,500 miles in his car last year.
Fixed costs totaled \$3,860.
Variable costs totaled \$3,940.
a. What was the total annual cost?
b. What was the cost per mile?
11. Hope Kocinski drove 12,200 miles in her car last year. Her variable costs totaled \$980.35. Her fixed costs totaled \$2,439.00. What was the cost per mile for her to operate her car?
12. Alice Powers drove 13,550 miles in her car last year. Her variable costs totaled \$1,776.90. Her fixed costs totaled \$2,457.15. What was the cost per mile for her to operate her car?
13. J. J. Olmstead drove 11,400 miles in his SUV last year. His variable costs totaled \$2,965.89. His fixed costs totaled \$2,884.26. What was the cost per mile for him to operate his SUV?

MAINTAINING YOUR SKILLS

Need Help? Go to...

- ➔ Skill 2: Rounding Numbers, page 729
- ➔ Skill 10: Dividing (Decimal Remainder), page 737

Round to the nearest hundredth.

14. 21.751

15. 15.352

16. 4.3981

17. 15.9061

18. 0.04126

19. 0.3179

Divide. Round answers to the nearest hundredth.

20. $641 \div 200$

21. $1,500 \div 500$

22. $850 \div 9,000$