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National Common Core State Standards (see page 11)

January 2017

Education, Income, and Wealth

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GLOSSARY

Asset: A resource with economic value that an individual, corporation, or country owns with the expectation that it will provide future benefits.

Capital gains: A profit from the sale of financial investments.

Compound interest: Interest computed on the sum of the original principal and accrued interest.

Credit score: A number based on information in a credit report used to indicate a person's credit risk.

Delinquency rate: The number of loans that have delinquent payments relative to the total number of loans.

Financial asset: A contract that states the conditions under which one party (a person or institution) promises to pay another party cash at some point in the future.

Financial investment: Placing money in a savings account or in any number of financial assets, such as stocks, bonds, or mutual funds, with the intention of making a financial gain.

Financial literacy: Having knowledge of financial matters and applying that knowledge to one's life.

Human capital: The knowledge and skills that people obtain through education, experience, and training.

Income: The payment people receive for providing resources in the marketplace.

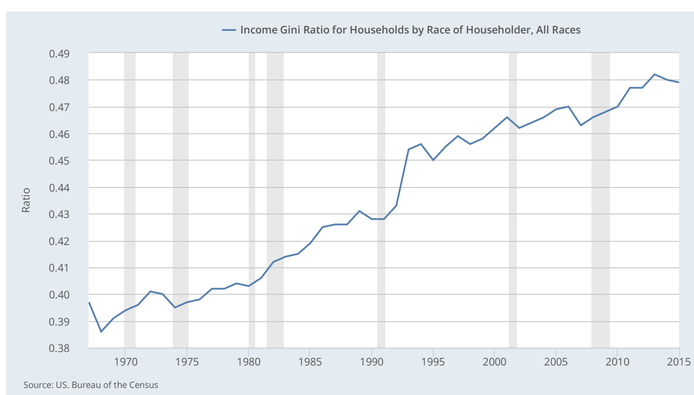
Payday loan: A small, short-term loan that is intended to cover a borrower's expenses until his or her next payday. May also be called a paycheck advance or a payday advance.

Transaction costs: The costs associated with buying or selling a good, service, or financial asset.

> "By some estimates, income and wealth are near their highest levels in the past hundred years, much higher than the average during that time span and probably higher than for much of American history before then."
> —Janet Yellen, Federal Reserve Chair[1]

Americans have among the highest living standards in the world and have enjoyed rising living standards for decades. Median household **income** in the United States in 2015 was $56,516, up from $49,276 in 2010.[2] However, gains in household income have not been evenly distributed across all income groups. Income inequality has been increasing in the United States since the 1970s, peaking in 2013[3] (Figure 1). A 2015 Gallup poll found that 63 percent of Americans feel that the distribution of U.S. money and wealth is unfair.[4] While many factors contribute to income and wealth inequality, the role of education is a key piece of the puzzle.

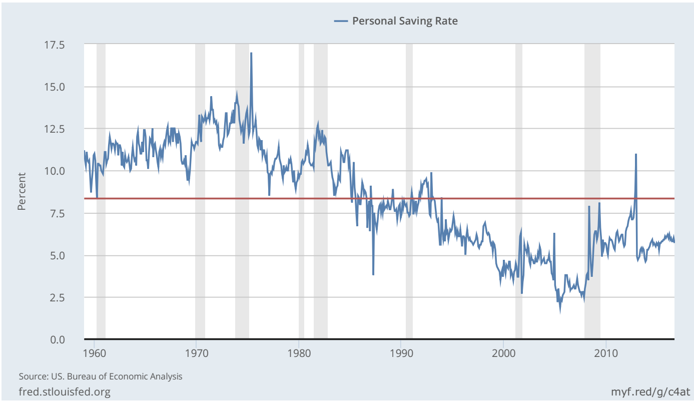
Figure 1
U.S. Income Inequality a Rising Trend



NOTE: The Gini coefficient (also known as the Gini ratio or index) is a common measure of income inequality within a nation. It gauges income inequality on a scale from 0 to 1: The higher the number, the higher the level of inequality. The lowest U.S. value was 0.386 in 1968, and the highest value was 0.482 in 2013. In 2015 the, Gini coefficient was 0.479.

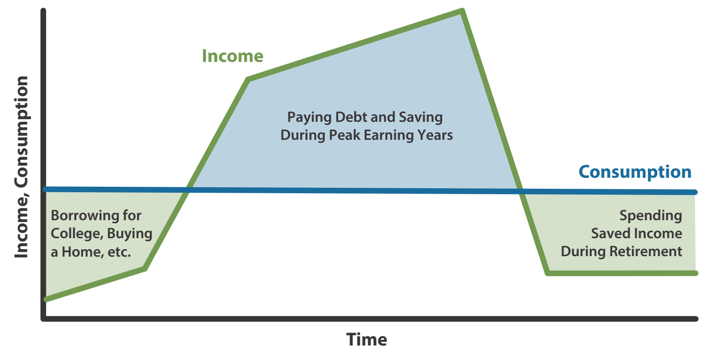
SOURCE: FRED®, Federal Reserve Bank of St. Louis. Accessed November 22, 2016; https://fred.stlouisfed.org/graph/?g=7yKu.

Figure 2
U.S. Personal Saving Rate Over 50 Years



NOTE: The horizontal line indicates the average saving rate over the period.
SOURCE: FRED®, Federal Reserve Bank of St. Louis. Accessed November 22, 2016; https://fred.stlouisfed.org/graph/?g=bQZk.

Figure 3
A Model of Saving and Spending: The Life Cycle Theory of Consumption and Saving



The Basics

When people earn income, they use that income to do three things: pay taxes, buy goods and services (consume), and save. Saving is not spending on current consumption or taxes and involves giving up some current consumption for future consumption. The accumulation of money set aside for future spending and consumption is known as savings. Americans don't save as much as those in other industrialized nations. The U.S. personal saving rate has dropped substantially over the past 50 years (Figure 2). As of September 2016, the U.S. personal saving rate was 5.7 percent, whereas it has historically averaged 8.4 percent (since 1959).[5] By comparison, German households saved 16.7 percent, on average, in 2015.[6]

Saving is an essential component of building wealth. Wealth, also called net worth, is the total value of a person's **assets**, such as liquid assets (cash or something you can easily turn into cash), real estate, businesses, and cars, minus any liabilities (money owed; debt). Saving to build wealth is an important part of financial planning. And debt is not necessarily a bad thing. Because income tends to start low at younger ages, borrowing (taking on debt) allows people to have things now and pay for them over time. In economic terms, this is called smoothing consumption. Income then tends to increase in middle age and decrease when people retire. Economists often use the life cycle theory of consumption and saving to explain this phenomenon. As shown in the model (Figure 3), people tend to borrow to purchase homes, cars, or an education when they are young, pay down debt and save a portion of their income during their peak working and earning years, and finally spend their saved money during retirement. Within this pattern of planned borrowing and saving, the hump-shaped pattern of income (the curved line) allows for smooth consumption (the horizontal line) across the lifecycle. Thus, saving—to build wealth—is essential for a higher quality of life during retirement.

Two similar terms must be differentiated here: *Income* is the payment people receive for providing resources in the marketplace. For example, people often receive paychecks twice a month. You may have heard people discuss the flow of income. Saving involves setting some of the flow of income aside to increase *wealth*. Wealth is the accumulation—or stock—of saved money. Notice that turning the flow of income into a stock of wealth requires saving money. There are several options for saving, including saving in a savings accounts or saving through the purchase of **financial assets**, which is called **financial investment**. People invest in financial assets with the aim of "making money"—they hope to earn interest, dividends, profits, and/or **capital gains** in the future.

Education and Income

The relationship between education and income is strong. Education is often referred to as an investment in **human capital**. People invest in human capital for similar reasons people invest in financial assets, including to make money. In general, those with more education

Family Financial Outcomes Based on Education

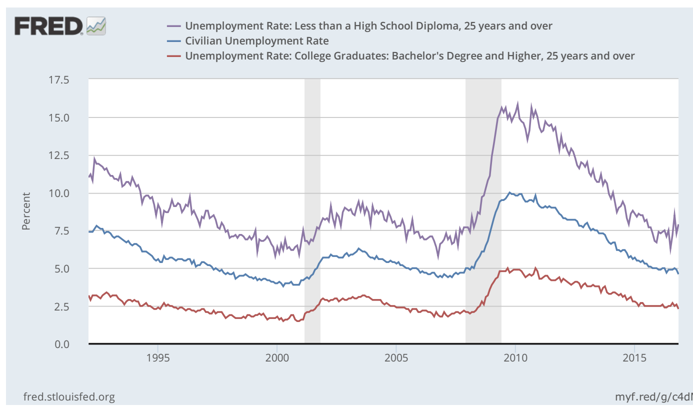
Education*	Percentage of families	Median income (2013)	Median wealth (2013)	Wealth-to-income ratio**	Millionaires (family wealth)
No high school diploma	12%	$22,320	$37,766	1.43	1 in 110
High school diploma	50%	$41,190	$95,072	2.15	1 in 18
Two- or four-year degree	25%	$76,293	$273,488	3.45	1 in 4.6
Advanced degree	13%	$116,265	$689,100	5.58	1 in 2.6

NOTE: *Based on the education level of a family headed by someone 40 years of age or older. **This ratio shows how much wealth each group has per dollar of income. For example, the ratio for families without a high school degree was 1.43, which means that, on average, for every $1 of income there was $1.43 of wealth. The ratio is a measure of how efficient people are at turning income into wealth.

SOURCE: Boshara, Ray; Emmons, William R. and Noeth, Bryan. "The Demographics of Wealth: How Age, Education and Race Separate Thrivers from Strugglers in Today's Economy." Essay No. 2: Education and Wealth, Federal Reserve Bank of St. Louis, May 2015, pp. 4, 5, 9, and 13; https://www.stlouisfed.org/~/media/Files/PDFs/HFS/essays/HFS-Essay-2-2015-Education-and-Wealth.pdf.

earn higher incomes (see the table). The higher income that results from a college degree is sometimes referred to as the "college wage premium." Research shows that this premium has grown over time.[7] In addition, in general, the more skills people have, the more employable they are. As a result, workers with more education have a lower average unemployment rate than those with less education (Figure 4).

Figure 4
Unemployment Declines as Education Increases



NOTE: In November 2016, the overall U.S. unemployment rate was 4.6 percent, but level of education matters. The unemployment rate for college graduates was 2.3 percent, while that for those with less than a high school diploma was 7.9 percent.

SOURCE: FRED®, Federal Reserve Bank of St. Louis. Accessed December 21, 2016; https://fred.stlouisfed.org/graph/?g=8ds7.

Education and Wealth

The relationship between education and wealth is also strong. Of course, earning a higher income makes saving easier, and saving is necessary to build wealth. Those with lower incomes have a flatter (non-humped) income pattern, which makes saving and paying down debt more difficult. But those with more education also tend to make financial decisions that contribute to building wealth.[8] It is important to realize, however, that anyone can follow the financial behaviors that well-educated families tend to practice, such as these:

1) **Have some liquid assets.** Liquid assets can help relieve financial distress during a difficult time without having to sell assets or accumulate debt. Liquid assets include savings accounts, stocks, and bonds.

2) **Diversify.** To diversify means to invest in various financial instruments to reduce risk. In addition to tangible assets such as houses and cars, those with higher levels of education also tend to hold a greater share of their savings in stocks, bonds, and businesses, which tend to provide higher returns (but also more risk of loss).

3) **Keep debt low relative to assets.** Those with low debt relative to assets pay lower interest rates. Those with high debt relative to assets pay higher interest rates, which can make it difficult to save. And, over longer periods, both savings and debt are susceptible to the effects of **compound interest**—which means that savings (or debt) can grow at exponential rates over time.[9]

It is important to realize, however, that the relationship among education, income, and wealth is more complicated than simply more education yielding a higher income and more wealth. Factors such as natural ability

Correlation Is Not Causation

The relationship among education, income, and wealth seems to be fairly strong. Economists, however, are not ready to say that education alone is the cause of higher income (and wealth). In fact, you might have heard the phrase, "correlation does not imply causation." What does this mean? Well, just because two things seem related does not mean that one causes the other. For example, consider ice cream sales. They tend to increase when the rate of sunburn also increases. Does increased ice cream consumption, then, cause an increase in the sunburn rate? Not likely. In fact, a third factor strongly influences both—the weather. Demand for ice cream increases during the hot summer months, when more people tend to be outdoors and thus more likely to get a sunburn.

Likewise, while at least some of the college wage premium is due to the knowledge and skills acquired through education, other factors, such as the following, are surely at play:

- **Natural ability:** Those with high intellectual ability are more likely to complete college, and that ability contributes to success in the job market as well.
- **Assortive mating** ("like marries like"): Highly educated people tend to marry other highly educated people—which can double the wage premium and increase household income.
- **Inheritance:** People with more education are more likely to have parents with accumulated wealth and, thus, are more likely to receive an inheritance.
- **Better health and longer lifespans:** People with more education tend to be healthier, which enables them to work longer (increasing lifetime earnings) and live longer (collecting more lifetime benefits from Social Security and pensions).[1]

[1] Boshara, Ray; Emmons, William R. and Noeth, Bryan. "The Demographics of Wealth: How Age, Education and Race Separate Thrivers from Strugglers in Today's Economy." Essay No. 2: Education and Wealth, May 2015, p. 7; https://www.stlouisfed.org/~/media/Files/PDFs/HFS/essays/HFS-Essay-2-2015-Education-and-Wealth.pdf.

and family background also impact both income and wealth and are not caused by having more education (see the boxed insert).

The Role of Financial Literacy

Research shows that up to half of wealth inequality may be caused by differences in financial literacy.[10] That is, many people do not have the skills or ability to manage their money effectively. As a result, they are more likely to use costly home loan (mortgage) products,[11] pay higher **transaction costs** and fees, and use high-cost borrowing options.[12] High-cost borrowing includes the use of **payday loans** and businesses such as pawn shops and rent-to-own stores.[13] Currently only 20 states require high school students to take a course in economics and only 17 states require a course in personal finance.[14] Research has shown, however, that such education makes a difference: Students in states with financial education requirements have lower loan **delinquency rates** and higher **credit scores** relative to students in states without financial education requirements.[15]

Conclusion

Income and wealth inequality have been on the rise in the United States for decades. Research indicates that the level of education is strongly related to both income and wealth. Households with higher levels of education tend to have more liquid assets to withstand financial storms, diversify their savings (investments), and maintain low levels of debt relative to assets. These financial behaviors are effective strategies for building income into wealth. Because much of wealth building can be tied to financial decisionmaking, it is likely that financial literacy can play a key role in reducing wealth inequality over time. ■

Notes

[1] Yellen, Janet L. "Perspectives on Inequality and Opportunity from the Survey of Consumer Finances." Board of Governors of the Federal Reserve System, 2014; http://www.federalreserve.gov/newsevents/speech/yellen20141017a.htm.

[2] U.S. Bureau of the Census. Median Household Income in the United States [MEHOINUSA646N], retrieved from FRED, Federal Reserve Bank of St. Louis, November 22, 2016; https://fred.stlouisfed.org/graph/?g=580N.

[3] Federal Reserve Bank of St. Louis. "How Has Income Changed over the Years?" *On The Economy* (blog); June 30, 2016; https://www.stlouisfed.org/on-the-economy/2016/june/how-has-income-inequality-changed-years.

[4] Newport, Frank. "Americans Continue to Say U.S. Wealth Distribution Is Unfair." May 4, 2015; *Gallup*; http://www.gallup.com/poll/182987/americans-continue-say-wealth-distribution-unfair.aspx.

[5] U.S. Bureau of Economic Analysis, Personal Saving Rate [PSAVERT], retrieved from FRED®, Federal Reserve Bank of St. Louis, November 22, 2016; https://fred.stlouisfed.org/graph/?g=580A.

[6] Beisemann, Leonie. "A Dash of Data: Spotlight on German Households." *OECD Insights*, February 11, 2016; http://oecdinsights.org/2016/02/11/a-dash-of-data-spotlight-on-german-households/.

[7] Valletta, Rob. "Higher Education, Wages, and Polarization." Federal Reserve Bank of San Francisco *Economic Letter*. January 12, 2015; http://www.frbsf.org/economic-research/publications/economic-letter/2015/january/wages-education-college-labor-earnings-income/.

[8] Boshara, Ray; Emmons, William R. and Noeth, Bryan. "The Demographics of Wealth: How Age, Education and Race Separate Thrivers from Strugglers in Today's Economy." Essay No. 2: Education and Wealth, May 2015; https://www.stlouisfed.org/~/media/Files/PDFs/HFS/essays/HFS-Essay-2-2015-Education-and-Wealth.pdf.

[9] Boshara, Ray; Emmons, William R. and Noeth, Bryan. "The Demographics of Wealth: How Age, Education and Race Separate Thrivers from Strugglers in Today's Economy." Essay No. 2: Education and Wealth, May 2015; https://www.stlouisfed.org/~/media/Files/PDFs/HFS/essays/HFS-Essay-2-2015-Education-and-Wealth.pdf.

[10] Lusardi, Annamaria; Michaud, Pierre-Carl and Mitchell, Olivia S. "Optimal Financial Knowledge and Wealth Inequality." NBER Working Paper 18669, January 2013; http://www.nber.org/papers/w18669.pdf.

[11] Moore, Danna. "Survey of Financial Literacy in Washington State: Knowledge, Behavior, Attitudes, and Experiences." Technical Report 03-39, Washington State University Social and Economic Sciences Research Center, December 2003.

[12] Lusardi, Annamaria and Tufano, Peter. "Debt Literacy, Financial Experiences, and Overindebtedness." NBER Working Paper 14808, March 2009.

[13] Lusardi, Annamaria and de Bassa Scheresberg, Carlo. "Financial Literacy and High-Cost Borrowing in the United States." NBER Working Paper 18969, April 2013.

[14] Council for Economic Education. *Survey of the United States: Economic and Personal Finance Education in Our Nation's Schools, 2016*; http://councilforeconed.org/wp/wp-content/uploads/2016/02/sos-16-final.pdf.

[15] Brown, Alexandra; Collins, J. Michael; Schmeiser, Maximilian and Urban, Carly. "State Mandates Financial Education and the Credit Behavior of Young Adults." Finance and Economic Discussion Series 2014-68, Federal Reserve Board, 2014; https://www.federalrese.gov/pubs/feds/2014/201468/201468pap.pdf.

Name______________________________ **Period**________

Federal Reserve Bank of St. Louis *Page One Economics*®:

"Education, Income, and Wealth"

After reading the article, complete the following:

1. Define the following terms in your own words, then label each as either a "stock" or a "flow."

Term	Definition	Stock or Flow?
Income		
Savings		
Wealth		

2. Researchers look for relationships between variables. A **positive relationship** exists between two variables when an increase in one is associated with an increase in the other. For example, there is a positive relationship between outdoor temperatures and sales of air conditioners—as temperatures rise, so do sales of air conditioners. On the other hand, there is a **negative relationship** between two variables when an increase in one is associated with a decrease in the other. For example, there is a negative relationship between outdoor temperatures and sales of furnaces—as the temperature rises, sales of furnaces tend to fall. State the relationships between the variables in the table below.

Variable 1	Variable 2	Relationship
Outdoor temperatures	*Sales of air conditioners*	***Positive***
Outdoor temperatures	*Sales of furnaces*	***Negative***
Level of education	Income	
Level of education	Unemployment	
Level of education	Wealth	

3. Explain why the relationship between education and income might not be as simple as it first appears.

4. What is necessary to turn income into wealth?

5. Describe how the following financial habits contribute to well-educated families' ability to build wealth over time:
    a. Liquidity
    b. Diversification
    c. Low debt relative to assets

Teacher's Guide

Federal Reserve Bank of St. Louis *Page One Economics*®:
"Education, Income, and Wealth"

After reading the article, complete the following:

1. Define the following terms in your own words, then label each as either a "stock" or a "flow."

Term	Definition	Stock or Flow?
Income	The payment people receive for providing resources in the marketplace.	Flow
Savings	The accumulation of saved money set aside for future spending and consumption.	Stock
Wealth	Also called net worth, it is the total value of a person's **assets**, such as **liquid assets**, real estate, businesses, and cars, minus any liabilities.	Stock

2. Researchers look for relationships between variables. A **positive relationship** exists between two variables when an increase in one is associated with an increase in the other. For example, there is a positive relationship between outdoor temperatures and sales of air conditioners—as temperatures rise, so do sales of air conditioners. On the other hand, there is a **negative relationship** between two variables when an increase in one is associated with a decrease in the other. For example, there is a negative relationship between outdoor temperatures and sales of furnaces—as the temperature rises, sales of furnaces tend to fall. State the relationships between the variables in the table below.

Variable 1	Variable 2	Relationship
Outdoor temperatures	*Sales of air conditioners*	***Positive***
Outdoor temperatures	*Sales of furnaces*	***Negative***
Level of education	Income	Positive
Level of education	Unemployment	Negative
Level of education	Wealth	Positive

3. Explain why the relationship between education and income might not be as simple as it first appears.

   Correlation is not causation. Other factors beyond education, such as natural ability, assortive mating, inheritances, and better health, could cause an increase in income.

4. What is necessary to turn income into wealth?

   Saving money

5. Describe how the following financial habits contribute to well-educated families' ability to build wealth over time:

   a. Liquidity

      Those with liquid assets can better deal with financial distress with their own money without having to sell off assets or accumulate high-interest debt (borrow).

   b. Diversification

      Those with investments in various financial instruments, both tangible (houses and cars) and intangible (stocks, bonds, and businesses), reduce their risk and tend to earn higher returns.

   c. Low debt relative to assets

      Those with low debt relative to assets pay lower interest rates. Those with high debt relative to assets pay higher interest rates, which can make it difficult to save. And, over longer periods, both savings and debt are susceptible to the effects of compound interest—which means that savings (or debt) can grow at exponential rates over time.

Additional Resources

Econ Lowdown® of the Federal Reserve Bank of St. Louis provides numerous economic education resources for teachers to use with their students. These include lesson plans, online modules, interactive whiteboard lessons, podcasts, and videos. These free resources are available at https://www.stlouisfed.org/education.

Use the following classroom lessons to help teach about topics covered in this issue of *Page One Economics*:

Making Personal Finance Decisions Curriculum Unit

Lesson 1A: The Wealth Game—Factors for Success

Students play "The Wealth Game" (based on "Market Exchange and Wealth Distribution: A Classroom Simulation" by Robert B. Williams, *Journal of Economic Education*, Fall 1993). Students are given an initial set of colored beads with defined values that determine their wealth in one of three categories: poor, middle class, or rich. Their task is to increase the value of their wealth by trading their beads with other students. Individual student outcomes of the game are discussed in terms of the four primary determinants of wealth: natural abilities, effort, motivation, and luck.

https://www.stlouisfed.org/~/media/Education/Curriculum/pdf/Making-Personal-Finance-Decisions-Lesson-1A.pdf

Lesson 2A: The Inventory Game—Net Worth and Cash Flow

Students physically move into and out of a "wallet" (a specified area in the room) and note the change in the number of students in the wallet over time, as well as the inflow and outflow rates. This demonstration is then related to the stock (an amount at a point in time) concepts of assets and liabilities and the flow (an amount per unit of time) concepts of income and expenses. Students use this distinction to determine net worth, cash flow, and the relationship between them.

https://www.stlouisfed.org/~/media/Education/Curriculum/pdf/Making-Personal-Finance-Decisions-Lesson-2A.pdf

Lesson 3A: Investing in Yourself

Students perform calculations—with half the class given information to make the task easier—to demonstrate the importance of human capital in increasing a person's productivity. They then look at the wages for various occupations and consider the role of human capital in explaining the differences in those wages.

https://www.stlouisfed.org/~/media/Education/Curriculum/pdf/Making-Personal-Finance-Decisions-Lesson-3A.pdf

Standards and Benchmarks

Common Core State Standards

Grades 6-12 Literacy in History/Social Studies, Science, and Technical Subjects

History/Social Studies

- **Key Ideas and Details**

  CCSS.EL-LITERACY.RH.11-12.1: Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

  CCSS.EL-LITERACY.RH.11-12.2: Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

- **Craft and Structure**

  CCSS.EL-LITERACY.RH.11-12.4: Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).

National Standards for Financial Literacy

Standard 1: Earning Income. Income for most people is determined by the market value of their labor, paid as wages and salaries. People can increase their income and job opportunities by choosing to acquire more education, work experience, and job skills. The decision to undertake an activity that increases income or job opportunities is affected by the expected benefits and costs of such an activity. Income also is obtained from other sources such as interest, rents, capital gains, dividends, and profits.

Grade 8

4. People with less education and fewer job skills tend to earn lower incomes than people with more education and greater job skills.

Standard 3: Saving. Saving is the part of income that people choose to set aside for future uses. People save for different reasons during the course of their lives. People make different choices about how they save and how much they save. Time, interest rates, and inflation affect the value of savings.

Grade 8

6. Compound interest is the interest that is earned not only on the principal but also on the interest already earned.

Standard 4: Using Credit. Credit allows people to purchase goods and services that they can use today and pay for those goods and services in the future with interest. People choose among different credit options that have different costs. Lenders approve or deny applications for loans based on an evaluation of the borrower's past credit history and expected ability to pay in the future. Higher-risk borrowers are charged higher interest rates; lower-risk borrowers are charged lower interest rates.

Grade 8

5. Various financial institutions and businesses make consumer loans and may charge different rates of interest.
7. Lenders charge different interest rates based on the risk of nonpayment by borrowers. The higher the risk of nonpayment, the higher the interest rate charged. The lower the risk of nonpayment, the lower the interest rate charged.

Standard 5: Financial Investing. Financial investment is the purchase of financial assets to increase income or wealth in the future. Investors must choose among investments that have different risks and expected rates of return. Investments with higher expected rates of return tend to have greater risk. Diversification of investment among a number of choices can lower investment risk.

Grade 8

1. Financial assets include a wide variety of financial instruments including bank deposits, stocks, bonds, and mutual funds. Real estate and commodities are also often viewed as financial assets.

Grade 12

7. Diversification by investing in different types of financial assets can lower investment risk.