Your First Car — Teacher Guide

Financial Algebra · Unit 5: Auto Loans & Borrowing

3 class periods | Pairs | Skills: Skill 1, Skill 2, Skill 3, Skill 4

Overview

A car is often the first big loan people take on. Dealers talk in monthly payments; smart buyers talk in total cost. You and a partner will help Isaiah choose a car by comparing loans, building an amortization schedule, and calculating 5-year total cost of ownership.

Skills covered

- Model installment loans (borrowing-skill-01)
- Compare APR and loan term (borrowing-skill-02)
- Build amortization schedules (borrowing-skill-03)
- Analyze total borrowing cost (borrowing-skill-04)

Required materials

- Student packet
- Spreadsheet software
- Decision Lab “Your First Car” (optional)

Suggested pacing

Session	Focus
Day 1	Task 1–2
Day 2	Tasks 3–4
Day 3	Buyer’s guides and gallery walk

Implementation guidance

- Review the payment formula with one example first.
- Emphasize the same 5-year horizon for every car.

Worked calculations

Used sedan (dealer)

1. Financed $13,300; payment $327.19; total of payments $15,705.43; finance charge $2,405.43.
2. 5-yr fuel = $\frac{13000}{31} \times \$3.5 \times 5 = \$7{,}338.71$.
3. Insurance + maintenance = $11,250; resale $6,636.00.
4. TCO = $30,158.14.

Certified hybrid (credit union loan)

1. Financed $19,900; payment $383.80; total of payments $23,027.91; finance charge $3,127.91.
2. 5-yr fuel = $\frac{13000}{48} \times \$3.5 \times 5 = \$4{,}739.58$.
3. Insurance + maintenance = $10,000; resale $11,200.00.
4. TCO = $29,067.49.

New compact (dealer 0.9% promo)

1. Financed $24,400; payment $416.04; total of payments $24,962.30; finance charge $562.30.
2. 5-yr fuel = $\frac{13000}{36} \times \$3.5 \times 5 = \$6{,}319.44$.
3. Insurance + maintenance = $10,500; resale $14,795.00.
4. TCO = $29,486.74.

Sample student responses

> “Although the certified hybrid’s payment ($383.80) is higher than the used sedan’s ($327.19), it has the lowest 5-year cost ($29,067.49) thanks to fuel savings and resale value. The new compact’s 0.9% promo keeps it close ($29,486.74), while the used sedan costs the most over five years ($30,158.14) and carries more repair risk.”

Common misconceptions

- Comparing monthly payments only.
- Ignoring resale value.
- Comparing a 48-month loan to a 60-month loan without a common horizon.

Differentiation

Support

- Provide formulas in a spreadsheet template.

Extend

- Add a lease option and compare.

Extension opportunities

- Research real insurance quotes for a 21-year-old driver (anonymized) and compare.

100-point rubric

Category (points)	Exemplary (100%)	Proficient (~80%)	Developing (~60%)	Beginning (~30%)
Financial understanding (20)	Uses vocabulary precisely and explains every financial concept involved, including assumptions.	Mostly accurate explanations with minor vocabulary gaps.	Partial understanding; some concepts misapplied.	Little evidence of understanding.
Mathematical accuracy (25)	Payments, schedules, and TCO calculations correct for every car.	1–2 minor errors that do not change conclusions.	Several errors or missing work.	Calculations largely missing or incorrect.
Analysis & comparison (20)	Compares every option on the same basis and tests at least one changed assumption.	Compares options with small gaps.	Comparison superficial or uneven.	Little analysis.
Justification (15)	Recommendation is supported by specific numbers and weighs non-financial factors and risks.	Mostly supported.	Mostly opinion.	No justification.
Communication & presentation (10)	Clear, organized, well-labeled tables, charts, and writing.	Minor clarity issues.	Hard to follow in places.	Disorganized.

Category (points)	Exemplary (100%)	Proficient (~80%)	Developing (~60%)	Beginning (~30%)
Completion (10)	Every checklist item complete.	One item missing.	Two or three items missing.	Most items missing.

Total: 100 points. Alternative recommendations earn full credit when supported by accurate evidence.

Student documents (reference)

Car and financing options (prices include tax and fees)

	Used sedan (dealer)	Certified hybrid (credit union loan)	New compact (dealer 0.9% promo)
Price	$15,800	$22,400	$26,900
Down payment	$2,500	$2,500	$2,500
Loan	8.4% APR, 48 mo	5.9% APR, 60 mo	0.9% APR, 60 mo
Insurance per year	$1,300	$1,550	$1,800
Maintenance per year (est.)	$950	$450	$300
Fuel economy	31 mpg	48 mpg	36 mpg
Value after 5 years (est.)	42% of price	50% of price	55% of price