

Lesson Description

Students will analyze data to determine the relationship between level of educational attainment and weekly earnings and the relationship between level of educational attainment and unemployment rates.

Students will calculate the cost of a college education using online tools while learning about financial aid and the importance of Free Application for Federal Student Aid (FAFSA).

Students will devise a savings plan for college.

Texas Essential Knowledge and Skills (Target standards)

- **PFL Math 8.12G:** Estimate the cost of a two-year and four-year college education, including family contribution, and devise a periodic savings plan for accumulating the money needed to contribute to the total cost of attendance for at least the 1st year of college.

Texas Essential Knowledge and Skills (Prerequisite standards)

- **Math 8.1A:** apply mathematics to problems arising in everyday life, society, and the workplace
- **Math 8.5D:** use a trend line that approximates the linear relationship between bivariate sets of data to make predictions
- **Math 8.5H:** identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems

National Standards (Supporting standards)

- **CEE Savings 8.7:** The value of a person's savings in the future is determined by the amount saved and the interest rate. The earlier people begin to save, the more savings they will be able to accumulate, all other things equal, as a result of the power of compound interest.

CEE - Council for Economic Education

PFL Terms

- Occupation
- Earnings
- Savings
- Loan
- Inflation

Time Required

Two 45-minute class periods

Materials Required

- A copy of **Handout 8.5-1** and **8.5-2** for each student
- A copy of **Activity 8.5-1** for each student
- A computer and internet access for each student
- A calculator for each student

Procedure**Engage**

1. Ask students to think about the college or career school they would like to attend. Allow the students 3 minutes to consider the college or career school of their choice and to share this with their neighbor.
2. Ask students to use their thumbs to show whether they know how much it costs to attend the college of their choice for one year.
 - a. Thumbs up: I know how much it costs to attend the college of my choice for one year.
 - b. Thumbs to the side: I can make an educated guess about how much it costs to attend the college of my choice for one year.
 - c. Thumbs down: I have no idea how much it costs to attend the college of my choice for one year.
3. Ask students to use their thumbs to show whether they know what occupation they plan to pursue.
 - a. Thumbs up: I know what occupation I want to pursue.
 - b. Thumbs to the side: I have a few ideas of occupations I may want to pursue.
 - c. Thumbs down: I have no idea what occupation I want to pursue.

Explore

4. Distribute **Handout 8.5-1** and a calculator to each student. Display Chart 1 of **Handout 8.5-1**. Tell students that the bar graph from the Bureau of Labor and Statistics compares the levels of education with the median weekly earnings for people 25 years and older for 2012. Earnings are for full-time wage and salary workers. Use the bottom portion of the handout to explain each level of education. Ask students the questions below.
 - a. What is meant by median weekly earnings in this bar graph? *(If you ordered all the weekly earnings from least to greatest for workers 25 years or older for the year 2012, it is the middle weekly earnings.)*
 - b. What is the difference between the median weekly earnings of a worker with a Bachelor's degree and a worker with an Associate's degree? *(\$1066 - \$785 = \$281 per week)*
 - c. What is the difference between the median annual earnings of a worker with a Bachelor's degree and a worker with an Associate's degree? *(\$281 x 52 weeks = \$14,612)*
 - d. Assuming that these workers work for 30 years and earn the same amount each year, how much more would a worker with a Bachelor's degree earn over a worker with an Associate's degree? *(\$14,612 x 30 years = \$438,360)*
5. Work with a partner to calculate the difference in earnings over 30 years for a worker with a Bachelor's degree and a worker with a high school diploma? *(\$1066 - \$652 = \$414; \$414 x 52 weeks = \$21,528; \$21,528 x 30 years = \$645,840)*

6. Work with a partner to write a statement that summarizes the bar graph. (**Sample response: The more education a person has the more that person will earn annually.**)
7. Display **Handout 8.5-2**. Tell students that the bar graph from the Bureau of Labor and Statistics compares the levels of education with the unemployment rate for people 25 years and older for 2012. Ask students the questions below.
 - a. Which two groups of people had the lowest unemployment rate? (**People with a Doctoral degree and a Professional degree.**)
 - b. Which group of people had the highest unemployment rate? (**People with less than high school diploma.**)
 - c. Work with a partner to summarize this bar graph. (**Sample response: People with less education have a higher unemployment rate.**)
8. Take students to a computer lab with Internet connection. Distribute **Activity 8.5-1** to each student. (*Note to teacher: A key is not provided since college cost will change year to year. A 2013-2014 sample is provided.*)
9. Read the Notice of Privacy to students.

You will not be asked to enter any personal information during this lesson. This activity is designed to show how to calculate the cost of college.

Explain

10. Read the types of financial aid on part A of **Activity 8.5-1** or show the video at <http://studentaid.ed.gov/types>.
11. Direct students' attention to part B of **Activity 8.5-1**. Explain to students that this part of the activity will demonstrate how to use online tools to estimate college cost.
12. Prepare students for a Think-Pair-Share activity. Ask: *What factors affect the cost of college?* Direct students to list these factors for number 1 of part B on **Activity 8.5-1**. Next, have students explain the factors to a neighbor. Finally, have a few students share one item on their list with the class. The teacher should write these factors on the board. (**Sample responses: the length of time a student is in college, the number of classes a student takes, the amount of aid a student receives, the type of college a student attends, where the student lives during his or her college years**)

Explore

13. Read the explanation for the next section of Part B on **Activity 8.5-1**.

Use the fictional character below to practice calculating the cost of college.

Johnny lives in Alvin, Texas and is a senior at Alvin High School. He plans to get a Bachelor's degree at the University of Houston. To better plan for college, he would like to know the following.

- What is the cost to attend 4 years at University of Houston?
- What is the cost to attend Alvin Community College for the first 2 years of college then transfer to the University of Houston?
- Is it more affordable to live at home, on campus?

14. Tell students to go to <http://www.collegeforalltexas.com>. Explain to students that they will use the *College for All Texans* website and the *bigfuture by The College Board* website to help Johnny answer these questions.
15. Direct students to follow steps 2-6 independently. For classes that need additional guidance, model each step for students.
16. Explain that the results will produce the cost for the upcoming school year. Below are the results for the 2013-2014 school year.

2013-2014 Estimated Costs and Aid Package:			
1. College:	 University of Houston	 Alvin Community College	
2. Where you will live while attending college:	On campus	Live at home	
3. Cost of Attending	Total Cost	\$23638	Total Cost
	Tuition & Fees	\$9888	Tuition & Fees
	Room & Board	\$8600	Room & Board
	Books	\$1200	Books
	Other	\$3950	Other
4. Median Grant	\$12000	\$2350	
5. Estimated grant and/or scholarship assistance:	\$4000-\$22000/year	\$2300-\$2400/year	
6. Estimated net cost:	\$1638-19638/year	\$8077-8177/year	
7. Estimated student loans and/or student work earnings:	\$500-\$7000/year	\$0-\$1750/year	
8. Estimated net cost with self-help:	\$0-19138/year	\$6327-8177/year	

Costs include tuition and fees, books and supplies, room and board, personal expenses, and transportation. Budget components are calculated based on average expenditures incurred by students. For tips on how to reduce your college costs go to www.collegeforalltexas.com

Explain

17. Use the descriptions below to help students understand the results.

Row 1 is the selected colleges.

Row 2 is where Johnny plans to live based on which college he chooses.

Row 3 shows the estimated cost for attending each college. The bold print on row 3 is the total cost. This includes the cost of tuition and fees, room and board, books and other expenses. Direct students to record total cost for each college on **Activity 8.5-1** for number 7.

Row 4 is the median grant that is awarded to students at each college.

Row 5 is the estimated financial assistance that Johnny may receive. This estimate is based on his family's income, family's size, and number of family members that will be enrolled in college for the upcoming school year.

Row 6 is the estimated net cost. Ask students to explain net cost. **(It is the total cost minus the financial assistance.)** For the University of Houston sample above, the maximum assistance of \$22,000 was subtracted from the total cost of \$23,638 to get the lowest value for the range. For the upper range, the minimum assistance of \$4,000 was subtracted from the total cost of \$23,638. Direct students to find the average of the

values in the given range for the estimated net cost of each college and record these values on **Activity 8.10-1** for number 8.

Row 7 is the estimated student loans and/or works earnings. Explain that college students often get student loans to help pay the cost of college. The Federal Student Aid program provides the following information about loans:

Remember, federal student loans are real loans, just like car loans or mortgages. You must repay a student loan even if your financial circumstances become difficult. Your student loans cannot be canceled because you didn't get the education or job you expected, or because you didn't complete your education (unless you couldn't complete your education because your school closed). [Source: Federal Student Aid, <http://studentaid.ed.gov/repay-loans>]

Row 8 is the estimated net cost with self-help. This is the estimated net cost minus student loans and student work earnings.

18. Instruct students to discuss number 9 on **Activity 8.5-1** with a neighbor and write a plan for Johnny. Have a few students share their thoughts with the class. (**Sample response: Johnny will most likely receive more grant money annually if he attends the University of Houston; however the cost per year is still greater than the community college. The cost will depend on how much grant and scholarships Johnny receives for each college. Johnny should apply to both colleges and apply for financial aid to both colleges. He can then compare his financial responsibility for each college.**)

Explain

19. Read the statement below from **Activity 8.5-1** to the students.

Notice the State Net Price Calculator estimated the cost for the upcoming year. Assuming Johnny is actually in 8th grade, he will need to estimate the cost for a college education in 4 years. Each year the cost of living and the cost of tuition increases due to inflation. According to Investopedia, as inflation rises, every dollar will buy a smaller percentage of a good. For example, if the inflation rate is 2%, then a \$1 pack of gum will cost \$1.02 in a year.

[Source: <http://www.investopedia.com/terms/i/inflation.asp>]

Elaborate

20. To estimate the cost of college in four years, students will use the bigfuture by The College Board website. Direct students' attention to number 10 on part B of **Activity 8.5-1**. Direct them to go to <https://bigfuture.collegeboard.org/>.
21. Instruct students to complete numbers 10-12 on part B of **Activity 8.5-1**. The teacher should model each step.
22. For steps G and O, explain to students that the total cost is the black number in the upper left corner.

Explain

23. Read the Tips located on the results page of the College Cost Calculator.
- These cost numbers can be daunting, but don't let them throw you for a loop. Relatively few students pay the full "sticker price."
 - There are resources available to help you reach your education goal, such as

scholarships, loans, grants, and other forms of financial aid.

- There are more savings options than ever, too — from state "529" plans and prepaid tuition plans to tax-deferred accounts.
- College is a great investment. Did you know that people with a college degree earn over 80% more on average than those with a high school diploma? Over a lifetime, the gap in earnings potential between a h.s. diploma and a 4-year degree is more than a million dollars.

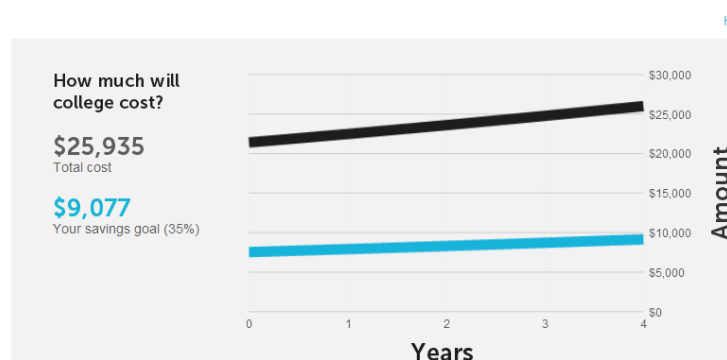
Explore

24. Have students read number 13 on part B of **Activity 8.5-1**. Instruct students to find the estimated totals for Sabrina as asked on number 13 by using <http://www.collegeforalltexas.com> and <https://bigfuture.collegeboard.org/>. Below are Sabrina's results based on the 2013-2014 school year.

2013-2014 Estimated Costs and Aid Package:											
1. College:	 Texas State Technical College-West Texas										
2. Where you will live while attending college:	Live at home										
3. Cost of Attending	<table border="1"> <tr> <td>Total Cost</td> <td>\$10408</td> </tr> <tr> <td>Tuition & Fees</td> <td>\$4290</td> </tr> <tr> <td>Room & Board</td> <td>\$2250</td> </tr> <tr> <td>Books</td> <td>\$1170</td> </tr> <tr> <td>Other</td> <td>\$2698</td> </tr> </table>	Total Cost	\$10408	Tuition & Fees	\$4290	Room & Board	\$2250	Books	\$1170	Other	\$2698
Total Cost	\$10408										
Tuition & Fees	\$4290										
Room & Board	\$2250										
Books	\$1170										
Other	\$2698										
4. Median Grant	\$750										
5. Estimated grant and/or scholarship assistance:	\$0-\$1500/year										
6. Estimated net cost:	\$8908-10408/year										
7. Estimated student loans and/or student work earnings:	\$1334-\$3667/year										
8. Estimated net cost with self-help:	\$5241-9074/year										

Costs include tuition and fees, books and supplies, room and board, personal expenses, and transportation. Budget components are calculated based on average expenditures incurred by students. For tips on how to reduce your college costs go to www.collegeforalltexas.com

College Cost Calculator



25. Direct students' attention to part C, devise a periodic savings plan. Explain that the current, low interest rates do not produce a significant growth in a savings account. However, any money you can save in a bank savings account now will get you that much closer to paying for a college degree or certification program. Save early and save often. A bank savings account keeps the money safe and separate from your checking account, making it more difficult to "dip into" those funds ahead of time. There are other opportunities for savings programs that you can discuss with your school counselor.
26. For question 1 on part C of **Activity 8.5-1**, "What are ways an 8th grader can start saving for college?" Have students work with a partner to develop a list.
27. Ask students to share their ideas. Write their ideas on the board. (**Sample responses: Students can save their earnings from chores, babysitting, and mowing. Students can be smart shoppers and shop for economical deals. Students can save a portion of their allowance.**)
28. Explain that adults often make tradeoffs when trying to save for an expensive item such as a car or a house. A tradeoff is giving up of one thing for another. For example, if an adult is saving to purchase a car, he or she may give up eating out or reduce the amount of money that is spent on entertainment. The money that is saved will be used to purchase the car.
29. Have students complete Part C.
30. Tell students to go to the Texas Higher Education Coordinating Board, College for All Texans website at <http://www.collegefortexans.com/>. Select "students", then hover your mouse over "Helpful Info" and choose "Find Money for College." There will be four websites to choose from as the students investigate possible options for college funding.
31. Tell students to click on www.federalstudentaid.ed.gov, the U.S. Department of Education, Federal Student Aid Gateway. Click Who Gets Aid and investigate the eligibility criteria for the federal student aid programs. The goal for the students is to determine if they qualify for any aid to reduce their total cost to attend college. Encourage students to investigate this website with their parents.
32. Encourage students to complete Part D with their parents. Remind students that this activity will not be collected for a grade. The purpose of this activity is to give them the tools to begin planning for their post-secondary education.

Evaluate/End

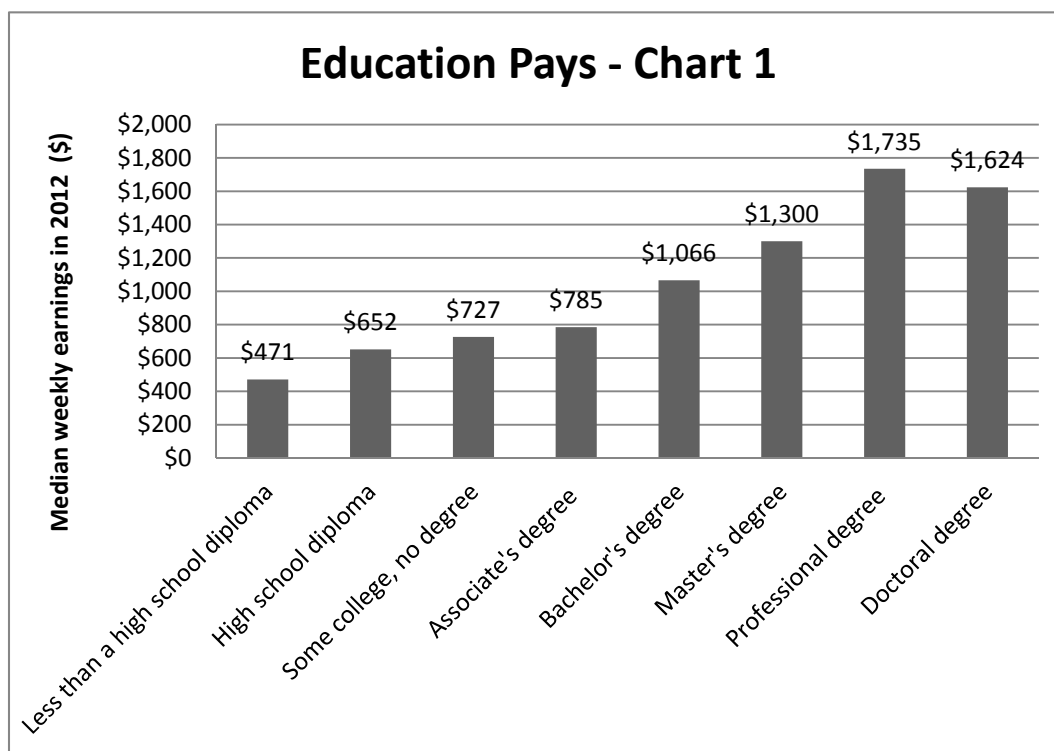
33. To end the lesson, ask the questions below.
 - a. What Internet tool can be used to compare cost of a college education at different colleges and universities? (<http://www.collegeforalltexans.com>)

- b. What Internet tool can be used to calculate the cost of college in the upcoming years? (<https://bigfuture.collegeboard.org>)
- c. What website will provide information about student financial aid? (<http://studentaid.ed.gov>)
- d. What financial application should be completed after January 1 of your senior year? (**Free Application for Federal Student Aid (FAFSA)**)
- e. Why save for college? (**Sample responses: The more you save now for college, the less you will need to borrow later. Students with college savings accounts are more likely to go to college.**)
- f. Why go to college? (**Sample responses: The more education you obtain, the more money you are likely to make. The more education you get, the greater the opportunity for employment. The unemployment rate is higher for people without a college education.**)

Extension

- Invite a school counselor or a local college admissions counselor to share information about grants, scholarships, work study opportunities and loans. The class may want to set up a Parent/Student Night with a counselor presenting information on how to fund college or technical school attendance.
- Have students read and complete activities for *My Future, My Way: First Steps Toward College A Workbook for Middle and Junior High School Students* <http://studentaid.ed.gov/sites/default/files/my-future-my-way.pdf>. Then have each student create a poster that illustrates their college plan.

Handout 8.5-1



[Source: Bureau of Labor and Statistics http://www.bls.gov/emp/ep_chart_001.htm]

Technical certificate or diploma (at least one, but less than two, years): an award for completion of a program designed for at least one, but less than two, full academic years. It recognizes completion of competency in an occupational field and may be part of an A.A.S. curriculum or a stand-alone program.

Associate degree (two years or more): a degree granted upon completion of a program that requires at least two, but fewer than four, academic years of postsecondary education. It includes a level of general education necessary for growth as a lifelong learner and is comprised of 60-72 semester credit hours. **Bachelor's degree:** a degree granted upon completion of a program that requires four to five years of full-time college work and carries the title of bachelor.

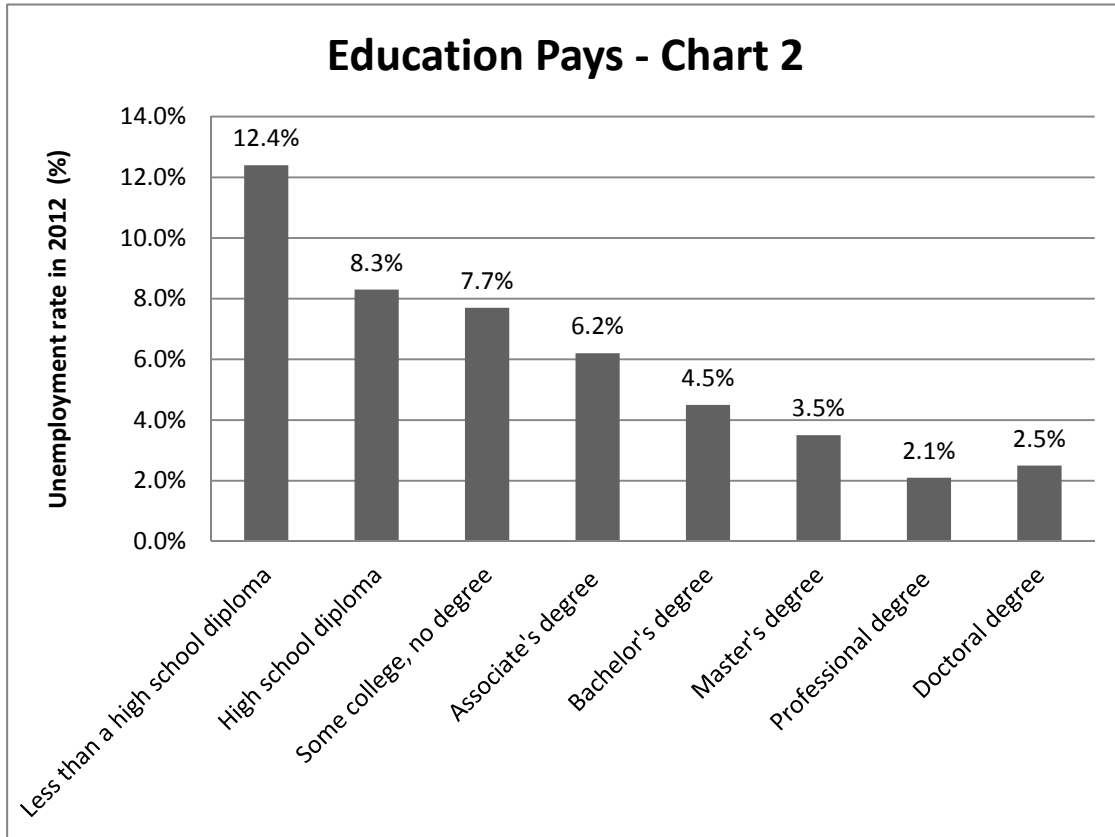
Master's Degree: a degree which requires at least one, but no more than two, full-time equivalent years of study beyond the bachelor's degree.

Professional Degree: a degree awarded upon completion of a program which meets all of these criteria: a) completion of academic requirements to begin practice in the profession; b) at least two years of college work before entering the program; and c) at least six academic years of college work to complete the degree program, including the prior required college work.

Doctoral Degree: a degree awarded upon completion of an educational program at the graduate level which terminates in a doctor's degree.

[Source: <http://www.adhe.edu/divisions/researchandplanning/Pages/degreedefinitions.aspx>]

Handout 8.5-2



[Source: Bureau of Labor and Statistics http://www.bls.gov/emp/ep_chart_001.htm]

Activity 8.5-1

Name _____ Class Period _____

The Cost of a College Education**Notice of Privacy**

You will not be asked to enter any personal information during this lesson. This activity is designed to show how to estimate the cost of college and devise a savings plan.

A. Understand types of aid

- **Grants and scholarships** are often called “gift aid” because they are free money—financial aid that doesn’t have to be repaid. Grants are often need-based, while scholarships are usually merit-based. [Source: <http://studentaid.ed.gov/types/grants-scholarships>]
- **Loan** - borrowed money for college or career school; you must repay your loans, with interest [Source: <http://studentaid.ed.gov/types>]
- **Work study** - a work program through which you earn money to help you pay for school [Source: <http://studentaid.ed.gov/types>]

After January 1 of your senior year of high school, complete the Free Application for Federal Student Aid by going to <http://www.fafsa.ed.gov/>. The office of Federal Student Aid provides grants, loans, and work-study funds for college or career school.

B. Calculate the cost of college

1. What factors affect the cost of college?

You will use the fictional character below to practice calculating the cost of college.

Johnny lives in Alvin, Texas and is a senior at Alvin High School. He plans to get a Bachelor’s degree at the University of Houston. To better plan for college, he would like to know the following.

- What is the cost to attend 4 years at University of Houston?
- What is the cost to attend Alvin Community College for the first 2 years of college then transfer to the University of Houston?
- Is it more affordable to live at home, on campus or off campus?

Help Johnny examine his options by following the steps below.

2. Go to <http://www.collegeforalltexas.com>.
3. Click on *Students*.
4. Select State's Net Price Calculator (NPC) on the right column by clicking on the *Calculate* option.
5. Read the Disclaimer then select *I agree*.
6. Answer questions 1-14 using Johnny's personal information below.

- 1) *Select at least one school you may attend:*
 - i. University of Houston
 - ii. Alvin Community College (In-district tuition - yes)
- 2) *For each school above, where will you live?*
 - i. On campus
 - ii. Live at home
- 3) *What is your age?* 18
- 4) *Are you married?* no
- 5) *Do you have eligible dependents?* no
- 6) *Are you a U.S. citizen (or eligible non-citizen) and a resident of the state of Texas?*
Yes
- 7) *What is your parents' marital status?* Single
- 8) *What was your parents' income in 20__ (use previous year)?* \$38,000
- 9) *Was your parents' income (from the previous question) earned by one or two parents?* One Parent
- 10) *How much did your parents pay in income taxes in 20__ (or previous year)?* \$935
- 11) *What was your income in 20__ (use previous year)?* \$1700
- 12) *How much did you pay in income taxes in 2012:* \$0
- 13) *Including yourself and your parents, how many people will be considered part of your parents' household for 20__-20__ (use upcoming school year)?* 4
- 14) *Excluding your parents, how many people in your parents' household will be in college during 20__-20__ (use upcoming school year)?* 1

7. What is the total cost for each option?

University of Houston _____

Alvin Community College _____

8. What is the estimated net cost for each option?

University of Houston _____

Alvin Community College _____

9. What would be the most affordable option for Johnny?

Notice the State Net Price Calculator estimated the cost for the upcoming year. Assuming Johnny is actually in 8th grade, he will need to estimate the cost for a college education in 4 years. Each year, the cost of living and the cost of tuition increases due to inflation. According to Investopedia, as inflation rises, every dollar will buy a smaller percentage of a good. For example, if the inflation rate is 2%, then a \$1 pack of gum will cost \$1.02 in a year. [<http://www.investopedia.com/terms/i/inflation.asp>] To estimate the cost of college in four years, use **the *bigfuture by The College Board*** website.

10. Go to <https://bigfuture.collegeboard.org/>.

11. Click on the drop down menu *Pay for College* and select *Tools & Calculators*.

12. Click on *College Cost Calculator*. Follow the steps below.

- A. For *Annual college costs, in today's dollars*, enter Johnny's estimated net cost for Alvin Community College. This is the median cost you entered for number 8.
- B. For *College cost inflation rate*, enter the recommended inflation. (Click on the "?" to find the recommended inflation rate.)
- C. For *Expected years of attendance*, enter 2.
- D. For *Percent of costs you plan to cover from savings*, enter any percent. (This number will not affect the cost.)
- E. Years until college, enter 4.
- F. Click on See Results.
- G. How much will college cost for the 2 years at Alvin Community College?

- H. Click on Recalculate. (We will now use the College Cost Calculator to enter Johnny's last two years in college.)
- I. For *Annual college costs, in today's dollars*, enter Johnny's estimated net cost for the University of Houston. This is the median cost you entered for number 8.

- J. For *College cost inflation rate*, enter the recommended inflation. (Click on the “?” to find the recommended inflation rate.)
- K. For *Expected years of attendance*, enter 2.
- L. For *Percent of costs you plan to cover from savings*, enter any percent. (This number will not affect the cost.)
- M. Years until college, enter 6. (If Johnny is in 8th grade, add the 4 years of high school and the 2 years at community college to determine the number of years before Johnny enters the University of Houston.)
- N. Click on See Results.
- O. How much will college cost for the 2 years at the University of Houston?

- P. How much will college cost for the 2 years at Alvin Community College and the two years at the University of Houston? _____

13. Find the estimated cost of a college education for Sabrina based on the profile below.

Sabrina is an 8th grade student in Sweetwater, Texas. She plans to attend Texas State Technical College – West Texas to major in Digital Arts. This is a 2-year certification program. Sabrina will live at home with her parents and 2 younger brothers. Her parents combined income for the previous year was \$96,000. They paid \$5000 for income tax. Sabrina did not earn any money. She is not married. She does not have any dependents. She is a U.S. citizen.

Estimated total cost per year for the upcoming year? _____

What is the estimated grant and/or scholarship assistance that Sabrina might receive?
_____ (range)

Assume Sabrina does not receive financial assistance. Estimated total cost of her 2 year education, including inflation, 4 years from now? _____

C. Devise a periodic savings plan

Students who have a savings account are 4 times more likely to go to college. If the savings account is in their name, they are 7 times more likely to go to college. [Source: Elliott and Beverly in the paper The Role of Savings and Wealth in Reducing “Wilt” Between Expectations And College Attendance (2010), <http://csd.wustl.edu/Publications/Documents/WP10-01.pdf>]

1. What are ways an 8th grader can start saving for college?
2. How much do you think you can save per month?
3. What tradeoffs will you need to meet this goal?
4. Go to <http://www.bankrate.com/>
5. Locate the list of calculators in the middle of the screen.
6. Click on the “Simple savings calculator” located at the bottom of the calculator list.
7. For Initial Amount, enter the amount you think you can save per month.
8. For Monthly Deposit, enter the same as above.
9. For Annual Interest (Compounded), enter Monthly
10. For Interest Rate, enter 1%.
11. For Number of Years, enter 4. (This is the number of years until you graduate.)
12. What is the Final Savings Balance? _____

The current, low interest rates do not produce a significant growth in a savings account. However, any money you can save in a bank savings account now will get you that much closer to paying for a college degree or certification program. A bank savings account keeps the money safe and separate from your checking account, making it more difficult to “dip into” those funds ahead of time. There are other opportunities for savings programs that you can discuss with your school counselor.

D. Plan with Your Parents

Savings accounts are not the only avenue for saving for college. Explore the websites below with your parents to find other opportunities to save and pay for college.

1. Learn what middle school students can do now to prepare for college. Learn the tax advantages of saving and find a link to a clearinghouse of state college savings plans.
<http://studentaid.ed.gov/prepare-for-college/checklists/middle-school>
2. Use the FAFSA4caster to estimate your eligibility for financial assistance.
<http://studentaid.ed.gov/fafsa/estimate>
3. Learn what financial aid is available. - <http://studentaid.ed.gov/>
4. Learn how to find a college, pay for college, and make a plan at bigfuture by The College Board.
<https://bigfuture.collegeboard.org/>
5. Read about other ways to pay for college as well as how to plan for college -
<http://studentaid.ed.gov/sites/default/files/my-future-my-way.pdf>