

Money Math for Teens

The Emergency Fund





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The Emergency Fund

Lesson Plan

OBJECTIVE

To teach students the importance of being financially prepared for unexpected expenses by providing tips on establishing an emergency fund, which will help them manage financial obstacles.

Students will:

- ▶ Understand the need to have an emergency fund
- ▶ Develop a plan to create and build their own fund
- ▶ Examine alternative account types and financial products for housing their money
- ▶ Calculate the future value of their funds
- ▶ Create a frugal budget that includes provisions for building their emergency fund.

TEACHING MATERIALS

- ▶ Lesson plan with solutions for student exercises and answer key for assessment
- ▶ The Emergency Fund student handout
- ▶ Student assessment worksheet

LESSON ACTIVITY

1. **Get students' attention by asking a series of pointed questions:**
 - How many of them plan to be wealthy?
 - What are the recurring expenses they expect to have while living their ideal lifestyle?
 - Have they ever estimated how much their lifestyle will cost them each month?
 - How many already live on a budget? How many have never experienced living within a budget?
 - What do they think are "budget buster" events? What are some examples?



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2. Introduce the student handout.

- Ask students to read from the beginning through the What Is a Financial Emergency? section.
- Ask them to review the charts and make sure they can correctly interpret the data.
- It can be fun to discuss with students how different people may have different views when it comes to a true emergency.
 - Ask students to create a list of questionable emergencies (events that some might see as an emergency, while others see as trivial).
 - See if the group can come to a consensus on true emergencies.

3. Discuss why having an emergency fund is important, how much money is enough, how to get a fund started and where to house the fund.

- Students should realize that more is better when building and maintaining an emergency fund.
- Expert opinions on how much money the fund should contain vary, but many suggest 3 to 12 months of expenses. The longer the protection period, the more security the fund will provide.
- It doesn't matter if you start small, as long as you get started.
- A good first goal to set is saving \$1,000.
- The fund should be somewhat difficult to access, but not too difficult.
- Options for housing an emergency fund include safe and liquid investments, such as CDs, United States Treasury Bills, and money market mutual funds, as well as regular savings accounts.



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4. Discuss fund growth and the compound interest formula.

- Even if you stop contributing to an emergency fund at a certain point, it will grow on its own, thanks to compound interest.
- The compound interest formula is used to calculate the future value of an investment given an interest rate, the number of times interest is compounded per year and the time period over which funds are accumulated.

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

A = Accumulated balance

P = Principal

r = Annual interest rate (APR) expressed as a decimal

n = Number of compounding periods per year

t = Number of years the investment lasts

- An example for using the formula is in the lesson, along with an example for students to try.

Solution to the Now You Try problem using the formula above:

$$P = 1850$$

$$r = 2.75\% = 0.0275$$

$$n = 12$$

$$t = 3$$

$$A = 1850 \left(1 + \frac{0.0275}{12}\right)^{12 \times 3}$$

$$A = 1850(1 + 0.0022917)^{36}$$

$$A = 1850(1.0022917)^{36}$$

$$A = 1850(1.0858975)$$

$$A = \mathbf{\$2,008.91}$$



The Emergency Fund

5. Discuss tips for building an emergency fund.

- Nine suggestions are offered that will help students find extra money they can use to build their emergency fund.
- Ask for other suggestions—students may mention additional creative ideas.
- The concept of extra money makes sense once students know what expenses are essential and which are not.

6. Discuss advanced savings for an emergency fund, which requires creating a strict, frugal budget.

- Students can follow the suggested eight-step formula to set a budget that will help them meet their savings goals.
- The Now You Try example emphasizes discerning essential and nonessential expenses.
 - Five of Tyler's 11 expenses can be classified as nonessential.
 - Movie night
 - Buying lunch
 - Date night
 - Shoes
 - Morning coffee.
 - Nonessential expenses provide opportunities to find extra money for savings either by reducing expenses or simply eliminating them.
 - Remind students that budgeting money for entertainment can help them stick to their budget. A budget that is too restrictive can be hard to follow.
 - **Question 1:** Tyler's essential expenses total **\$1,720.45** per month. A fully funded three-month cushion would then total **\$5,161.35**.
 - **Question 2:** Students should work together as a group to recommend adjustments. Essential expenses should remain unchanged, and nonessential expenses can be reduced or eliminated.
 - **Question 3:** Calculate the adjustments to nonessential expenses to determine how much he will save per month under his new budget.



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- **Question 4:** Divide \$5,161.35 by the savings calculated. This will yield the number of months it would take Tyler to live with the reduced expenses and redirect the savings toward building a three-month emergency fund. It would take him twice as long to build a six-month fund.

- **Question 5:** Using the compound interest formula:

$$P = 5161.35$$

$$r = 2.5\% = 0.025$$

$$n = 12$$

$$t = 1$$

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

$$A = 5161.35(1 + 0.0022917)^{36}$$

$$A = 5161.35(0.0022917)^{36}$$

$$A = 5161.35(1.0858975)$$

$$A = \mathbf{\$5,291.85}$$

7. Evaluate students' comprehension (see assessment worksheet).

- Allow students to use the lesson handout as a resource because the assessment uses formulas presented in the handout.

Assessment Answer Key

1. A
2. B
3. D
4. C
5. C
6. D
7. D
8. B
9. A
10. C



The Emergency Fund

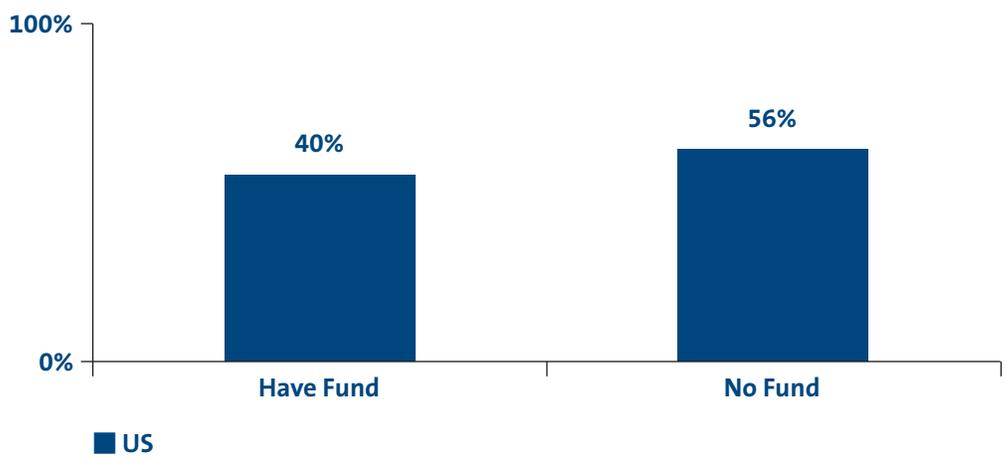
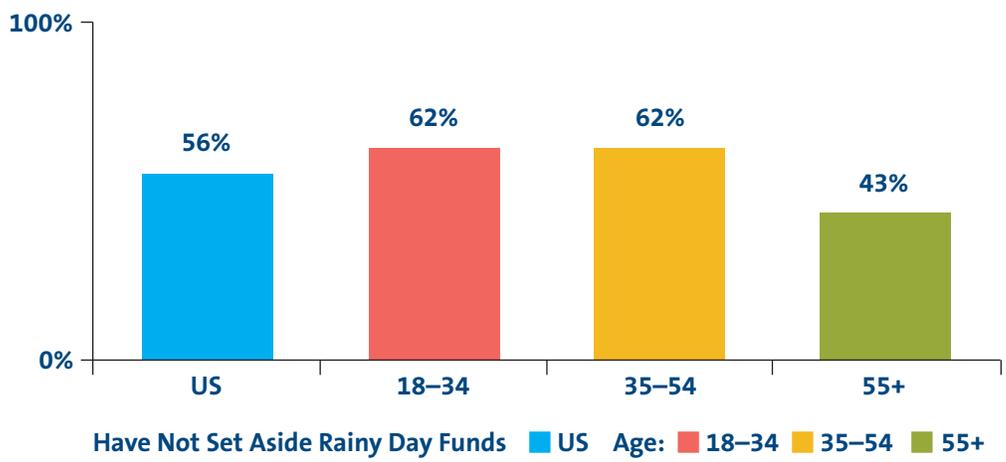
Student Handout: The Emergency Fund

What's next on your financial to-do list? Save for college, pay off your car, get a new job, save for retirement? Not so fast. Almost every article or book offering financial advice will agree: the very first thing you should do, after budgeting and meeting basic financial needs, is to start building an emergency fund.

What Is an Emergency Fund?

An emergency fund, also known as a rainy day fund, is a stash of easily accessible money that has been set aside for emergencies. Having money stashed away to deal with unexpected events can give you a sense of security—you'll know that such an event won't destroy or derail your financial plans.

But most people don't have emergency funds. According to the 2012 National Financial Capability Study, 56% of Americans don't have money set aside. Following is data from the study:





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The news changes a bit as you look at data by state. Here is a sample of data taken from the National Financial Capability Study based on a few states:

Have Emergency Funds?			No Fund, by Age Group		
State	Yes	No	18–34 years	35–54 years	55+
Florida	43%	51%	55%	59%	42%
California	45%	48%	51%	57%	35%
New York	49%	46%	46%	54%	38%
Illinois	45%	51%	55%	55%	42%

How does your state match up with the national averages? The most recent Financial Capability Study can be accessed at www.usfinancialcapability.org.

What Is a Financial Emergency?

It's important to understand the true meaning of an emergency. Wanting new clothes, a new video game or even a new car is not an emergency. Real emergencies include getting injured, losing your job or your air conditioner breaking in the middle of summer. A good rule of thumb: if you're not sure if it's an emergency, it probably isn't.

Why Is It Important to Have an Emergency Fund?

If a real emergency happens, will you have the money to pay your bills? Insurance is one way to protect yourself against certain situations, but even the best insurance doesn't protect against every financial problem.

The unexpected is inevitable. People who have an emergency fund to protect them from unanticipated events are going to come out in far better shape than people who do not. Those without an emergency fund are more likely to turn to credit and incur new debt to help them out when emergencies arise. Even if it feels like you can't afford to have an emergency fund, you really can't afford *not* to have one.



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How Much Should an Emergency Fund Have?

It's hard to say exactly how much an emergency fund should have because the amount of money you might need is based on personal factors, so it's different for everyone. The sum of money in your fund may not necessarily provide the same sense of comfort to someone else. You may require a larger or smaller fund than another person to achieve the same feeling of security.

However, just because there isn't a foolproof answer to this question doesn't mean there isn't expert financial advice you can follow. Some experts believe \$1,000 is sufficient, while others advise that it's enough to have the money to cover 3 to 6 months' worth of expenses. More conservative experts suggest having an absolute minimum of 8 to 12 months of expenses.

Most experts agree that setting up your emergency fund is a critical step to financial health, and once you've saved enough for a cushion, then you can move to other financial goals. You will find out how much is enough by examining your own situation and doing what works for you.

Getting Started

The most important step you can take toward having a fully funded emergency fund is to get started *now*. A step-by-step approach works best.

1. Starting an emergency fund is as easy as depositing a small amount, such as \$25, \$50 or \$100, into an interest-bearing account. Before you decide how much money to start with, be sure you have enough cash to cover your basic living expenses.
2. Keep reminding yourself of the fund's importance.
3. Set a goal of \$500 and save until that goal is met.
4. Grow the fund to \$1,000, and stop contributing to it until all of your debts, aside from your mortgage, are eliminated.
5. Begin adding to the emergency fund again until you have a full three to six months' worth of expenses.

Your monthly budget should contain enough money to reduce and eventually eliminate your debt, but don't confuse a debt reduction fund with your emergency fund. Debt reduction gets you out of debt; your emergency fund helps you stay out of it in the first place.

Here are three tips for finding the money to build your initial emergency fund:

- ▶ **Earn more money:** Work extra hours if you can, or find a part-time job. Direct all extra earnings into your emergency fund.
- ▶ **Spend less money:** Look at your current expenses and find things you can do without. Be sure to direct the money you save into your fund.
- ▶ **Sell old or unused items:** We all have extra things we no longer use or need.



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David Bach recommends these three simple steps to growing your emergency fund in *The Automatic Millionaire*:

- 1. Decide how big a cushion you need:** The author recommends a minimum of three months' worth of expenses but stresses that more is better.
- 2. Don't touch it:** According to Bach, the reason most people don't have emergency money in the bank is that they think they have an emergency every month. A real emergency is something that threatens your survival, not just your desire to be comfortable.
- 3. Put it in the right place:** The author recommends putting emergency money to work so it grows.

Small steps are inevitably going to be your first steps, and they definitely count. Once you have put aside \$25.00 one week and discovered that you can live without that \$25.00 in your spending account, then you have the confidence to know that you can do it again. You may even have the confidence to think, "Well, hey, if I put aside \$25.00 and I didn't miss it, I'm going to try to put \$50.00 aside and not miss it."

—Jean Chatzky, *Bankrate.com* interview, July 2007

Choosing the Best Place for Your Money

Picking the right account to house your emergency fund is important. Because you'll need quick access in an emergency, the money in your fund should be easily accessible, but not too easily. If you can get to your cash too easily, you might be tempted to dip into it for nonemergencies. Here are some tips for making your fund a little harder to access:

- Use a bank closer to work instead of home
- Use an account not linked to a debit card
- Use an online brokerage account
- Use an online savings account.

In addition to being neither too easy nor too difficult to access, the account you choose should:

- Pay a decent interest rate
- Have minimal or no fees.



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Some people choose a **certificate of deposit (CD)** for their emergency fund, or a series of CDs of approximately equal value, with one maturing every six months or every year. This approach is called **laddering** because you can roll over the CDs as they mature to keep your “ladder” intact. If your money is in CDs, you’ll lose interest for taking money out early, which may motivate you to keep the fund intact. But in a real emergency, the interest you may lose is a small price to pay for having the money you need.

You might also consider buying **United States Treasury Bills** with part of your emergency fund. They can be timed to mature on a regular schedule, and like CDs, they tend to pay more interest than a simple savings account. While they aren’t bank products, they are backed by the federal government, which means there is no risk of losing principal if you hold them to maturity. Since they have very short terms — 4, 13, 26 or 52 weeks — they usually don’t expose you to inflation or interest rate risk.

Other options for an emergency fund include **money market mutual funds**, which are funds that must, by law, invest in low-risk securities, such as government securities and CDs. Compared with other types of mutual funds, money market funds are highly liquid, low-risk securities. Unlike money market deposit accounts offered by commercial banks and insured by the US government, money market mutual funds are not federally insured. While they are intended to pay dividends that are comparable to prevailing short-term interest rates, they can lose value.

Will My Fund Grow?

Savings accounts, CD laddering, mutual funds and Treasury Bills all offer interest that will help grow your fund. But how much exactly will it grow?

There is a formula that computes the final amount of a deposit, taking compounding into consideration. Each time interest is paid into an account, interest is paid on that interest. The formula is called the compound interest formula, and it looks like this:

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

A = Accumulated balance

P = Principal

r = Annual interest rate (APR) expressed as a decimal

n = Number of compounding periods per year

t = Number of years the investment lasts



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Example >>>

An emergency fund of \$2,100 is accumulated in an account paying an annual interest rate of 3.75%, compounded quarterly. Find the balance after four years.

Using the formula above:

$$P = 2100$$

$$r = 3.75\% = 0.0375$$

$$n = 4$$

$$t = 4$$

$$A = 2100\left(1 + \frac{0.0375}{4}\right)^{4 \times 4}$$

$$A = 2100(1 + 0.009375)^{16}$$

$$A = 2100(1.009375)^{16}$$

$$A = 2100(1.1610227)$$

$$A = \mathbf{\$2,438.15}$$

The balance after four years is **\$2,438.15**.

Now You Try

An emergency fund of \$1,850 is accumulated in several accounts. Together, they pay an annual interest rate of 2.75%, compounding monthly. Find the balance of the fund after three years.



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Creative Ways to Build Your Fund

Here are a few tips that might help when you are thinking about ways to find extra money to devote to building your emergency fund.

- ▶ **Start small:** As you know, the important thing is to get started. Your fund will grow over time.
- ▶ **Automatic savings deduction:** If you are able to devote a set amount toward your emergency savings plan, have it taken from your primary checking account automatically. You are less likely to miss it if it is already taken out of your account.
- ▶ **Treat saving as if it were a bill:** Add your emergency fund contribution to your list of bills and pay it as if it were a bill.
- ▶ **Reduce one expense and save the difference:** Find something you already spend money on and cut back. Do you buy a cup of coffee each morning? Skip that purchase one or two days a week and put the cash into your fund.
- ▶ **Redirect eliminated debt payments:** Once you've paid off a recurring debt, put the amount of that payment into your emergency fund.
- ▶ **Budget big on groceries and save the difference:** If you usually spend \$100 each week on groceries, budget \$125 and save the difference.
- ▶ **Save your change:** Pay for items with only dollars. At the end of each day, empty your pockets of change and put it into a jar. Once a month, go to the bank and deposit the change. It adds up!
- ▶ **Brown bag approach:** If you buy lunch out most of the time, try bringing your lunch one or two days a week, and put the money you would have spent on lunch into your fund.
- ▶ **Try one month of no extra spending:** Buy only bare necessities for one month. This means no extra activities such as dining out, clothes shopping or movies. Put all of the money you saved into your emergency fund. You'll be amazed at the quick savings boost.

Advanced Savings

Now that you've started saving, found creative ways to put away extra money and reached \$1,000 in savings, it's time to get serious and increase your emergency fund to three to six months' worth of expenses. But just how much money is that? This is where your monthly budget will come in handy. You've become really good at living within your means and finding ways to cut back, and you've found ways to include your emergency fund in your necessary expenses. Document your anticipated expenses for the next three to six months on paper and calculate how much you'll need to fully fund your permanent emergency fund.



The Emergency Fund

Create and Stick to a Strict Budget

A good budget will help you achieve your goals and will be flexible enough to adapt to changing circumstances. Here is a step-by-step formula for building a flexible, effective and efficient budget.

- 1. List your regular monthly expenses:** Necessary items include rent, mortgage, car expenses and payments to reduce debts. However, don't forget to leave room for monthly entertainment or shopping.
- 2. Calculate your earnings:** This includes income from your paycheck, as well as interest, investments or side jobs.
- 3. Subtract expenses from earnings:** The difference between these two numbers will determine your budget. For some, this number will be negative. If you have leftover money, that's great. If not, there is work to be done.
- 4. Rework the budget:** If your budget turned out negative, go back over your expenses and look for items you can reduce or cut. It will be important for these numbers to balance, and you may have to make sacrifices to do so. This is also a good time to find ways to make regular contributions to your emergency fund.
- 5. Don't forget about debt reduction:** It will be very important for your budget to include payments against your debts so you can eliminate them more quickly. Look closely at your budget and try to direct as much money toward debt reduction as you can.
- 6. Work your budget and stick to it:** Once your budget is ready, test it out, and try to live within the numbers you have created. Make necessary adjustments, but try to stick to it as closely as you can. You'll know right away if you are able to live within the budget.
- 7. Monitor and adjust:** Review your budget each month to see if anything has changed. Do you need to dedicate more resources to some things and less to others? Have any of your debts been eliminated?
- 8. Keep assessing:** A good budget is never finished. It constantly evolves and changes as your situation changes. Keep crunching numbers, catch any overspending, and correct it.



Name _____	Date _____
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Now You Try

Tyler is an 18-year-old recent high school graduate who is examining his financial situation. He has no emergency fund, is exposed to unexpected events that make it difficult or impossible for him to pay his bills, and spends every cent he earns, except for a college savings fund he is building. He would like an emergency fund consisting of three months' worth of essential expenses but has no idea how to find extra cash.

He looks at his checkbook, debit receipts and credit card statements and makes a list of all of his expenses from the past month. Below is a table showing those expenses. Take a look at Tyler's spending, and in the column provided, indicate if you think each expense is necessary.

Expense	Amount	Yes	No
Rent	\$850.00		
Car payment	\$263.00		
Movie night	\$42.00		
Car insurance	\$212.50		
Bought lunch (16 times)	\$185.00		
Cell phone bill	\$84.95		
Date night (3 dates)	\$160.00		
Gasoline (3 fills)	\$135.00		
Shoes	\$97.00		
Morning coffee (20 stops)	\$78.00		
College fund payment	\$175.00		
Total	\$2,282.45		

1. For Tyler to build a fully funded three-month emergency fund, how much must he save?



Name _____

Date _____

2. Make recommendations for how Tyler should adjust his spending, and indicate how much you will save him each month.

Expense	Amount	Recommendations
Rent	\$850.00	
Car payment	\$263.00	
Movie night	\$42.00	
Car insurance	\$212.50	
Bought lunch (16 times)	\$185.00	
Cell phone bill	\$84.95	
Date night (3 dates)	\$160.00	
Gasoline (3 fills)	\$135.00	
Shoes	\$97.00	
Morning coffee (20 stops)	\$78.00	
College fund payment	\$175.00	
Total	\$2,282.45	

3. How much did you trim from Tyler's spending?
4. How long must Tyler follow your recommendations to save three to six months' worth of money in his new emergency fund?
5. If Tyler's three-month emergency fund is in an account paying 2.5% interest each year, compounding monthly, what is the balance after one year?

Being in control of your finances is empowering, and an effective budget will help you get there. The emergency fund is an important component of your financial stability, and it also helps you keep your budget realistic. Unexpected expenses happen to everyone at some point, and if you are prepared for them, those expenses won't break your budget or force you into taking on more debt. The combination of a fully funded emergency fund and a frugal, yet realistic budget will empower you to take control of your finances and enjoy financial stability.



Name _____

Date _____

Assessment: The Emergency Fund

1. What percentage of Americans have not prepared for unexpected expenses by having an emergency fund?
 - A. 56%
 - B. 35%
 - C. 68%
 - D. 47%
2. Which of the following would you classify as a true emergency?
 - A. Overdrawing your checking account
 - B. Losing your job
 - C. Wanting tickets to a sold-out concert
 - D. Having a balance on a credit card with 19.5% interest
3. What is the foolproof formula for the amount of money you need in an emergency fund?
 - A. Start with \$500, build it to \$1,000, then stop saving
 - B. 3 to 6 months of essential expenses
 - C. 8 to 12 months of essential expenses
 - D. There is no single, foolproof formula for everyone
4. If you took \$1,000 and put it into an interest-bearing savings account compounding quarterly at 3%, how much would your fund be worth at the end of one year?
 - A. \$1,030.00
 - B. \$1,120.00
 - C. \$1,030.34
 - D. \$1,120.33
5. According to the National Financial Capability Study, what percentage of 18- to 34-year-old Americans have no emergency fund established?
 - A. 47%
 - B. 65%
 - C. 62%
 - D. 60%



Name _____

Date _____

6. People without an emergency fund:
 - A. Are more likely to turn to credit and new debt to help them out of an unexpected event
 - B. Will find themselves in a worse financial situation than before an unexpected event
 - C. Are likely to feel uneasy or panic when an unexpected event causes a financial crisis
 - D. All of the above

7. According to the state data from the National Financial Capability Study presented in the lesson, which state listed is in the best shape for 18 – 34-year-olds? Worst shape?
 - A. Florida in best shape; New York in worst shape
 - B. Illinois in best shape; New York in worst shape
 - C. New York in best shape; California in worst shape
 - D. New York in best shape; Florida and Illinois in worst shape

8. Opening a series of certificates of deposit (CDs) and staggering their maturities is a saving strategy called:
 - A. Interest rate staggering
 - B. CD laddering
 - C. Term staggering
 - D. CD series

9. What would be the final balance of an emergency fund containing three to six months' worth of expenses totaling \$4,700 that is held in a money market account compounding monthly and earning 2.75% interest for two and a half years?
 - A. \$5,034.10
 - B. \$5,023.13
 - C. \$5,127.64
 - D. \$5,099.16

10. Which of the following does not belong in a frugal budget?
 - A. College savings payment
 - B. Rent
 - C. Completing your Beatles CD collection
 - D. Car insurance payment