

Real World Math Skills



A Simulated Math Unit

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Lesson 5
Buying a Car

Objective: Students will pretend to buy a car and learn about figuring car loans.

Materials: A copy of this worksheet
Lesson 3 completed

Skills: Decimals, percents, algebraic formulas

Activity: Worksheet 6 Buying a car



Now that you have a place to live, you have to have a car. You might even have bought your car while you were living with mom and dad. So where do you begin?

1) Remember when you budgeted for an auto. If you don't remember, it can be found for line 4 in lesson 3. But remember the amount is for your car and includes insurance and taxes. Write down that amount here.

2) This is not how much you can afford for a car, but how much you can afford for the insurance, registration, gas and car payment. Below are the costs of these items. The price ranges for insurance are based on the age and type of car, where you live, your deductible, how much coverage you want and your age. The registration is based on the age of the car and the value. We will give some range of prices and you can decide which is most reasonable. You must be able to justify the budget prices you choose.

Insurance Annual Rate: \$300 - \$2000

Registration Annual Rate: \$150.00 - \$500.00

Because these are one time annual fees, you will want to budget monthly to save the required amount. Therefore, divide the annual costs by 12 to calculate the monthly amount.

3) You also will have to pay for gas for your car. Gas might be expensive and it depends on how far you drive to work and your gas mileage. Gas can range anywhere from \$100 to \$250 per month per vehicle. Write down below what you suspect both you and your spouse might spend on gas.

- 4) Add up the monthly insurance premium, monthly registration savings amount and gas total then subtract this amount from what you wrote in problem 1. This is your monthly loan amount for your car.

YOUR Monthly Insurance Premium:		
YOUR Monthly Registration Savings:	+	
YOUR Monthly Gas Charge:	+	
TOTAL CAR CARE:	=	
Budgeted Car Allowance for YOU		
Total Car Care	-	
TOTAL MONTHLY CAR PAYMENT	=	

You might not have enough money for a car payment. If you did not spend as much as budgeted for an apartment, you can “borrow” from that budget amount and add it to your monthly car payment. (Don’t forget your spouse as well, so you might have to add a little to both amounts.) Be sure to stay in your budget.

- 5) Even though you know how much you can afford to pay each month for the car loan, you need to figure how much of a car you can afford. After all, part of that loan amount includes the interest in obtaining a loan. Car loans are for four or five years. The amount of your car is called your principle. You might use the formula $I = PRT$ meaning Interest (I) is equal to Principal (P) • Rate (R meaning interest rate for one year) • Time (how many years you want the loan).



Remember:

$$I = PRT \quad \text{Interest} = (\text{Principle} * \text{Rate} * \text{Time})$$

P = Principle (Cost of car)
 I = Interest that you will pay above the price of the car

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R = the interest Rate you will be paying per year

T = how many years or Time you will be paying on the loan.

Your car payment is C (principle and interest). Sound confusing? It's not that hard once you plug in the numbers.

ABC Loan Company is offering car loan rates for 7% (0.07) for 5 years. So to figure the interest you are paying for your car, you would multiply the principal (how much the car costs) times 0.07 times 5. Remember this is just the interest. You have to add the price of the car to that amount to get how much you will actually be paying for the car. If your loan is for 60 months (5 years) you will need to divide the price you will actually be paying for the car by 60 to get your monthly car payment.

Let's try one. John wants to buy a car for \$10,000. Remember ABC loan is offering the 7% interest rate for five years. So

$$10,000 \cdot 0.07 \cdot 5 = 3,500.$$

John is paying \$3500.00 interest on the loan. Therefore he is really paying \$13,500 for the car instead of \$10,000. His monthly payments would be $\$13,500 \div 60 = \225.00 per month.

In order for you to decide how much you can pay for a car, first take your monthly car loan amount (what you wrote in problem 4) and multiply it by 60. This is how much you can pay for the total amount of the car, just like John's \$13,500.

So, if you want to do some more simple math, you can plug in the numbers using this simple chart:

a. Calculate your annual car allowance by multiplying your monthly car allowance by 12.	
b. The loan is for 5 years, so multiply the answer in line a by 5. This is how much you can pay for the car including the price of the car and interest. This is C in our algebraic formula	
c. Divide this amount by 1.35. This number represents the principal, the interest of 7% and a 5 year loan. This is how much you can pay for a car.	

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Here is the algebraic explanation: I = Interest, P = Principal (price of car), R = interest rate, T = years of loan, C = total cost of car including principal and interest.

$$I = PRT$$

$$R = 0.07$$

$$T = 5$$

$$I = P \cdot 0.07 \cdot 5$$

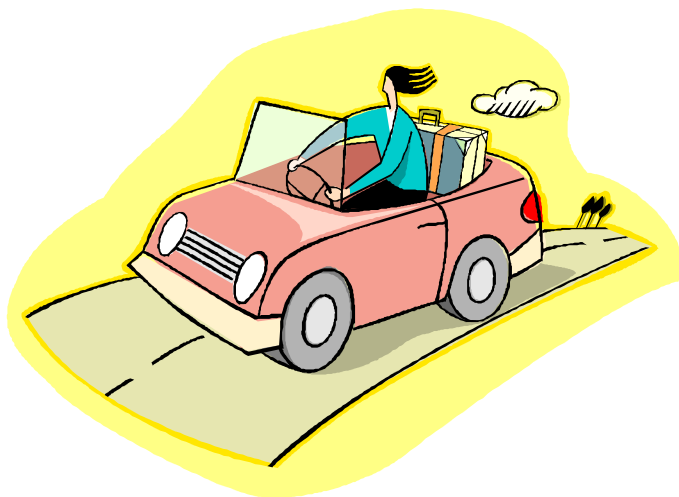
$$I = 0.35P$$

$$C = P + I$$

$$C = P + 0.35P$$

$$C = 1.35P$$

- 6) Now that you know how much your car can cost (problem 5c), you can look through the auto magazines and find your perfect car! Paste a picture of your car on the back or bottom of this worksheet.
- 7) When you have found the right car just for you, calculate your payment. Here are the steps again to find out how much your monthly payment will be. You will go through ABC financing for a 7% loan for 5 years.
- Calculate the interest using the formula $I=PRT$ (Interest = Principal • Rate • Time)
 - Add the interest to the principal amount (how much you paid for the car)
 - Divide the amount you wrote in b by 60, the number of months in 5 years.
 - You can also find a car for your spouse or just write down the monthly car allowance you wrote in problem 4.



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