# TEST OF FINANCIAL KNOWLEDGE: EXAMINER'S MANUAL

William B. Walstad

Ken Rebeck

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## ABOUT THE AUTHORS

**William B. Walstad** is Professor of Economics at the University of Nebraska–Lincoln.

**Ken Rebeck** is Professor of Economics at St. Cloud State University (Minnesota).

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## FOREWORD

The Council for Economic Education (CEE) is deeply committed to providing the highest quality instructional products for teachers to use in their classrooms to give their students the educational tools for understanding personal finance. Providing teachers with up-to-date assessments are part of the total package. The *Test of Financial Knowledge*: *Examiner's Manual* offers teachers and test administrators the essential information they need in order to test the understanding of upper middle school or lower high school students (eighth and ninth graders) on personal finance and compare the results with other students across the nation.

The *Test of Financial Knowledge* is one of three CEE standardized assessments for personal finance. The other two assessments are the *Test of Financial Literacy* for upper high school students (eleventh and twelfth graders) and the *Basic Finance Test* for upper elementary school or lower middle school students (fifth and sixth graders). All three assessments are available online for teacher use with students. The CEE also has a test bank of questions for teachers to use to construct their own tests for diagnostic purposes. Information about the website can be found at: http://www.councilforeconed.org/resource/online-assessment-center/

The CEE is truly indebted to many individuals who shared their multitude of talent and their precious time to write, review, and revise items for the *Test of Financial Knowledge* that are based on the content specifications in the CEE's *National Standards for Financial Literacy* (2013). Special thanks go to William Walstad for directing the project for the CEE and undertaking the test development work with his associate director, Ken Rebeck. Members of the National Advisory Committee (acknowledged by name and institution on page 3 and in Appendix 1) also provided invaluable assistance in preparing and revising test items for the test drafts.

The CEE gratefully acknowledges the generous funding and support of PwC for making this accomplishment possible.

Council for Economic Education

# TEST OF FINANCIAL KNOWLEDGE: EXAMINER'S MANUAL

The *Test of Financial Knowledge* (TFK) is a standardized test for measuring the achievement of upper middle school or lower high school students in units or courses that emphasize content and instruction in personal finance. The test should be a valuable tool for assessing what students know about the basics of personal finance and related concepts in economics or business.

The *TFK Examiner's Manual* provides test users with the information they need to administer the test and interpret the results. It has three major objectives. First, it gives test users a detailed description of the test content along with item rationales so they can understand how the test covers important content specified in national standards for personal finance. Second, it explains how the test should be administered to students and discusses the possible uses of the test for assessment and instruction. Third, it presents statistical evidence on the reliability and validity of the test as a measure achievement in personal finance that would typically be taught at the upper middle school or lower high school levels.

## 1. TEST DEVELOPMENT

In 2013, the Council for Economic Education (CEE) published the *National Standards for Financial Literacy* (hereafter *FL Standards*). This document describes six major content areas for personal finance instruction in the nation's schools: (1) earning an income; (2) buying goods and services; (3) saving; (4) using credit; (5) financial investing; and, (6) protecting and insuring financial assets. Associated with these six standards are 144 benchmarks that explain in more detail what students should know about the standards and how to use this knowledge by the end of the fourth, eighth, and twelfth grades.

At the time of publication of the *FL Standards*, no standardized tests were available to assess student understanding of these standards. The CEE therefore sought funding for a project to create three tests, one for use in high school, another for middle school, and the third for elementary school.

The CEE secured funding from PwC in summer 2014 for the development of the three standardized tests in personal finance. The PwC support for the CEE also included funding for the development of an online assessment center to house all the CEE standardized tests in both economics and personal finance. In addition, a test bank of questions from CEE publications in personal finance and economics would be added to the online assessment center so that teachers could create their own classroom tests for use with their students. This *Examiner's Manual* only describes the test development phase of the project and primarily focuses on the TFK.

**Test Specifications.** Several decisions were made prior to or during test development that affected the content and features of the three new assessments. First, each test was designed to assess student understanding of the materials contained in the *FL Standards*. The specific content for test questions would be drawn from the benchmarks for each standard, but sorted by grade level to construct the three new tests. The TFK content would emphasize what students should know by eighth grade as described in the 49 eighth grade benchmarks. The high school test, called the *Test of Financial Literacy* (TFL), would assess the 63 twelfth grade benchmarks. The elementary test, titled the *Basic Finance Test* (BFT), would use the 32 fourth grade benchmarks for test content.

Second, the design of the three personal finance tests would be similar to the CEE's three standardized tests in economics. These tests were prepared to assess standards and benchmarks in the CEE's *Voluntary National Content Standards in Economics* (CEE 2010). They include the high school *Test of Economic Literacy* (TEL), the middle school *Test of Economic Knowledge* (TEK), and elementary school *Basic Economics Test* (BET). The new tests also would complement the high school, middle school, and elementary school assessment instruments for the CEE's *Financial Fitness for Life* (FFFL) curriculum. The content for the new tests, however, would be based on *FL*

*Standards* and thus would not be tied to an assessment of any particular curricula.

Third, for norming or test data purposes the TFL, TFK, and BFT would be administered to samples of students at several grade levels to cover the ranges for the major transition points in precollege education as was the case with the three standardized economics test (TEL, TEK, and BET). The TFL would assess student understanding at or near the end of high school (eleventh and twelfth grades). The TFK would be used for measuring student achievement at the end of middle school or the beginning of high school (eighth and ninth grades). The BFT would test students at the end of elementary school or the beginning of middle school (fifth and sixth grades).

Fourth, a multiple-choice format would be used for each instrument so a test would sample a wider range of the content domain as specified in the benchmarks for the *FL Standards*. This decision was important because it permitted a sufficient number of test items to be distributed across each of the six standards and the many benchmarks at each grade level. This format would make the most efficient use of the available resources for assessments, and it was consistent with the practice adopted for the three standardized economics tests (TEL, TEK, and BET).

Fifth, each test was to be constructed as an achievement test and not a speed test. The number of multiple-choice questions included on each one would be limited to what most students could reasonably be expected to answer in about a 45-minute class period. This time period was well within the time length of most classes and would allow ample opportunity for teachers to make arrangement within a classroom for giving test instructions and administering the test. Most questions on each instrument would not be overly complex so that most test items could be answered in less than a minute, on average. More time, however, would be allocated for completion of the elementary test because some elementary students may have more difficulty with reading. Past experience with the three standardized economics tests indicated that most students had sufficient time to answer the 45 TEL items, the 40 TEK items, and the 30 BET items. Accordingly, the acceptable ranges for the number of items on a test were set at 45 to 50 items for the TFL, 40 to 45 for the TFK, and 30 to 35 for the BFT.

**Personnel.** William Walstad, Professor of Economics at the University of Nebraska-Lincoln and Editor of the *Journal of Economic Education*, was the director of the test project. His responsibility was to select the item writers, conduct meetings, develop test items, prepare the final tests, oversee statistical analysis, and write an examiner's manual for each test. Ken Rebeck, Professor of Economics at St. Cloud State University, was the associate director for the project. His job was to work with Walstad on the item development, preparation of the final tests, conduct the statistical analysis, and co-author an examiner's manual for each test.

Both Walstad and Rebeck have extensive experience in the collaborative development of national tests in economics and personal finance. Their past work with personal finance assessments included preparation of three *FFFL* tests. They also directed projects to prepare new editions of the TEL, TEK, and BET, and co-authored examiner's manuals for each of those tests. In addition, they had conducted a research study on the effectiveness of a high school curriculum in personal finance (*Financing Your Future*) (Walstad, Rebeck, and MacDonald 2010). Walstad served on the writing committee for the *FL Standards.* Rebeck has made many presentations at teacher workshops on personal finance and economics through the Minnesota Council on Economic Education.

The CEE representative for the project was Kevin Gotchet, a director of programs at the CEE. He previously worked on the CEE's Excellence in Economic Education project, which was funded by a multi-year grant from the U.S. Department of Education. Gotchet worked with Walstad on selection of the personnel for the project, managed the budget, helped organize meetings, arranged for data collection though the CEE's online assessment center, and monitored progress of the project.

In summer 2014, Walstad and Gotchet created a National Advisory Committee (NAC) for the test project that included five independent members, who together had expertise in classroom instruction in personal finance and economics, had conducted precollege teacher training in personal finance and economics, and were experienced in test-item writing. William Bosshardt, Associate Professor of Economics and Director of the Center for Economic Education at Florida Atlantic University, has many years of experience in providing training in economics and personal finance for precollege teachers. He also had served on test development committees for the TEL, TEK, and BET and was the project director in charge of writing the CEE's *FL Standards*. Elizabeth Breitbach is Clinical Assistant Professor of Economics at the University of South Carolina. Her research and publications focus on the effect of financial literacy on banking participation. Brenda Cude is a professor in the Department of Financial Planning, Housing, and Consumer Economics at the University of Georgia. She teaches courses for undergraduates on personal finance and conducts research on the financial literacy of college students. Andrew Hill is an economic education advisor at the Philadelphia Federal Reserve Bank. He also is a team leader for a teacher training program in the Philadelphia area for a high school course in personal finance (*Keys to Financial Success*) and was a writer for the *FL Standards*. Bonnie Meszaros, Associate Director at the Center for Economic Education and Entrepreneurship at the University of Delaware, provides training in economics and personal finance to area teachers. She has served on test development committees for the BET and TEK and was a writer for the *FL Standards.* Each member of the NAC, therefore, had valuable work experience and knowledge to contribute to test development.

**Item Writing.** The first meeting of the NAC with the project directors was held for two days in mid-August, 2014 in Atlanta, Georgia. Each NAC member and the two directors were responsible for supplying about 40–50 test items for review at the meeting. The items could be new or drawn from various sources, such as CEE-published curricula in personal finance or non-CEE instructional material. Items from CEE or other source material, however, would only serve as an "example" that could be used for writing a new item on the same content. The project requirement for any item included on one of the tests was that the item be new. The different stages of review and editing of items throughout test development would ensure that requirement was met for all test items.

All of the 335 items submitted for review by the NAC members and the two project directors were coded by standard and benchmark using the CEE's *FL Standards*. The coding permitted items to be sorted to identify content gaps where there were no test items and where new ones needed to be written. The pool of items also was rated using four categories: (1) accept as is; (2) requires minor revision; (3) requires major revision; and (4) reject and do not use. Most items received a 2 or 3 rating from the NAC and project directors. The group made changes to items that could be easily revised and left other items for revision after the meeting. Some new items also were written at the meeting.

The final set of items selected for further revision were then assigned to the group members to work on at their home locations. For each standard, one committee member was assigned primary responsibility for revising items for that standard and filling content gaps with a few new items. A second committee member would then review the revised items from the first committee member and offer further comments and changes. At the completion of the revision process, the revised items from all standards were compiled by the project director for further review.

The second NAC meeting with the two project directors was held in Dallas in October 2014. The primary purpose for this day-long meeting was to review and revise all items in the question pool. Items that could be changed easily were revised by the group at the meeting. Other items that required more work were assigned to committee members to change after the meeting and then be sent to the project director and associate director for further review.

In November, the revised questions from the Dallas meeting and the follow-up work at home sites were compiled by the project director. The total of 318 possible items included 53 for standard 1, 38 for standard 2, 42 for standard 3, 69 for standard 4, 60 for standard 5, and 56 for standard 6. The set of items were then rated by the NAC and the project directors using the 1–4 rating scale previously described.

The project director and associate director met in Sioux Falls, South Dakota, on January 16–17, 2015, to prepare a draft of each test. For this drafting process, the 318 possible items were sorted by standard, and then by grade level and benchmark within a standard. The project directors then selected what they thought were the best items for each test based on the grade level of items, the quality of the items, the 1–4 ratings from the review process, and the distribution of test content across benchmarks. This work produced initial drafts of the TFL, TFK, and BFT.

After the meeting, the project directors continued to refine each draft. Nine new items were written and added to the TFL to cover missing benchmarks or improve the content distribution across standards. Ten new items were written and added to the TFK and nine new items were written and added to the BFT for similar reasons.

Further refinements were then made to each draft. The length of the item options were ordered from shortest to longest, or if necessary from longest to shortest, to eliminate any clues to a correct answer based on option length. To the extent possible, the correct answer was randomized across the four options (A, B, C, or D) so that each one was about equally likely to be the correct answer. The names for individuals in item stems and the four options were split about equally between males and females. Names also were updated to use the most popular ones as found in recent birth lists of names. Each item was carefully checked for correct grammar and spelling. Each test also was administered to three students for review, one for each grade level, to get further feedback and to check on the appropriateness of items.

In February 2015, a near-final draft of each test was sent to members of the NAC for their last review and comment. The main request to the NAC was to make sure that there was only one best or correct answer to each test item. The review by the NAC uncovered a few minor wording problems with questions that were corrected, but found no problem with the correct answers.

In late February 2015 each test was sent by the project director to the CEE for entry into the CEE Online Assessment Center. In February 2016 the accumulated data from the online testing over a year was used to identify five TFL and five TFK items that appeared too hard or did not capture knowledge of the underlying benchmarks as well as items on the rest of the tests. The final result of the revision work was a 45-item TFL covering 45 of the 63 twelfth-grade benchmarks (71 percent of benchmarks), a 40-item TFK covering 39 of the 49 eighth-grade benchmarks (80 percent of benchmarks), and a 35-item BFT covering all of the 32 fourth-grade benchmarks (100 percent of benchmarks).

The last section of this *Examiner's Manual* presents the 40 test items for the TFK and gives a written rationale for the correct answer. As will be discussed in the next section, there was good coverage of the personal finance concepts to establish the content validity of the TFK.

## 2. THE CONTENT AND STRUCTURE OF THE TEST

The *FL Standards* provides a description of what experts in personal finance and economics consider to be core content in personal finance that should be taught by the eighth grade. Table 1 shows the standards and the distribution of items across the eighth grade benchmarks for the TFK.

## TABLE 1. *TFK* Standards and Benchmarks

| | |
|---|---|
| **Standard 1: Earning Income** | |
| People make choices to protect themselves from the financial risk of lost income, assets, health, or identity. They can choose to accept risk, reduce risk, or transfer the risk to others. Insurance allows people to transfer risk by paying a fee now to avoid the possibility of a larger loss later. The price of insurance is influenced by an individual's behavior. | **8 items or 20 %** |
| **Income Benchmarks: Grade 8** | **Item No.** |
| 1. Careers are based on working at jobs in the same occupation or profession for many years. Different careers require different education and training. | **1** |
| 2. People make many decisions over a lifetime about their education, jobs, and careers that affect their incomes and job opportunities. | |
| 3. Getting more education and learning new job skills can increase a person's human capital and productivity. | **2** |
| 4. People with less education and fewer job skills tend to earn lower incomes than people with more education and greater job skills. | **3** |
| 5. Investment in education and training generally has a positive rate of return in terms of the income that people earn over a lifetime. | **4** |
| 6. Education, training, and development of job skills have opportunity costs in the form of time, effort, and money. | |
| 7. People often use a portion of their savings to help themselves or their family members build human capital through education or job training. | **5** |
| 8. Entrepreneurs take the risk of starting a business because they expect to earn profits as their reward, despite the fact that many new businesses can and do fail. Some entrepreneurs gain satisfaction from working for themselves. | **6** |
| 9. Interest, dividends, and capital appreciation (gains) are forms of income earned from financial investments. | **7** |
| 10. Some people receive income support from governments because they have low incomes or qualify in other ways for government assistance. | |
| 11. Social Security is a government program that taxes the income of current workers to provide retirement, disability, and survivor benefits for workers or their dependents. | **8** |
| **Standard 2: Buying Goods and Services** | |
| People cannot buy or make all the goods and services they want; as a result, people choose to buy some goods and services and not buy others. People can improve their economic well-being by making informed spending decisions, which entails collecting information, planning, and budgeting. | **6 items or 15%** |
| **Buying Standard Benchmarks: Grade 8** | **Item No.** |
| 1. When making choices about what to buy, consumers may choose to gather information from a variety of sources. The quality and usefulness of information provided by sources can vary greatly from source to source. While many sources provide valuable information, some sources provide information that is deliberately misleading. | **9** |
| 2. By understanding a source's incentives in providing information about a good or service, a consumer can better assess the quality and usefulness of the information. | **10** |
| 3. People choose from a variety of payment methods in order to buy goods and services. | **11** |
| 4. Choosing a payment method entails weighing the costs and benefits of the different payment options. | **12** |
| 5. A budget includes fixed and variable expenses, as well as income, saving, and taxes. | **13** |
| 6. People may revise their budget based on unplanned expenses and changes in income. | **14** |
| **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. | **8 items or 20%** |

## TABLE 1. *TFK* Standards and Benchmarks

| **Saving Benchmarks: Grade 8** | **Item No.** |
|---|---|
| 1. Banks and other financial institutions loan funds received from depositors to borrowers. Part of the interest received from these loans is used to pay interest to depositors for the use of their money. | **15** |
| 2. For the saver, an interest rate is the price a financial institution pays for using a saver's money and is normally expressed as a percentage of the amount saved. | **16** |
| 3. Interest rates paid on savings and charged on loans, like all prices, are determined in a market. | **17** |
| 4. When interest rates increase, people earn more on their savings, and their savings grow more quickly. | **18** |
| 5. Principal is the initial amount of money upon which interest is paid. | **29** |
| 6. Compound interest is the interest that is earned not only on the principal but also on the interest already earned. | **20** |
| 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. | **21** |
| 8. Different people save money for different reasons, including large purchases (such as higher education, autos, and homes), retirement, and unexpected events. People's choices about how much to save and for what to save change considerably over the course of their lives and are based on their tastes and preferences. | |
| 9. To assure savers that their deposits are safe from bank failures, federal agencies guarantee depositors' savings in most commercial banks, savings banks, and savings associations up to a set limit. | **22** |
| **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. | **6 items or 15%** |
| **Using Credit Benchmarks-Grade 8** | **Item No.** |
| 1. People who apply for loans are told what the interest rate on the loan will be. An interest rate is the price of using someone else's money expressed as a percent of the loan principal. | |
| 2. The longer the repayment period on a loan and the higher the interest rate on the loan, the larger is the total amount of interest charged on a loan. | **23** |
| 3. A credit card purchase is a loan from the financial institution that issued the card. Credit card interest rates tend to be higher than rates for other loans. In addition, financial institutions may charge significant fees related to a credit card and its use. | **24** |
| 4. Borrowers who use credit cards for purchases and who do not pay the full balance when it is due pay much higher costs for their purchases because interest is charged monthly. A credit card user can avoid interest charges by paying the entire balance within the grace period specified by the financial institution. | **25** |
| 5. Various financial institutions and businesses make consumer loans and may charge different rates of interest. | **26** |
| 6. Interest rates on loans fluctuate based on changes in the market for loans. | **27** |
| 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. | **28** |
| 8. People can use credit to finance investments in education and housing. The benefits of using credit in this way are spread out over a period of time and may be large. The large costs of acquiring the education or housing are spread out over time as well. The benefits of using credit to make daily purchases of food or clothing are short-lived and do not accumulate over time. | |

## TABLE 1. *TFK* Standards and Benchmarks

| | |
|---|---|
| **Standard 5: Financial Investing**<br>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. | **6 items or 15%** |
| **Financial Investing: Benchmarks: Grade 8** | **Item No.** |
| 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. | **29** |
| 2. Interest is received from money deposited in bank accounts. It is also received by owning a corporate or government bond or making a loan. | **30** |
| 3. When people buy corporate stock, they are purchasing ownership shares in a business. If the business is profitable, they will expect to receive income in the form of dividends and/or from the increase in the stock's value. The increase in the value of an asset (like a stock) is called a capital gain. If the business is not profitable, investors could lose the money they have invested. | **31** |
| 4. The price of a financial asset is determined by the interaction of buyers and sellers in a financial market. | **32** |
| 5. The rate of return on financial investments consists of interest payments, dividends, and capital appreciation expressed as a percentage of the amount invested. | |
| 6. Financial risk means that a financial investment has a range of possible returns, including possibilities of actual losses. Higher-risk investments have a wider range of possible returns. | **33** |
| 7. The rate of return earned from investments will vary according to the amount of risk. In general, a trade-off exists between the security of an investment and its expected rate of return. | **34** |
| **Standard 6: Protecting and Insuring**<br>People make choices to protect themselves from the financial risk of lost income, assets, health, or identity. They can choose to accept risk, reduce risk, or transfer the risk to others. Insurance allows people to transfer risk by paying a fee now to avoid the possibility of a larger loss later. The price of insurance is influenced by an individual's behavior. | **6 items or 15%** |
| **Protecting and Insuring Benchmarks: Grade 8** | **Item No.** |
| 1. Personal financial risk exists when unexpected events can damage health, income, property, wealth, or future opportunities. | |
| 2. Insurance is a product that allows people to pay a fee (called a premium) now to transfer the costs of a potential loss to a third party. | **35** |
| 3. Insurance companies analyze the outcomes of individuals who face similar types of risk to create insurance contracts (policies). By collecting a relatively small amount of money, called a premium, from each policyholder on a regular basis, the company creates a pool of funds to compensate those individuals who experience a large loss. | **36** |
| 4. Self-insurance is when an individual accepts a risk and saves money on a regular basis to cover a potential loss. | **37** |
| 5. Insurance policies that guarantee higher levels of payment in the event of a loss (coverage) have higher prices. | **38, 39** |
| 6. Insurance companies charge higher premiums to cover higher-risk individuals and events because the risk of monetary loss is greater for these individuals and events. | **40** |
| 7. Individuals can choose to accept some risk, but also take steps to avoid or reduce risk, or transfer risk to others through the purchase of insurance. Each option has different costs and benefits. | |
| 8. Social networking sites and other online activity can make individuals vulnerable to harm caused by identity theft or misuse of their personal information. | |

Several points should be remembered when evaluating the coverage of the test across personal finance standards in Table 1. First, the TFK is not designed as a test of each standard or benchmark, but of overall understanding of personal finance. There are too few test items per standard (6 to 8) to make a sound judgment about mastery of a standard. It also would be inappropriate to evaluate student achievement on a benchmark because there is only one item per benchmark. The test, however, does provide a broad and representative sampling of the content domain across all standards in personal finance and thus can be used to assess overall student achievement in personal finance.

Second, the distribution in Table 1 reflects the test developers' best judgment of the association of an item with a particular benchmark. This classification of a test item by benchmark, however, may not be exact because content in the stem and the alternative options of an item might be related to content in several benchmarks. The allocation of an item to a particular benchmark as shown in Table 1 reflects what the test developers consider to be an item's primary relationship to a benchmark even if there are secondary associations.

Third, the distribution of test items reflects the test developers' interpretation of what *ought* to be included in a general test of personal finance for upper middle school or lower high school students (eighth or ninth graders) based on the content outlined by the *FL Standards*. The number of items by standard were largely determined by the number of eighth grade benchmarks for a standard. For example, the standards "Earning Income" and "Saving" had more benchmarks than the other standards, and therefore had more items covering these two standards.

Fourth, test items can be classified by cognitive level. The problem with using a complex classification scheme with five or six cognitive levels to rate items is that the ratings can be somewhat arbitrary. Such fine distinctions also may not be of much value for a test in personal finance which focuses on knowledge and application. Thus, the issue of cognitive level can be addressed for the TFK by sorting items into the two major categories, one at the lower level (knowledge or comprehension) and one at a higher level (application that might include analysis and evaluation). A review of the TFK shows about 15 knowledge or comprehension items (7, 8, 9, 10, 11, 13, 15, 16, 19, 20, 24, 27, 29, 31, and 39) and 25 application items. Thus about 38 percent of items are knowledge or comprehension and 62 percent are application.

## 3. USES OF THE TEST

### To Measure Student Understanding

The TFK was designed primarily for assessing and improving the quality of upper middle or lower high school teaching of personal finance. There are several ways to use it for this objective.

#### AS A PRETEST

The TFK can be administered as a pretest at the outset of a unit of instruction in personal finance or at the beginning of a semester to assess the students' prior knowledge of personal finance concepts. This pretest use is important to middle school and high school teachers because some school districts provide some instruction in personal finance in earlier grade levels. If this prior instruction in personal finance has been effective, many students may have already acquired some knowledge or understanding of the subject..

To determine areas of students' relative strength or weakness in personal finance, teachers can compare the scores of their students with the scores for each test item provided in this manual. Small differences between scores reported for a given question in this manual and those obtained in the classroom should not be emphasized.

Certain kinds of comparisons may prove useful. For instance, if the average score of students on the test is as good as or better than these published scores, significantly lower scores on selected items may indicate areas of personal finance the teacher may wish to emphasize in subsequent teaching or classroom work.

The manual also provides brief rationales that explain the correct answer for each question and why other answers are incorrect. Teachers should read those rationales before deciding whether the particular concept tested deserves greater attention in the classroom. If still in doubt, teachers should refer to the relevant benchmarks in the *FL Standards* (see code listed with each item rationale) as listed in Table 1 or consult the *FL Standards* publication.

### AS A POSTTEST

The TFK can be used at the end of a semester or unit of instruction to measure the extent to which understanding has improved. Posttest scores for a given group of students may be compared to their pretest scores and to the published scores for students in the tables presented later in this manual. A pretest and posttest use of the TFK should help to provide evidence of the effect of classroom instruction in improving knowledge and understanding of personal finance.

When used as a posttest, the TFK should be administered early enough to allow one or two class periods to be used for discussion of test scores and results. The teacher can take advantage of the students' natural interest in their relative standing in the class and in relation to the published results in this manual.

**Item Discussion.** When students cannot answer a question or find it most difficult to select the correct answer, they are often interested in what the correct answer is and why it is correct. Students' incorrect responses tend to be concentrated on specific topics. It is on those topics that review time can be spent most profitably, since the clustering of errors is an indication of confusion about the topic. The teacher may wish to read the rationale for each correct answer from the Item Rationale given in a later section of the manual or refer the relevant benchmarks in the *FL Standards*. Discussion can then continue between students and teacher, using educational materials on personal finance for further information.

Caution should be used in reading or paraphrasing item answers from the item rationale, particularly if the test is used on a pre- and posttest basis. After posttesting, reading the correct response and its rationale should cause no harm and is likely to be effective as a teaching/learning activity. This practice, however, should not be followed after *pretesting* if a subsequent posttest is to be administered. The reason is that the same items would be used both as a pretest and a posttest, and students would know the correct answers based on the pretest discussion of items, thus invalidating a pre- and posttest comparison.

### DURING A COURSE

A third use of the TFK is to administer it midway during a course or unit of instruction and to use the results for *formative* evaluation purposes. Data on student performance near the halfway point can then be used to alter instructional strategies for the balance of the course or unit, thereby more closely reaching the instructional goal—greater student understanding of personal finance.

It should be remembered that if whole or parts of the TFK are administered during a course and also as a posttest, it is likely that some student "learning" will result because students will then answer a test item twice. Students may "remember" items from one test administration to the next, thus making any comparison invalid.

## 4. ADMINISTERING THE TEST

### General Instructions

The TFK was designed for middle school and high school teachers or school administrators to use with students taking courses or units in personal finance. The decision about whether the TFK should be used to measure student achievement in courses or units in personal finance should be based on a careful review of the TFK test items and course content to make sure the test fits the personal finance that is taught in upper middle school or lower high school grades.

Although the instructions that follow will be adequate for most situations, it is suggested that the examiner carefully look over the test before the testing session begins to anticipate any problems. Unless standard procedures are followed when the test is given to students, the results obtained may not be strictly comparable with the published results in this manual.

The room in which the test is to be administered should be well-lighted, well ventilated, and quiet. The students should have sufficient working space. Students should be seated so as to minimize opportunities to see other's answers.

The test can be administered either online or in paper form. Teachers or administrators who give the online test should be familiar with online testing procedures. They should make sure that every student has proper access to a working computer or terminal. It also is helpful to talk with an instructional technology specialist at a school about the optimal computer use for classes, preparing students for online tests, and monitoring progress. Arrangements then should be made for the online testing of students through the CEE's Online Assessment Center (OAC), which is found at www.councilforeconed.org/resource/online-assessment-center/.

Those educators who give the test in paper form can print out a copy at the CEE's OAC and then make copies for students. They also can print out and make copies of an answer sheet. (A facsimile of an answer sheet is provided as an appendix to this manual.) If answers are to be machine-scored, the answer sheets must be compatible with the scoring equipment, and the students must mark the sheets with the appropriate pencils (usually No. 2 lead). Students should not use a pen because it is difficult to change answers or have items machine scored.

All printed test materials should be counted and assembled prior to the testing session with an answer sheet under the front cover of every test booklet so that both answer sheet and test booklet can be distributed together, saving testing time. Each student should receive only one booklet.

When administering the test—either online or in paper form—give these two general instructions to students.

1. This test is designed to measure your understanding of personal finance. Not all students who take this test will have taken a separate course or unit in personal finance, but most have learned something about the subject in their other courses, through reading newspapers, listening to the radio, watching television, or browsing the Internet. You also may have discussed personal finance issues with a parent, guardian, or other adult. These questions will measure how well you understand personal finance and its application.
2. You should try to answer *every* question by marking what you think is the best choice. You might not know the answers to some questions, but use the information you *do* have to eliminate those answers you think are incorrect and select your best answer. Work at a comfortable speed, but do not spend too much time on any one item. The test consists of 40 questions or incomplete statements, for which you should choose the **one best answer** from the four possible answers. With some items, more than one answer may appear to be correct, but choose the *best* answer from one of the four.

## Timing the Test

The TFK requires about 40 minutes of testing time for middle school or high school students, depending on group ability. If testing is done in a class period that is shorter than 40 minutes, and the time cannot be extended, allowance should be made for this factor when test scores are evaluated and compared to these published test results.

The TFK was designed as a power test rather than as a speed test, so it is probable that most students will complete it in less than 40 minutes. Since many class periods are set at 45 minutes, the testing should begin as soon as possible after test instructions are given at the start of class.

## Scoring the Test

The score for the TFK is the number of correct responses. The maximum possible score is 40. If the test is taken online, then the system should report the score for each student. If the test is taken in print form, then an answer sheet may be scored by hand or by machine.

To score the test by hand, use the key and facsimiles of the answer sheet in Appendix 3. Scan each answer sheet to make certain the student marked only one answer for each question; if more than one answer has been marked, the response to that question is considered wrong. The raw score is the total number of correct answers.

Machine-scoring of tests often produces a printout of the student roster with raw scores and percentiles for the scores by group tested. In addition, the group mean, standard deviation, and a frequency distribution are often provided. Such data can be useful in the interpretation of results.

# 5. TECHNICAL DATA

## Student Sample

The TFK was administered to a sample composed primarily of seventh- and eighth-grade students. To participate in the testing, teachers registered their class of students at the CEE's Online Assessment Center. They then arranged to have their students take the test online through computers at their school. The period for student testing started in spring of the 2014-2015 school year, continued through fall of the 2015-2016 school year, and ended by the middle of February 2016. Most of these students had received instruction in personal finance either during the school year or in a prior school year. No claim is made that this small sample of students tested is representative of the target student population throughout the nation because it was not possible to obtain a large, stratified random sample of students. The results, however, are suggestive of one that would be obtained from students at these grades.

Table 2 reports the aggregate statistics obtained from the 181 students who took the test. The data were collected from classes taught by teachers in the six schools listed in Appendix 2.

**TABLE 2. Aggregate Statistics for the Student Sample Taking the TFK**

| | |
|---|---|
| ***Sample Size*** *(number of students)* | 181 |
| ***Reliability*** | |
| Coefficient alpha | .83 |
| Standard error of measurement | 2.85 |
| ***Scores*** *(40 test items)* | |
| Mean | 17.39 |
| Standard Deviation | 6.97 |

The sample data should not be considered as indicating the absolute standard of achievement in personal finance because it is not known what was specifically taught or how much time was spent instruction. Rather, the sample results provide a relative standard to aid teachers in comparing their students with other students who took the test. The comparisons will be meaningful only if to the extent that composition of the student body in any class is similar to the sample tested.

## Percentile Tables

Table 3 presents the raw test scores and corresponding percentile ranks from the sample of seventh- and eighth-grade students taking the TFK online. The ranks were obtained by calculating the total percentage of students who scored at or below a certain raw score. The table permits the conversion of raw scores to percentile ranks.

Percentile ranks allow a test user to compare how his or her class, or an individual student, performed relative to this sample of students across these five states. For example, a student who obtains a raw score of 20 on the TFK has a percentile rank of 68 among a sample of seventh- and eighth-grade students, most of whom received some form of personal finance instruction. Therefore, a student with a raw score of 20 is performing as well as, or better than, 68 percent of these students.

**TABLE 3: Percentiles for TFK Scores**

| Raw Score | Percentile |
|---|---|
| 40 | |
| 39 | |
| 38 | |
| 37 | 99 |
| 36 | 99 |
| 35 | 99 |
| 34 | 98 |
| 33 | 98 |
| 32 | 98 |
| 31 | 97 |
| 30 | 96 |
| 29 | 95 |
| 28 | 92 |
| 27 | 89 |
| 26 | 88 |
| 25 | 86 |
| 24 | 80 |
| 23 | 77 |
| 22 | 76 |
| 21 | 74 |
| 20 | 68 |
| 19 | 63 |
| 18 | 57 |
| 17 | 53 |
| 16 | 49 |
| 15 | 45 |
| 14 | 40 |
| 13 | 34 |
| 12 | 28 |
| 11 | 23 |
| 10 | 17 |
| 9 | 11 |
| 8 | 7 |
| 7 | 5 |
| 6 | 3 |
| 5 | |
| 4 | |
| 3 | |
| 2 | |
| 1 | |

## Item Difficulty and Discrimination

Test administrators may want to know how their students performed on certain items. This information would be particularly important in cases where the teacher covered only some of the concepts or topics included in the test. Information on item difficulty and discrimination will help teachers evaluate student performance on particular items.

**Item Difficulty**. Table 4 shows the percentage of correct responses on each item. This percentage is an estimate of the difficulty of an item. This percentage can range from 0 to 100 percent. Data on item difficulty should be interpreted with care because it depends on many things besides the complexity of the concept being tested. Such matters as classroom emphasis on content, the closeness or plausibility of incorrect alternatives or "distractors" and the relation of the item content to students' outside activities, experiences, reading, and awareness may also affect item difficulty. It is worth emphasizing that undue attention should not be placed on small differences between the percentage reported in this manual and those obtained in the classroom.

Each question on the TFK has four possible choices: one correct answer and three distractors. Pure chance would dictate an expected correct score of 25 percent on the test for those who had no knowledge of personal finance. If some students score below 25 percent on the test (or about 10 or less correct answers), their answer sheets in particular should be carefully checked for systematic errors in test marking, scoring, or test administration. However, if a group of students know nothing about personal finance, probability will dictate that some students will earn scores of 10 or below even without errors.

**Item Discrimination.** Also reported in Table 4 is the corrected item-to-total score correlation or point-biserial correlation. It is the correlation between the students' total test scores (less the particular item) and their scores on an item.

**TABLE 4. Item Discrimination and Percentage of Correct Responses: TFK**

| Item | Correct Answer | Corrected Item-Total Correlation | Percent Correct |
|---|---|---|---|
| 1 | B | .35 | 60 |
| 2 | A | .25 | 59 |
| 3 | D | .44 | 67 |
| 4 | A | .44 | 66 |
| 5 | D | .39 | 73 |
| 6 | B | .27 | 69 |
| 7 | C | .22 | 29 |
| 8 | A | .25 | 39 |
| 9 | D | .32 | 34 |
| 10 | C | .24 | 34 |
| 11 | D | .47 | 65 |
| 12 | D | .44 | 46 |
| 13 | B | .41 | 43 |
| 14 | C | .21 | 36 |
| 15 | C | .33 | 45 |
| 16 | A | .37 | 48 |
| 17 | C | .25 | 49 |
| 18 | D | .36 | 40 |
| 19 | B | .29 | 24 |
| 20 | D | .48 | 38 |
| 21 | A | .35 | 48 |
| 22 | A | .50 | 48 |
| 23 | C | .42 | 32 |
| 24 | B | .34 | 46 |
| 25 | A | .13 | 38 |
| 26 | D | .25 | 20 |
| 27 | C | .34 | 62 |
| 28 | B | .33 | 43 |
| 29 | A | .07 | 37 |
| 30 | B | .08 | 27 |
| 31 | B | .30 | 40 |
| 32 | B | .17 | 37 |
| 33 | C | .08 | 33 |
| 34 | B | .11 | 23 |
| 35 | D | .32 | 46 |
| 36 | C | .19 | 34 |
| 37 | A | .39 | 65 |
| 38 | A | .14 | 21 |
| 39 | B | .33 | 30 |
| 40 | D | .50 | 46 |

The correlation ranges from -1 to 1. The *higher* the coefficient, the better the item functions as a discriminator between those students who know more or know less personal finance. If this coefficient is zero, it would indicate that this item fails to discriminate between those with more and less knowledge of personal finance.

In general, if an item has a discrimination coefficient below 0.20, the item may either be a weak discriminator or it may indicate that there is limited classroom coverage of the tested concept. Questions with a *negative* coefficient indicate that more lower-scoring students get the question right than do higher-scoring students. Item discrimination does *not* adjust for the reading or general ability of students. Thus, higher ability students may do well on a question regardless of whether they had personal finance instruction.

## Item Responses

Table 5 shows the percentages of students who selected one of the four options for each TFK item, with the correct response percentage in bold face and with an asterisk. Analysis of item responses can be useful. For example, if a large percentage of students answered A when the correct answer was C, distractor A should be studied to determine why students selected it. The item rationale found in Section 6 provides explanations of correct answers and why other answers are incorrect to aid in interpreting results.

## Reliability

The reliability of a test is the degree of consistency with which a test measures student performance or achievement. For example, two students taking the same test are likely to obtain different scores, but each student taking the test again (without intervening instruction in the subject tested) should obtain about the same score as the first time. Many factors (including practice in taking the test or guessing) cause changes in student performance from day to day. As a result, a test can never measure a student's achievement perfectly (that is, obtain a student's "true" score).

**TABLE 5. Percentage Response to Each Alternative: TFK**

| Item | A | B | C | D |
|---|---|---|---|---|
| 1 | 10 | **60*** | 6 | 24 |
| 2 | **59*** | 9 | 15 | 18 |
| 3 | 6 | 13 | 14 | **67*** |
| 4 | **66*** | 12 | 16 | 6 |
| 5 | 7 | 12 | 8 | **73*** |
| 6 | 12 | **69*** | 16 | 4 |
| 7 | 38 | 14 | **29*** | 19 |
| 8 | **39*** | 33 | 19 | 9 |
| 9 | 24 | 18 | 24 | **34*** |
| 10 | 23 | 24 | **34*** | 19 |
| 11 | 11 | 13 | 11 | **65*** |
| 12 | 17 | 26 | 12 | **46*** |
| 13 | 23 | **43*** | 14 | 20 |
| 14 | 20 | 20 | **36*** | 24 |
| 15 | 8 | 27 | **45*** | 20 |
| 16 | **48*** | 21 | 23 | 8 |
| 17 | 16 | 18 | **49*** | 18 |
| 18 | 14 | 20 | 25 | **40*** |
| 19 | 37 | **24*** | 19 | 20 |
| 20 | 20 | 22 | 21 | **38*** |
| 21 | **48*** | 20 | 24 | 8 |
| 22 | **48*** | 11 | 14 | 28 |
| 23 | 23 | 35 | **32*** | 10 |
| 24 | 20 | **46*** | 22 | 12 |
| 25 | **38*** | 19 | 25 | 17 |
| 26 | 28 | 31 | 20 | **20*** |
| 27 | 9 | 11 | **62*** | 18 |
| 28 | 23 | **43*** | 29 | 5 |
| 29 | **37*** | 24 | 21 | 18 |
| 30 | 33 | **27*** | 37 | 4 |
| 31 | 27 | **40*** | 22 | 12 |
| 32 | 32 | **37*** | 14 | 17 |
| 33 | 26 | 25 | **33*** | 16 |
| 34 | 34 | **23*** | 31 | 12 |
| 35 | 18 | 9 | 28 | **46*** |
| 36 | 33 | 16 | **34*** | 17 |
| 37 | **65*** | 8 | 14 | 14 |
| 38 | **21*** | 41 | 27 | 11 |
| 39 | 32 | **30*** | 25 | 13 |
| 40 | 6 | 25 | 23 | **46*** |

Note: *Correct answer

**SEM.** It is possible to estimate the amount of variation in test scores due to measurement error, and therefore to specify a range within which one can be relatively certain the "true" score will fall. By taking account of such measurement error, the reliability of the test as a whole can be estimated.

The standard error of measurement (SEM), which is reported in Table 2, is an estimate of the amount of variation that can be expected in a test score. A raw score of 24 on a test with an SEM of 2.85 indicates about 67 percent certainty that a person's "true" score lies in a range from 21.15 to 26.85 (24 +/- 2.85), or that we can be 95 percent certain that the "true" score lies in a range from 18.30 to 29.70 [24 +/- (2 × 2.85)]. The smaller the SEM, the more accurate a test is as a measure. Individual test scores are best thought of as lying within a range, rather than as a single score, because of our inability to measure knowledge perfectly (the SEM is never zero).

**Alpha.** Another estimate of overall test reliability is the coefficient alpha (Cronbach, 1951). It measures the internal consistency among test items with a common focus, which for this test is personal finance. One way to conceptualize internal consistency is to think of splitting the test in half and correlating scores on both halves. The alpha coefficient provides an estimate of the average of all possible split half correlations.

The alpha statistic ranges from zero to 1.00. The higher the coefficient, the better items work together in measuring the test construct, and thus the greater the statistical reliability of the test. An alpha of 1.00 would indicate a perfectly reliable test, while a coefficient of zero would indicate a totally unreliable one. The alpha of 0.83 for the TFK indicates that there is good internal consistency among items.

Finally, it should be stressed that the reliability of the TFK is substantially higher than that of most teacher-made tests of personal finance. A question to be determined by each test user is whether the test as a whole (or individual questions) is appropriate for his or her students.

## Conclusion

One of the most important validity questions for an educational achievement test such as the TFK is whether or not it measures what *ought* to be measured. The work to provide evidence of the *content validity* of the TFK was described in Sections 1 and 2 of this manual. In brief, the specification of the personal finance content that should be included on this test was explained in the *FL Standards* (CEE 2013). The eighth grade benchmarks served as the guide for the development and selection of test questions. The results of this work are shown in Table 1. In addition, the item rationales in the next section give an explanation for the correct answer for each test item based on the personal finance content in the *FL Standards.*

The process used for test development also ensured that the items on the TFK would contain valid content. Item construction was reviewed by a National Advisory Committee (NAC) composed of five experts in personal finance and economics. These committee members and the two test developers evaluated the content of questions for any potential bias or reading problems that would affect the performance by different types of students. The content of all items also was checked by NAC members before they were included on the test.

A standardized test such as the TFK, therefore, has much to offer the teacher. This test instrument is carefully designed and developed to cover the subject matter that *ought* to be taught (and tested) in the upper middle and lower high school grades. The sample data indicate that the TEK is a reliable measure and that the test items perform well with students at its target grade levels. Classroom tests in personal finance made by teachers are unlikely to attain these standards for test development. The use of the TFK as a measure of achievement in personal finance has many advantages for middle and high school teachers and students.

## 6. ITEM RATIONALE: TEST OF FINANCIAL KNOWLEDGE

| ITEM | RATIONALE |
|---|---|
| *1. Which is the best example of a worker with a career?*<br>*A. Ian works many different part-time jobs to save for retirement.*<br>*B. Easton worked as a plumber's apprentice and now has his own plumbing business.**<br>*C. Skylar applies to a new job in different industries every few years to meet new people.*<br>*D. Camila worked for a rental company for five years while saving money to attend a four-year university.* | A career encompasses more than just jobs that earn money. A career involves a job or set of jobs with a long-term focus, centering on a specific industry or set of skills, and often involves advancement into new positions as experience grows. Easton's work experience is the only option with the long-term focus that defines a career. [1/8/1] [*Code for bracket item: Standard/Grade Level/Benchmark (CEE, 2013)*] |
| *2. An increase in which of the following will improve Avery's human capital?*<br>*A. the skills she brings to the job**<br>*B. the time she spends looking for work*<br>*C. the number of employees where she works*<br>*D. the amount of money she has in her savings* | Human capital consists of the skills and abilities a person possesses which provide value to employers. Improvements in human capital increase a worker's productivity. None of the other options are likely to have an effect on Avery's human capital. [1/8/3] |
| *3. Which of the following people is likely earning the highest income?*<br>*A. Jayden, who dropped out of high school and works as a server at a restaurant*<br>*B. Aubrey, who graduated from high school and is an assistant for an insurance agent*<br>*C. Dan, who graduated from community college with training in auto mechanics and works as a mechanic at a car dealership*<br>*D. Lily, who graduated from college with a degree in biology and works in the quality control department at a drug company** | Workers with more education typically have more skills and are more productive and valuable to employers on the job market. Demand for more productive workers is greater than demand for less productive workers, and therefore more productive workers on average earn higher incomes. Of the four options, Lily's college degree in biology suggests the greatest value to employers. [1/8/4] |
| *4. Sam works at a low-wage job. He would like a job that pays more. What would be the best action for Sam to take to increase his standard of living over his lifetime?*<br>*A. get more training**<br>*B. buy more on credit*<br>*C. ask employer for a raise*<br>*D. save less to spend more* | Human capital, or the skills and abilities a worker brings to the job market, help determine the worker's productivity, value to employers, and, ultimately, income over a lifetime. The only option of the four that improves Sam's human capital is to get more training. Buying more on credit and saving less to spend more might lead to temporary gains, but must eventually be paid for. Sam's employer will likely grant a request for a raise if Sam's human capital increases over time. [1/8/5] |

| ITEM | RATIONALE |
|---|---|
| 5. *Zoey is twelve and wants to be a veterinarian when she grows up. She begins to save part of the income she earns from her part-time job every week. What is the most likely reason she is saving money?*<br>*A. to pay the veterinarian's hospital to hire her*<br>*B. to buy the license needed to be a veterinarian*<br>*C. to buy the equipment she will need to be a veterinarian*<br>*D. to pay for the schooling she will need to be a veterinarian** | Investing in education is a requirement to have a career as a veterinarian, as it is for a career in many other professions. There is a cost to investing in education, and Zoey's long-term plan to be a veterinarian involves paying tuition. None of the other options are valid explanations for why she is saving income from her part-time job to be a veterinarian. [1/8/7] |
| 6. *Nicole is an entrepreneur. One of the risks she faces is*<br>*A. disagreements with her employer.*<br>*B. failure of her business to make a profit.**<br>*C. earning less return on her stock choices.*<br>*D. a fall in the price of equipment she uses.* | Entrepreneurs start businesses with the expectation of making a profit. Since a profit is not guaranteed, businesses can a do fail, which is a risk entrepreneurs take. Nicole will not have an employer, and will not necessarily be investing in stocks in her role as an entrepreneur. Nicole will benefit if the price she must pay for equipment falls. [1/8/8] |
| 7. *Wyatt buys 100 shares of LAP stock for $10 a share. A year later, he sells the stock for $15 a share. What is the $500 he earned called?*<br>*A. interest*<br>*B. dividend*<br>*C. capital gain**<br>*D. retained earnings* | An investor can earn interest in different forms. A capital gain is earned when an asset is sold for more than the price paid when it was purchased. This was the case for Wyatt's investment in, and sale of, LAP stock. Interest is earned when lending money. Dividends are paid to shareholders in a company. Retained earnings are held by the companies and not paid out as income to investors. [1/8/9] |
| 8. *Bill has retired and collects a payment from the government each month. Current workers and employers pay taxes that finance these payments. What are these payments called?*<br>*A. Social Security**<br>*B. retirement dividends*<br>*C. workers' compensation*<br>*D. unemployment insurance* | Social Security is a government program that taxes the income of current workers to provide retirement, disability, and survivor benefits for workers or their dependents. Workers compensation and unemployment insurance represent two other forms of a government safety net, but only Social Security applies to Bill's situation. [1/8/11] |
| 9. *Which of the following would be an example of a deceptive sales practice for a product sold at a retail store?*<br>*A. The retail store marks down the price of the product to 50 percent off.*<br>*B. The store hires a sports star to promote the product and attract new customers.*<br>*C. A store clerk directs interested customers to a store display showing different features of the product.*<br>*D. The price stated in an advertisement for the product is lower than the price for the product at the store.** | Although many sellers provide reliable information regarding the sale of a product, there are times when a seller attempts to mislead the potential customer into thinking a purchase appears better than it really is. All four options are approaches sellers might use to influence a customer, but only stating an advertised price lower than the actual price is deceptive. [2/8/1] |

| ITEM | RATIONALE |
|---|---|
| *10. Which of the following gives consumers the most independent information for comparing the features and reliability of different brands of refrigerators?*<br>*A. the sales person who sells the refrigerator at the store*<br>*B. the website of the manufacturer that makes the refrigerator*<br>*C. a comparative report on refrigerators from a consumer testing organization**<br>*D. advertisements about the refrigerators in newspapers, magazines, or on television* | Better information about a product to be purchased comes from objective, or independent, sources. Even though the refrigerator manufacturer's website and advertisements might provide information, it rarely includes objective comparisons with refrigerators of other brands. Of the options, only the consumer testing organization provides objective, independent comparative information that a potential buyer can assume is unbiased. [2/8/2] |
| *11. Adam wrote a check to Nora but the check bounced. What does this mean?*<br>*A. Nora does not have a checking account.*<br>*B. Nora tried to cash the check at the wrong bank.*<br>*C. Adam wrote the check for less than what he owed Nora.*<br>*D. Adam did not have enough money in his checking account to cover the check.** | When Adam uses a check, he transfers money from his deposit account to the buyer. If there are not enough funds in his account to cover the check, the check will bounce. Whether or not Adam's check bounces is not due to Nora's actions, nor whether or not he made the check out to Nora for the correct amount. [2/8/3] |
| *12. Josie goes to an auto supply store to buy new windshield wipers that sell for $40. She knows that her checking account balance shows $25. Can Josie pay for the wipers using her debit card?*<br>*A. Yes, because her debit card works like a credit card.*<br>*B. Yes, because she has a two day grace period to make sure her checking account balance is $40.*<br>*C. No, because all debit cards requires a minimum $100 balance in her checking account.*<br>*D. No, because it reduces her checking account immediately by the amount of the purchase.** | Using a debit card to pay for an item will immediately – with no grace period - deduct the amount spent from Josie's checking account. It is not a loan she can pay back later, which would be the case if she used a credit card. Because she has only $25 in her account (regardless of any required minimum balance), $40 cannot be deducted from it. [2/8/4] |
| *13. The Jacksons' budget includes fixed and variable expenses. Which of these is a variable expense?*<br>*A. rent*<br>*B. groceries**<br>*C. car payments*<br>*D. insurance payments* | Variable expenses change from month to month, due to changes in the amounts of the purchases and the prices of the purchases. Fixed expenses do not change from month to month typically due to contracts specifying the amounts and prices to be paid. Of the four options, only the Jacksons' grocery expenses vary from month to month. [2/8/5] |

| ITEM | RATIONALE |
|---|---|
| *14. Which of the following events would be the most likely to cause Alexa to reduce the spending in her monthly budget?*<br>*A. She gets a promotion at work that requires more company travel.*<br>*B. She decides to enroll in a training course paid for by her employer.*<br>*C. She cuts back on her hours at work to take care of her elderly parents.**<br>*D. She gets assigned a new position at work that reduces her commuting time.* | Over time, budgets need to be adjusted due to changes in income or changes is spending that are out of the person's control. If Alexa's income falls, she must either reduce the amount she spends or the amount she saves. Cutting back on work hours is the only option that will leave her with less income and thus less in her budget to spend. [2/8/6] |
| *15. Many people deposit money in accounts at banks and credit unions. What do these institutions do with most of those deposits?*<br>*A. buy gold and silver*<br>*B. keep them in their vaults*<br>*C. lend them out to borrowers**<br>*D. invest them in the stock market* | Banks keep only a fraction of deposits in their vaults or with the Federal Reserve. Although banks can invest the rest of the deposits in a variety of ways, banks earn a profit primarily on the difference between the interest they receive on the money they loan out to borrowers and the interest they pay to depositors. [3/8/1] |
| *16. Interest is the price one pays to*<br>*A. borrow someone else's money**<br>*B. sell shares of a company's stock*<br>*C. place money in a certificate of deposit*<br>*D. purchase a corporate or government bond* | Interest is the amount, or price, a borrower pays to a lender for using money. [3/8/2] |
| *17. Which of the following is most likely to cause a bank to increase the interest rate it pays on deposits in savings accounts?*<br>*A. a decrease in the number of competing banks*<br>*B. a decrease in the interest rates other banks are charging for loans*<br>*C. an increase in the number of people who want to take out loans**<br>*D. an increase in the number of people who want to open savings accounts* | The interest rate a bank pays depositors and the interest rate it charges borrowers are determined by market forces. When more people want to take out loans, demand for loans increases. This increases the demand from banks for deposits, increasing the price they pay for deposits, or the interest rate. All of the other options are examples of market forces which would likely lead a bank to decrease the interest rate it pays on deposits. [3/8/3] |
| *18. When interest rates increase,*<br>*A. savers earn less interest and borrowers pay less interest.*<br>*B. savers earn less interest, but borrowers pay more interest.*<br>*C. savers earn more interest, but borrowers pay less interest.*<br>*D. savers earn more interest and borrowers pay more interest.** | The interest rate determines the amount a borrower pays a lender for the use of money. As the interest rate increases, more interest must be paid from the borrower to the lender. [3/8/4] |

| ITEM | RATIONALE |
|---|---|
| *19. Suppose Amanda deposited $100 in a savings account at the beginning of the year. Her deposit is known as her*<br>*A. profit.*<br>*B. principal.**<br>*C. capital gains.*<br>*D. interest income.* | Principal is the initial amount of money upon which interest is paid to a depositor, in this case Amanda. Profit is revenue minus costs. A capital gain is earned if a financial asset is sold for more than the amount the investor paid for it. Interest income is earned by lenders for the use of their money. [3/8/5] |
| *20. Interest that is left in an account for a period of time also earns interest. What is this called?*<br>*A. double profit*<br>*B. extra principal*<br>*C. special interest*<br>*D. compound interest** | A person earns interest on all of the money in an account, not just the amount deposited. If, for example, $100 is deposited and earns $2 in interest in one period, interest will be earned on $102 the next period. This is called compound interest and allows money to grow much more than just $2 every period if the money is left in the account for a long time. [3/8/6] |
| *21. Mike and Katlyn both deposited $500,000 into their savings over their lifetimes for retirement. Mike began saving 10 years before Katlyn, and retired with more savings than Katlyn. Which of the following is the best explanation for why Mike retired with more savings?*<br>*A. People who start saving earlier allow compound interest to work longer on their savings.**<br>*B. People who start saving earlier likely earn higher salaries than the people who wait to save.*<br>*C. People who start saving earlier are paid higher interest rates than those who wait to start saving.*<br>*D. People who start saving earlier are less likely to lose any of their savings than those who wait to save.* | Compound interest is interest earned on the amount deposited and previously earned interest. Because Mike began saving before Katlyn, the interest earned in each of the 10 years before Katlyn began saving allowed Mike's savings to grow much more than Katlyn's savings. None of the other options are valid reasons explaining why Mike retired with more savings. [3/8/7] |
| *22. Javier has $25,000 in his checking account at Stormy Ridge Bank. Stormy Ridge Bank is a member of the FDIC. If Stormy Ridge Bank fails, Javier will lose*<br>*A. $0.**<br>*B. $6,250.*<br>*C. $10,000.*<br>*D. $25,000.* | FDIC stands for the Federal Deposit Insurance Corporation, which insures deposits at member institutions up to a limit of $250,000 as of 2015. None of Javier's $25,000 in his checking account will not be lost if Stormy Ridge fails since the bank is a member of the FDIC. [3/8/9] |
| *23. The total interest Vicki will pay for borrowing $1,000 will be lower*<br>*A. the longer the loan term and the lower the interest rate.*<br>*B. the longer the loan term and the higher the interest rate.*<br>*C. the shorter the loan term and the lower the interest rate.**<br>*D. the shorter the loan term and the higher the interest rate.* | Interest accumulates every period of the term of a loan, so the shorter the term of the loan, the less periods interest must be paid. Also, the lower is the interest rate, the less is the interest calculated each period. [4/8/2] |

| ITEM | RATIONALE |
|---|---|
| *24. Which of the following lets someone buy a good or service now but pay for it later?*<br>*A. a debit card*<br>*B. a credit card**<br>*C. a money order*<br>*D. a personal check* | When someone uses a credit card, a loan is created from the financial institution that issued the card. The loan can be used to purchase a good or service now, and be paid back to the financial institution later. Both a debit card and a personal check must be paid for by the purchaser at the time of the purchase. A money order must be paid for before the purchase of the good or service. [4/8/3] |
| *25. Who is likely to pay the greatest dollar amount in finance charges, if each has charged the same amount on credit cards that have the same interest rate?*<br>*A. someone who pays the minimum payment each month**<br>*B. someone who pays half the balance on his card each month*<br>*C. someone who pays off the credit card bill in full each month*<br>*D. someone who pays the minimum amount one month, and then the full balance the next* | Finance charges include interest that must be paid on unpaid balances on credit cards. The larger the unpaid balance, the larger is the interest owed. Of the four options, a credit card user who pays only the minimum balance will have the largest unpaid balance and thus the largest finance charge. [4/8/4] |
| *26. In general, which of the following financial businesses will charge the highest interest rate for a short term loan?*<br>*A. credit union*<br>*B. savings and loan*<br>*C. commercial bank*<br>*D. payday loan shop** | Different financial institutions offer short-term loans and charge different rates of interest. Of the four options, payday loan shops are typically used by borrowers who cannot qualify for loans at other financial institutions and are able to charge the higher interest rates. [4/8/5] |
| *27. What loan is used to buy a home?*<br>*A. payday*<br>*B. consumer*<br>*C. mortgage**<br>*D. home equity* | Mortgages are secured long-term loans used to buy homes or property, and the home or property provides the collateral. Home equity loans also use the home as collateral but are used for purposes other than purchasing homes or property. Consumer loans are used to purchase consumer goods and services other than homes and property, and payday loans are short-term loans of much smaller amounts than that used to purchase homes or property. [4/8/6] |
| *28. What will a lender do if someone who has a higher than average risk of nonpayment wants to borrow money?*<br>*A. charge a lower interest rate*<br>*B. charge a higher interest rate**<br>*C. reduce the person's credit score*<br>*D. raise the person's credit score* | Both the interest rate and the risk of default determine the rate of return a lender expects to receive on a loan. If the risk of default is greater for a certain potential borrower than others the lender could make the loan to, the lender will charge the riskier borrower a higher, not lower, interest rate to receive the same rate of return. The lender will not affect the borrower's credit score when making the loan. [4/8/7] |

| ITEM | RATIONALE |
|---|---|
| *29. Jason purchases a corporate bond. His investment is*<br>*A. a loan to a corporation that will be paid back with interest.**<br>*B. a certificate of deposit with a corporation that guarantees a rate of return.*<br>*C. a group of diverse assets that are professionally managed by a corporation.*<br>*D. ownership in a corporation for which he will receive a portion of the profits.* | Jason's investment in a corporate bond amounts to purchasing a loan the corporation must pay interest on and eventually pay back. Although a certificate of deposit is a loan to a bank, it is not considered a bond. A group of diverse assets that are professionally managed is a mutual fund, and ownership in a corporation for which a portion of profits is received defines a share of stock. [5/8/1] |
| *30. Drew put $12,000 in a new savings account and made no changes to the account for a month. At the end of the month he had $12,010 in the account. What was his annual interest rate?*<br>*A. 0.01 percent*<br>*B. 1 percent**<br>*C. 10 percent*<br>*D. 100 percent* | The amount of interest Drew's account paid during the month was $10 on $12,000, or 1/1,200. To calculate the annual rate, this monthly rate is multiplied by 12 months, which equals 0.01 or 1 percent. [5/8/2] |
| *31. Amy received a dividend from Company X. This means she*<br>*A. sold the stock for more than she paid for it.*<br>*B. was paid a portion of the company's profits.**<br>*C. earned an additional one percent interest rate from the company.*<br>*D. received interest income on the money she loaned to the company.* | To receive a dividend from Company X, Amy must own stock in the company. A stockholder can earn income in the form of dividends, which are profits distributed by the company to stockholders, or by selling shares of the stock for more than what the seller paid for the stock. Interest income can be earned by owning Company X's bonds, not stock. [5/8/3] |
| *32. The price of Corporation XYZ's stock will most likely rise if*<br>*A. tax rates in the United States increase.*<br>*B. investors expect the company's profits to increase.**<br>*C. the public expects the company's profits to decrease.*<br>*D. government regulation over XYZ's industry increases.* | The price of a share of stock in Corporation XYZ is determined by the market for XYZ's stock. If investors expect XYZ's profits to rise, they will want to purchase more of XYZ's stock in hopes of a higher future value, which increases demand and the current share price. All other options will cause a downward pressure on XYZ's stock price. [5/8/4] |
| *33. Ryan wants to put the $5,000 he earned from his summer job in a safe financial asset as part of his savings for college. Which of the following financial investments is considered to have the lowest risk of losing value?*<br>*A. a mutual fund*<br>*B. corporate bond*<br>*C. a certificate of deposit (CD)**<br>*D. stock from a single corporation* | Ryan has a variety of financial assets from which to choose when saving for college. If he values a low risk of losing money, he will choose a financial asset with the least amount of variation in the possible rate of return. The only possibility of lost funds in a CD is if the financial institution offering the CD fails and is not an FDIC member. Mutual funds, corporate bonds and shares of stock all have much greater variations in rates of returns than CDs, and are much more likely than CDS to lose value. [5/8/6] |

| ITEM | RATIONALE |
|---|---|
| *34. Melissa and Josh are both investors, but they invest in different financial assets. Melissa invests in stocks. Josh invests in savings bonds. Compared with Melissa's investments, Josh invests in financial assets with*<br>*A. lower risk and higher expected rates of return.*<br>*B. lower risk and lower expected rates of return.**<br>*C. higher risk and a higher expected rates of return.*<br>*D. higher risk and lower expected rates of return.* | Savings bonds pay a fixed amount of interest to bondholders and are considered one of the safest financial assets because they are issued by the U.S. government, which is very unlikely to default. The rate of return on stocks is much more variable and thus much riskier than savings bonds. Because there is a positive relationship between the amount of risk and the expected rate of return, Josh's lower-risk investment in savings bonds is accompanied by a lower expected rate of return than Melissa's investment in stocks. [5/8/7] |
| *35. Julia is one of the best piano players in the world. Her parents pay an annual fee to a company that promises to pay Julia $10 million if she accidentally injured her fingers and couldn't play the piano. What type of arrangement is this?*<br>*A. loan*<br>*B. equity*<br>*C. liability*<br>*D. insurance** | Insurance is a financial product that someone purchases to pay for future loses usually associated with risk. Insurance transfers risk from the buyer to the seller. Julia's parents pay an annual fee, or premium, to a company to transfer the risk of lost future income due to the possibility of injury, so the arrangement is considered insurance. Loans, equity and liability are all financial concepts, but none alone are insurance arrangements. [6/8/2] |
| *36. What does an auto insurance company consider when deciding how large a premium to charge a policyholder?*<br>*A. the annual income of the customer based on tax returns*<br>*B. the potential number of passengers who will ride in the car*<br>*C. the potential cost of car repairs if the customer has an accident**<br>*D. the amount of money the customer has in savings and investments* | An insurance company will charge a higher premium to customers that create a higher expected cost. The cost of insuring a driver is determined by the risk of the driver getting into an accident and the potential cost of repairs of an accident. The other options do not signal to the insurance company the expected cost of insuring a driver. [6/8/3] |
| *37. Eron decides to drop the insurance coverage on her cell phone. From an insurance perspective she has decided to accept the*<br>*A. risk.**<br>*B. reward.*<br>*C. security.*<br>*D. premium.* | Eron would continue paying for insurance if she preferred the certainty of the small insurance coverage costs over the risk of the larger potential cost of replacing or fixing her cell phone. By dropping her insurance coverage she has accepted the risk of future loss. [6/8/4] |

| ITEM | RATIONALE |
|---|---|
| *38. Sophia has an auto insurance policy with the following deductibles: (1) $1,000 for collision; (2) $500 for comprehensive; and (3) $0 for property damage. If she backs into a mailbox and causes $200 in damage to the mailbox, how much of the repair cost would be Sophia's responsibility?*<br>*A. $0**<br>*B. $200*<br>*C. $500*<br>*D. $1,000* | The $200 damage to the mailbox is covered under property damage since the mailbox is someone else's property. A deductible is the amount Sophia must pay before the auto insurance company covers the remaining cost. A $0 deductible for property damage means that the entire $200 cost of repairing the mailbox will be paid by the insurance company. [6/8/5] |
| *39. The premium for insurance will be higher if the*<br>*A. dividend is low.*<br>*B. deductible is low.**<br>*C. probability of loss is low.*<br>*D. size of potential loss is low.* | A deductible is the amount the insured must pay for a loss before the insurance company covers the remainder of the loss. A lower deductible is associated with a higher expected cost for the insurance company, and the insurance company will therefore charge a higher premium for a policy with a lower deductible. Dividends are not associated with insurance premiums. A lower probability of loss or size of loss will lead to a lower, not higher, premium. [6/8/5] |
| *40. Two 18-year-old boys, Ethan and Caleb, have identical cars. Ethan has higher auto insurance premiums than Caleb. What is the most likely reason?*<br>*A. Ethan was fired from his job.*<br>*B. Ethan does not plan to attend college.*<br>*C. Ethan does not have a savings account.*<br>*D. Ethan was responsible for an auto accident.** | An insurance company will charge a higher premium to customers that are a greater risk of getting into an accident. A history of past accidents is a signal to insurance companies of the potential for future accidents. Because Ethan had an accident, he is considered riskier than Caleb and is charged a higher premium. None of the other options affect the premiums auto insurance companies charge drivers. [6/8/6] |

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## Appendix 1. Personnel for the TFK Development

**Project Director**

William B. Walstad, *University of Nebraska-Lincoln*

**Associate Project Director**

Ken Rebeck, *St. Cloud State University (Minnesota)*

**Council Officer**

Kevin Gotchet, *Council for Economic Education (New York)*

**National Advisory Committee**

William Bosshardt, *Florida Atlantic University*
Elizabeth Breitbach, University of South Carolina
Brenda Cude, University of Georgia
Andrew Hill, Federal Reserve Bank of Philadelphia
Bonnie Meszaros, University of Delaware

## Appendix 2. Schools Participating in TFK Testing

### ARKANSAS

*Hazen Elementary School*
*Hazen 72064*

### ILLINOIS

*Areil Elementary Community Academy*
*Chicago 60653*

*St. Alphonsus/St. Patrick School*
*Lemont 60439*

### KANSAS

*Osawatomie Middle School*
*Osawatomie 66064*

### MASSACHUSETS

*Quincy Upper School*
*Boston 02116*

### NEVADA

*John C Fremont Middle School*
*Las Vegas 89104*

## Appendix 3. Answer Form and Scoring Key, TFK

### Answer Form

| | A | B | C | D | | A | B | C | D | | A | B | C | D | | A | B | C | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | ○ | ○ | ○ | ○ | **11** | ○ | ○ | ○ | ○ | **21** | ○ | ○ | ○ | ○ | **31** | ○ | ○ | ○ | ○ |
| **2** | ○ | ○ | ○ | ○ | **12** | ○ | ○ | ○ | ○ | **22** | ○ | ○ | ○ | ○ | **32** | ○ | ○ | ○ | ○ |
| **3** | ○ | ○ | ○ | ○ | **13** | ○ | ○ | ○ | ○ | **23** | ○ | ○ | ○ | ○ | **33** | ○ | ○ | ○ | ○ |
| **4** | ○ | ○ | ○ | ○ | **14** | ○ | ○ | ○ | ○ | **24** | ○ | ○ | ○ | ○ | **34** | ○ | ○ | ○ | ○ |
| **5** | ○ | ○ | ○ | ○ | **15** | ○ | ○ | ○ | ○ | **25** | ○ | ○ | ○ | ○ | **35** | ○ | ○ | ○ | ○ |
| **6** | ○ | ○ | ○ | ○ | **16** | ○ | ○ | ○ | ○ | **26** | ○ | ○ | ○ | ○ | **36** | ○ | ○ | ○ | ○ |
| **7** | ○ | ○ | ○ | ○ | **17** | ○ | ○ | ○ | ○ | **27** | ○ | ○ | ○ | ○ | **37** | ○ | ○ | ○ | ○ |
| **8** | ○ | ○ | ○ | ○ | **18** | ○ | ○ | ○ | ○ | **28** | ○ | ○ | ○ | ○ | **38** | ○ | ○ | ○ | ○ |
| **9** | ○ | ○ | ○ | ○ | **19** | ○ | ○ | ○ | ○ | **29** | ○ | ○ | ○ | ○ | **39** | ○ | ○ | ○ | ○ |
| **10** | ○ | ○ | ○ | ○ | **20** | ○ | ○ | ○ | ○ | **30** | ○ | ○ | ○ | ○ | **40** | ○ | ○ | ○ | ○ |

_____ RAW SCORE

_____ PERCENTILE SCORE

NAME _____ DATE _____
month day year

AGE _____ DATE OF BIRTH _____ GENDER Male Female
month day year (circle one)

SCHOOL OR TEST CENTER _____

ADDRESS _____
number and street city state zip

INSTRUCTOR _____ GRADE OR YEAR _____ SEMESTER _____

## Appendix 3. Answer Form and Scoring Key, TFK (Continued)

### Scoring Key

| | A | B | C | D |
|---|---|---|---|---|
| 1 | ○ | ● | ○ | ○ |
| 2 | ● | ○ | ○ | ○ |
| 3 | ○ | ○ | ○ | ● |
| 4 | ● | ○ | ○ | ○ |
| 5 | ○ | ○ | ○ | ● |
| 6 | ○ | ● | ○ | ○ |
| 7 | ○ | ○ | ● | ○ |
| 8 | ● | ○ | ○ | ○ |
| 9 | ○ | ○ | ○ | ● |
| 10 | ○ | ○ | ● | ○ |
| 11 | ○ | ○ | ○ | ● |
| 12 | ○ | ○ | ○ | ● |
| 13 | ○ | ● | ○ | ○ |
| 14 | ○ | ○ | ● | ○ |
| 15 | ○ | ○ | ● | ○ |
| 16 | ● | ○ | ○ | ○ |
| 17 | ○ | ○ | ● | ○ |
| 18 | ○ | ○ | ○ | ● |
| 19 | ○ | ● | ○ | ○ |
| 20 | ○ | ○ | ○ | ● |
| 21 | ● | ○ | ○ | ○ |
| 22 | ● | ○ | ○ | ○ |
| 23 | ○ | ○ | ● | ○ |
| 24 | ○ | ● | ○ | ○ |
| 25 | ● | ○ | ○ | ○ |
| 26 | ○ | ○ | ○ | ● |
| 27 | ○ | ○ | ● | ○ |
| 28 | ○ | ● | ○ | ○ |
| 29 | ● | ○ | ○ | ○ |
| 30 | ○ | ● | ○ | ○ |
| 31 | ○ | ● | ○ | ○ |
| 32 | ○ | ● | ○ | ○ |
| 33 | ○ | ○ | ● | ○ |
| 34 | ○ | ● | ○ | ○ |
| 35 | ○ | ○ | ○ | ● |
| 36 | ○ | ○ | ● | ○ |
| 37 | ● | ○ | ○ | ○ |
| 38 | ● | ○ | ○ | ○ |
| 39 | ○ | ● | ○ | ○ |
| 40 | ○ | ○ | ○ | ● |