

What is more agreeable than one's home?

Marcus Tullius Cicero, Ancient Roman Writer, Scholar, and Statesman

8-1 Find a Place to Live

Objectives

- Calculate the affordability of a monthly rent.
- Determine the relationship between square footage and monthly rent.
- Determine lease signing costs.
- Calculate moving expenses.

Key Terms

- apartment
- tenant
- landlord
- furnished
- unfurnished
- lease
- expire
- evict
- single-family home
- square footage
- application deposit
- security deposit

WHERE WILL YOU LIVE?

Have you ever imagined what it would be like to have a place of your own? For many teenagers, the usual progression of living arrangements is from family home to dorm room to apartment to homeownership. Finding a place to live isn't easy. There are many decisions to make.

Your first experience in independent living will probably be in a rented **apartment**. When you rent an apartment, you are the **tenant**, and the owner of the apartment is the **landlord**. As you look for an apartment to rent, you will see that they come **furnished** or **unfurnished**. The cost of renting a furnished apartment includes the use of the landlord's furniture in that apartment. You must provide your own furniture when you rent an unfurnished apartment. Before you move into any apartment, you must sign a **lease**. A lease is a written agreement between the landlord and the tenant that details the amount of rent and the length of time that you will rent the apartment. The lease states the rules and regulations that must be followed by the tenant and the landlord. After a lease **expires** or ends, the tenant may sign a new lease for a new period of time and this lease may have an increase in the rent. If, for any reason, a tenant stops paying rent, they have defaulted on the lease, and may be **evicted** from the apartment.

While renting is a suitable option for many, others find owning a home is their goal. There are many options for ownership. You can purchase a **single-family home**, a multiple-family home, a condominium, or a cooperative.

Rather than renting an apartment, there is a possibility that you can purchase and own that apartment if it is part of a cooperative or condominium. A condominium is a form of home ownership where each unit is individually owned. Each individual unit is called a condominium or condo. Condominium owners own everything from the walls inward and are responsible for the maintenance of the inside of their own units. The owners are charged a maintenance fee that is used to maintain common areas such as a lobby, lawn, roof, sidewalks, and roads.

A co-op apartment or residence is another form of home ownership. A cooperative is a corporation. Cooperative owners own shares in the corporation and the right to live in a unit. They are also responsible for the maintenance of the inside of their units.

EXAMINE THE QUESTION

This is a question about life transitions. You might ask yourself, where will I be living in a few years? You may remain at home with your parents or rent an apartment. You might be living on a base as a member of the military or in a dorm room during your college years. When it comes time to decide where to live, knowing your options makes it a less stressful decision.

CLASS DISCUSSION

Why do people rent rather than purchase?

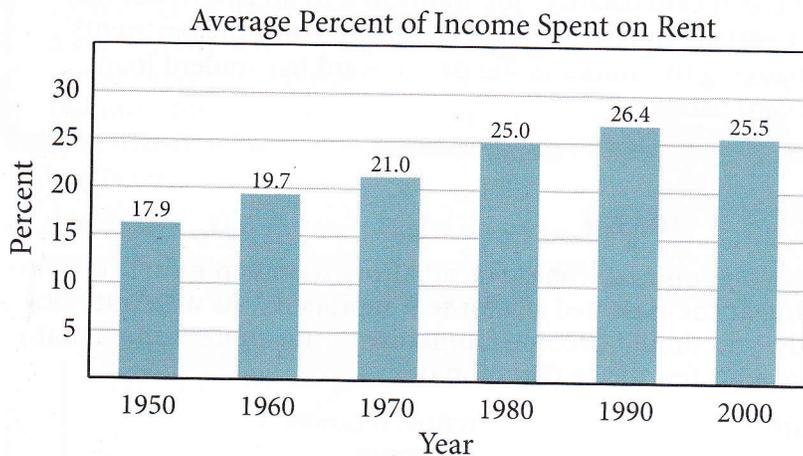
Discuss lease agreements. If, at the time of leasing, renters do not have a credit history, have little savings, or are in job transition, they may need a co-signer for the lease.

Skills and Strategies

Here you will learn how to make sound decisions when considering rentals or purchases based on data available.

Affording the Rent

Every 10 years, the U.S. Census Bureau collects data. The following chart illustrates the average amount that people paid for rent as a percentage of their incomes.



Notice how the percentage appears to be hovering around 25% since 1980. Experts agree that as a rule, a prospective renter should budget 25% to 30% of their gross income for rent.

EXAMPLE 1

Alex makes \$61,992 per year and pays about 25% of his gross monthly income in federal and state taxes. He wants to find an apartment to rent. Estimate how much he can afford to pay for rent each month. Then determine how much money he will have after taxes and rent are paid.

SOLUTION The recommended rule is to budget 25% to 30% of the gross income for rent. A good estimate to use is 28%. Rent is paid on a monthly basis, so find Alex's gross monthly income.

Divide annual income by 12. $61,992 \div 12 = 5,166$

Alex's gross monthly income is \$5,166. Find 28% of his monthly income to estimate an affordable amount.

Multiply by 0.28. $5,166 \times 0.28 = 1,446.48$

Alex can afford an apartment with a monthly rent of about \$1,446.

Alex pays 25% of his gross monthly income in federal and state taxes.

Multiply by 0.25. $5,166 \times 0.25 = 1,291.50$

Alex pays about \$1,291 in taxes each month. To find the amount remaining each month, subtract the amounts for rent and taxes from Alex's monthly income.

$$5,166 - 1,446 - 1,292 = 2,430$$

Alex will have approximately \$2,430 remaining.

TEACH

The topic of housing options may be new to students. Students should know the options, opportunities, and financial responsibilities that are involved. As you begin this chapter, create a large poster (or reserve a portion of board space that can remain untouched over the life of this chapter). Create a graphic organizer and add to it as new information surfaces. Start with the heading "Independent Living" then branch off with two paths: "Renting" and "Owning." Tailor the organizer to meet the needs of your students. The paths can include options, benefits, concerns, or a combination. As the organizer builds, students will be able to see the decisions they will have to make in planning for their futures.

EXAMPLE 1

Although the computation involved in this example is fairly basic, the importance of the question is not. Before any individual begins the process of looking to rent or buy, they need to assess what they can afford. Using the 25–30% ceiling as a rule of thumb helps people put options in perspective.

CHECK YOUR UNDERSTANDING

Answer No; after paying her taxes, loan, and credit card company, she is left with less than \$1,800. She should find a less expensive apartment.

• You can determine the remaining amount by determining the percent of Alex's income that is not spent on taxes and rent. Subtracting these percents from 100% yields 47% since $100 - 25 - 28 = 47$. You can verify that 47% of \$5,166 equals \$2,428.02, which is close to the estimate found previously.

■ CHECK YOUR UNDERSTANDING

Bethany's monthly gross income is \$3,840. She pays 24% of her monthly gross earnings in federal and state taxes and 15% for her student loan. Bethany uses 15% of her monthly gross income to pay toward her credit card balance. She wants to rent an apartment that will cost \$1,800 per month. Will she be able to make the payments without changing the amounts she pays toward her student loans and credit card balances?

Shopping for a Rental

Once you have determined what you can afford to pay in rent, it is time to start looking at the classified ads for rental property. As with automobile classifieds, you should become familiar with the abbreviations that are used. Here are a few of the common ones.

ba or bth, bathroom	renov, renovated
br, bedroom	rm, room
DW or D/W or dshwr, dishwasher	stu, studio
DR, dining room	spac, spacious
Drmn, doorman	WIC, walk-in closet
EIK, eat-in-kitchen	W/D, washer and dryer
elev, elevator in building	w/d hkup, washer and dryer hookup
gar, garage	w/w, wall-to-wall carpeting
h/w, hardwood floors	yd, yard
htd, heat is included in rent	
incl ht/hw, includes heat and hot water	
mint, excellent condition	

© STEPHEN ORSILLO, 2009/USED UNDER LICENSE FROM SHUTTERSTOCK.COM



In addition to explaining what the apartment has to offer, classified ads often include the **square footage** of each apartment. This number is the amount of floor space available in the apartment.

EXAMPLE 2

Students are familiar with regression analysis. This example asks them to see if a relationship exists between the size of an apartment and the rent. Impress upon them that the apartments listed have similar layouts and amenities and are in comparable neighborhoods. Square footage alone may not be the single factor that determines price. But, when similar dwellings are examined, it can be a powerful indicator.

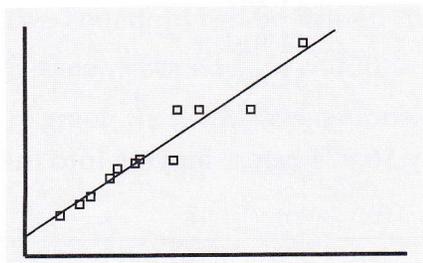
EXAMPLE 2

Don't do

Rufus and Maria have both been offered new jobs in a different city. A real estate broker sent them a listing of apartments in their desired location showing the square footage in each apartment. Use linear regression analysis to determine if there is a correlation between the square footage of rental property and the amount charged for the monthly rent. What is the linear regression equation? Interpret the correlation coefficient.

SOLUTION Use the statistics features on your graphing calculator to create a scatterplot. Graph the linear regression line.

Square Feet	Monthly Rent (\$)
664	995
735	1,045
787	1,095
872	1,205
903	1,245
993	1,325
976	1,295
1,133	1,295
1,150	1,595
1,244	1,595
1,474	1,595
1,697	1,995



```
LinReg
y=ax+b
a=.9061573426
b=403.0870898
r2=.9229477794
r=.960701712
```

The linear regression equation is $y = 0.91x + 403.09$ to the nearest hundredth.

The correlation coefficient of 0.96 indicates that square footage is a good predictor of the amount charged as rent for these apartments.

CHECK YOUR UNDERSTANDING

Answer approximately \$1,200

■ CHECK YOUR UNDERSTANDING

Based on Example 2, what is a good estimate for the amount of monthly rent charged for an 880-square foot apartment?

Lease Signing Costs

It isn't enough just to have the first month's rent available. There are a number of fees that are associated with the rental of any property. Usually, there is an **application deposit**. This amount, which is sometimes refundable, may vary between \$100 and \$400. It covers the cost of processing the application for the rental. Often a credit report is required. The fee for this report is usually under \$25.

A **security deposit** is money given to the landlord from the tenant as protection in the event that the tenant causes damage to the rented property. This deposit is refunded when the tenant moves out if there is no damage. The security deposit can range from 1 to 4 month's rent.

EXAMPLE 3

Students might be surprised by the upfront costs of renting. Remind them that some of the costs are refundable at a later date.

CHECK YOUR UNDERSTANDING

Answer $125 + 3.6r$

In addition to the first month's rent paid in advance, many landlords also require the last month's rent to be paid at the time of move in. This protects the landlord in the event that the tenant decides to break the lease and vacate the apartment earlier than agreed in the contract.

If you use a broker to find an apartment, there will be an additional fee for the broker's services; usually a percentage of a year's rent.

EXAMPLE 3

Rufus and Maria paid a \$200 application deposit for the 1,150-square foot apartment in Example 2. They are required to provide a credit report that costs \$25 and pay a security deposit equal to one month's rent. The landlord also requires the last month's rent at the time of signing the lease. The broker charged 10% of the yearly rent. How much should they expect to pay to be able to move into the apartment?

SOLUTION Rufus and Maria should plan on paying the following:

Application deposit	\$ 200
Credit report fee	\$ 25
Security deposit: 1 month's rent	\$1,595
Last month's rent	\$1,595
Broker's fee: $0.1(1,595 \times 12)$	\$1,914
First month's rent	\$1,595
Add these amounts to find the total.	\$6,924

Rufus and Maria should expect to pay \$6,924 before moving into their apartment.

■ CHECK YOUR UNDERSTANDING

Larry is renting an apartment that will cost r dollars per month. He must pay a \$100 application fee and a \$25 credit report fee. His security deposit is two month's rent, and he must also pay the last month's rent upon signing the lease. His broker charges 5% of the total year's rent as the fee for finding the apartment. Express in terms of r the total cost of signing the lease.

Moving Costs

Whether you are renting or purchasing a home, you need to budget for moving expenses. When planning a move, you should consider all of the options available to you.

You can elect to have someone do all of the packing, loading, transporting, unloading, and unpacking for you. Or, you can do all or part of it yourself, with or without help from professionals.

The cost of making a move depends upon a variety of factors: how much of the work you choose to do, the distance you are moving, the weight and size of your belongings, how accessible the items are to street level (Are you on the first floor? Are there many flights of stairs? Is there an elevator?), and the location of the pick up and drop off of your items. These are only a few of the factors that come into play when you are given a moving estimate. Many companies offer online services to help you.

EXAMPLE 4

Jay is moving from an apartment in Miami to one in Orlando. If Jay moves on a weekday, he will need more movers' time to pack, load, unload, and unpack because his friends will not be able to help him. If he moves on a weekend, he can get his friends to help, cutting down on the number of hours he will need to hire movers. MoveOut is a moving company that supplies movers, trucks, and moving equipment. They have given him the following moving estimates.

Weekday Move

6 hours of loading/unloading
5 hours of packing/unpacking
\$720 total cost

Weekend Move

4 hours of loading/unloading
2 hours of packing/unpacking
\$400 total cost

MoveOut charges a set hourly moving team rate for loading and unloading, and a different set hourly moving team rate for packing and unpacking. Determine the MoveOut hourly rates.

SOLUTION Solve this problem by setting up a system of two equations. First, identify the variables to use. Let x represent the hourly cost for loading/unloading. Let y represent the hourly cost for packing/unpacking.

Two equations can be written that model the moving costs.

Weekday Move $6x + 5y = 720$

Weekend Move $4x + 2y = 400$

To graph these linear equations, first solve for y .

$$6x + 5y = 720$$

$$4x + 2y = 400$$

$$5y = -6x + 720$$

$$2y = -4x + 400$$

$$\frac{5y}{5} = \frac{-6x + 720}{5}$$

$$\frac{2y}{2} = \frac{-4x + 400}{2}$$

$$y = -\frac{6}{5}x + 144$$

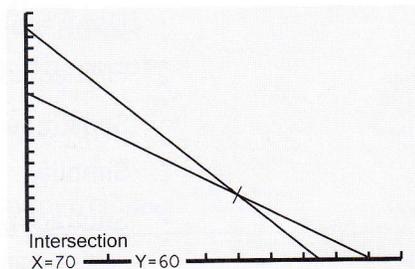
$$y = -2x + 200$$

Use values slightly greater than the x - and y -intercepts to determine an appropriate viewing window. In the weekday equation, the x -intercept is 120, and the y -intercept is 144. In the weekend equation, the x -intercept is 100, and the y -intercept is 200.

The setting for the viewing window and the graphs of the two equations are shown.

Using the intersection feature on your calculator, you can determine that the two lines intersect at the point (70, 60). This indicates that MoveOut charges \$70 per hour for loading/unloading and \$60 per hour for packing/unpacking.

WINDOW
Xmin=1
Xmax=130
Xscl=10
Ymin=0
Ymax=210
Yscl=10
Xres=1



■ CHECK YOUR UNDERSTANDING

Using the information above, suppose that Jay hired the movers for P hours to pack and unpack and for L hours to load and unload. Write an expression that represents his moving cost for these services.

EXAMPLE 4

In Chapter 2, students determined the solution to a system of two equations with two unknowns graphically. In this example, they will solve the system in a similar way. Make sure that they identify the variables at the outset and are careful with the equation statement. The initial equation will be written in the standard form of $ax + by = c$. In order to graph the linear equations, it is necessary to rewrite them in $y = mx + b$ form. Using the graphing calculator, students will be able to find the point of intersection and determine the rates for loading/unloading and packing/unpacking.

CHECK YOUR UNDERSTANDING

Answer $60P + 70L$

EXAMPLE 5

Students will now use the method of elimination to solve a system of two equations with two unknowns. They should be familiar with this method from a previous algebra course.

CHECK YOUR UNDERSTANDING

Answer (75, 5)

Systems of equations can also be solved algebraically. The *elimination method* is the process of algebraically manipulating one or both equations so that the coefficients of one set of variable terms are opposite and will drop out when the equations are combined as shown in Example 5.

EXAMPLE 5

Samantha is moving from Madison, WI to La Crosse, WI. She will do all of the packing and unpacking by herself with her brother. The moving company quoted a price of \$1,250 for 8 hours of loading and unloading and driving 130 miles. The company quoted the same price if the truck drives an extra 30 miles to pick up Samantha's brother. Samantha figures that with her brother's help she only needs to hire the movers for 6 hours. How much does the company charge per hour for the loading/unloading? How much do they charge per mile for driving?

SOLUTION Let x represent the hourly cost for loading and unloading. Let y represent the per-mile cost for renting the truck.

	Load/Unload Hours	Mileage
Situation without brother	8	130
Situation with brother	6	160
Cost	\$1,250	\$1,250

Write the equations that model each situation.

$$\text{Labor cost} + \text{Truck rental cost} = \text{Total cost}$$

$$8x + 130y = 1,250$$

$$6x + 160y = 1,250$$

Use the elimination method to solve the system of equations. Multiply the first equation by -3 , and multiply the second equation by 4 so the coefficients of the x -terms are opposites.

$$-3(8x + 130y) = -3(1,250) \rightarrow -24x - 390y = -3,750$$

$$4(6x + 160y) = 4(1,250) \rightarrow \underline{24x + 640y = 5,000}$$

Add the equations.

$$250y = 1,250$$

Solve for y . Divide each side by 250.

$$y = 5$$

Use $y = 5$ to substitute into either of the original equations to solve for x .

First equation $8x + 130y = 1,250$

Substitute 5 for y . $8x + 130(5) = 1,250$

Simplify. $8x + 650 = 1,250$

Subtract 650 from each side. $8x = 600$

Divide by 8. $x = 75$

Samantha will pay \$75 per hour for loading/unloading and \$5 per mile for the truck rental.

■ CHECK YOUR UNDERSTANDING

If you graph the two equations in Example 5, what is the point of intersection?