Incorporating Financial Literacy Standards into the Existing Colorado Mathematics and Economics Content Standards

Report

Prepared for the Colorado Department of Education

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Introduction.

Purpose:

The Colorado Department of Education (CDE) requested (i) a review of the new financial literacy requirements embodied in Colorado House Bill 08-1168, signed into law by Governor Ritter in June 2008, and (ii) recommendations to CDE on ways in which financial literacy standards might most effectively be integrated into the state's existing Mathematics and Economics content standards.

Authorizing Legislation:

House Bill 08-1168 Concerning Financial Literacy in K-12 Education includes a number of important provisions.

- The **State Board of Education** shall:
  - "…adopt standards for financial literacy that address, ***at a minimum***, the financial literacy topics specified in [Colorado Revised Statutes] section 22-2-127 (1)." [***emphasis*** added].
    - CRS section 22-2-127 specifies that "financial literacy" enables a person to:
      - ✓ *manage savings*
      - ✓ *manage investment*
      - ✓ *manage checking accounts*
      - ✓ *design and maintain a household budget*
      - ✓ *manage personal debt*
      - ✓ *understand consumer credit and finance*
      - ✓ *manage personal credit options*
      - ✓ *understand…short-term investment options*
      - ✓ *understand…long-tern investment options*
  - "…identify the financial literacy standards that are appropriately assessed within a mathematics assessment."
  - "…revise the statewide mathematics assessment to ensure that the identified financial literacy standards are assessed within the mathematics assessments…"
  - "…ensure that the preschool through elementary and secondary education standards, at a minimum, include standards in
    - ✓ reading
    - ✓ writing
    - ✓ mathematics
    - ✓ science
    - ✓ history
    - ✓ geography
    - ✓ visual arts
    - ✓ performing arts

- ✓ physical education
- ✓ world languages
- ✓ economics
- ✓ civics
- ✓ ***financial literacy***" [***emphasis*** added]

- Each **school district** shall:
  - "…adopt standards for financial literacy that address, at a minimum, the financial literacy topics specified in section 22-2-127 (1)."
  - "…revise its curricula to ensure that the curricula include financial literacy in the district's programs of study…"
  - "…adopt assessments that are aligned with the financial literacy standards. A district may include assessment of financial literacy standards within assessments that address standards in other subject areas."

Scope and Limitations:

Since the Colorado financial literacy standards have not yet been drafted, the recommendations put forth in this Report are based upon (a) the financial literacy concepts mandated by the 2008 legislation and (b) additional financial literacy concepts that extend beyond the legislated minimums, but that economists and financial experts consider critical components of an effective financial literacy education.

Existing constraints and guidelines assumed in this Report:

- The decision has been made by the Board of Education to house the financial literacy standards within the Mathematics and Economics Model Content Standards. A free-standing Financial Literacy set of standards will not be considered as an option in this Report.
- The analysis in this report recognizes the *21st Century Skills and Abilities* as an important summary of the relevant proficiencies that graduates of K-12 education should possess.
- CDE's objective of "fewer, higher, clearer" standards is understood and has been carefully considered throughout this Report, especially when recommending approaches that may contravene this principle.

Since the Mathematics and Economics content standards are also in a process of review and revision mandated by Senate Bill 08-212, the comments and recommendations in this Report are based upon the current edition of these standards, prior to any of the pending 2009 revisions. However, in light of the new financial literacy requirements, this Report also includes recommendations on the content of the Economics and Mathematics Model Content Standards and how they might be revised to best accommodate the new financial literacy concepts.

Methodology.

Overview:

Some years ago, Peter Lynch, one of the world's greatest investors, expressed the importance of personal financial education:

> *I have never understood why entire courses are devoted to languages, history, science, but not to investing and all its benefits . . . investing (or the lack of it) affects the daily lives of every person, every family, every company, and every country in today's world…those who save and invest for the future will be better off financially (and because of that, better off in other ways) than those who do not.*

Financial literacy education has always been important, but recently this aspect of our K-12 education has received much greater attention than in the past – and for good reason. While the Financial Crisis of 2008 has been blamed on many factors, individual household mismanagement of financial affairs certainly shares some of the culpability. Further, it is clear that the economy is changing in a way that requires people to take greater responsibility for their own financial future, and this trend will inevitably continue. For example, with the growing uncertainty of the U.S. social security and health care systems, exacerbated by employers' transition from defined-*benefit* retirement programs toward defined-*contribution* plans (which are directed by individual investors), more and more states are mandating that school curricula include financial literacy education. Former Fed Chairman Alan Greenspan emphasized this point a few years ago saying that improved "basic financial literacy at the elementary and secondary levels will provide a foundation of financial literacy that can help prevent … people from making poor decisions that can take years to overcome."

Realizing the importance of financial literacy education and students' (and all too often, parents) general lack of understanding of financial matters, the Colorado legislature passed House Bill 08-1168 with the objective of closing this critical gap in the K-12 curricula.

Developing the Financial Literacy Concept List.

In order to proceed, CDE must move from the general requirement for financial literacy standards to a specific list of essential financial literacy concepts (referred to as "topics" in the House Bill) that can then be bundled into appropriate benchmarks and standards. The best way to teach financial literacy – or any subject, for that matter – is to expose students to repeated applications of a relatively *short list* of core ideas. But how do we develop the short list? In this section, I explain the approach used in this Report to select the recommended key financial literacy concepts or topics.

The overarching objective of financial literacy education – which informs the development of the concept short list – is to develop our students' *ability to think*. Since technology, products, and laws often change, the range of choices available to our graduates expands greatly, and it is imperative that students develop the competencies that allow them to continue learning and to apply their decision-making skills in an ever-changing world. We must provide an education that is sufficiently adaptable and flexible to evolve and expand after high school graduation.

The famous 20th Century economist, John Maynard Keynes, stated that:

> *The theory of economics does not furnish a body of settled conclusions …it is a method rather than a doctrine, an* ***apparatus of the mind****, which helps its possessor to draw correct conclusions.*

The theory of economics provides a unified set of principles capable of guiding the personal finance curriculum as it is formulated in school districts throughout the state. Without the focus and direction of the "economic way of thinking," personal literacy education often ends up being little more than "the pursuit of trivial facts. Facts lacking conceptual content have little meaning."[1] Guiding the selection of key concepts for inclusion in financial literacy standards is a belief that standards must focus on the more fundamental ideas and are thus primarily conceptual. Thus, each standard is an *essential* principle of the economic way of thinking applied to financial literacy. The standards (to include benchmarks) should provide a statement of what every financially literate student should *know* and be *able to do* upon graduation from high school. As such, the standards should not be merely a "list of things to know" because such a list is too memory-based, doing little to enhance the "apparatus of the mind" that is sufficiently flexible to adapt to a changing environment.

In developing a short list of concepts for inclusion in the standards, it is important that we not repeat the mistakes of the past. Many of the "consumer education" programs taught in the past were "trivialized, as students were kept busy, for example, comparing the cost of cans of peas in different grocery stores. Budgeting and saving were typically presented as moral imperatives, not as strategies for making wise choices."[2]

The decision to embed financial literacy in the economics and mathematics standards is particularly appropriate, because fundamentally, economics is the *study of choice* – it provides a model based on efficient decision-making, thus offering an excellent platform for financial literacy standards. In fact, in structuring standards, most states have regarded economics as the natural home for personal finance education, because economics provides the organizing principles and logic that form the structure for the decision-making skills appropriate for personal finance. True financial literacy requires an understanding of basic economic principles and their application to personal finance.

With these principles in mind, in the next **Findings** section of this Report we proceed as follows:

- Conduct a comparison of the topics specified in the legislation (and listed above in the Authorizing Legislation section) with several reputable concept lists, to include the National Standards developed by the Jump$tart Coalition, three particularly strong state standards, and the Council for Economic Education *Financial Fitness for Life* curriculum. We must include all concepts (or "topics" in the legislative language) identified in the Colorado Revised Statutes 22-2-127 (1), however additional concepts may be added if deemed necessary for developing true financial literacy.
- Once the recommended "short list" of key concepts is developed, I discuss how these concepts might best be embedded in the Mathematics Content standards.

[1] "The Interdependence of Economic and Personal Finance Education," *Social Education*, 2005.
[2] Ibid.

- With the short list of financial literacy concepts and the sub-list of concepts appropriate for assessment in mathematics, we then discuss alternative ways in which the concepts might be embedded in the Economics Content standards. Recommended revisions to the Economics Standards are then discussed.

Findings.

Development of the Short List of Financial Literacy Concepts.

Table 1 on the next page provides a comparison of a sample of applicable state standards and the Council for Economic Education's *Financial Fitness for Life* curriculum with the Jump$tart National Standards and the concepts specified in the Colorado legislation. Since the Jump$tart National Standards provide a recognized and relatively complete listing of financial literacy concepts, they are used as the baseline against which the other documents are compared. Because the scope and meaning of some terms and phrases is not always clear, the checkmarks in the matrix provide only an approximation of concept correlation. However, the matrix offers useful guidance for determining which financial literacy concepts are mandated by law, and which additional concepts might be considered for inclusion in the recommended "short list" of financial literacy concepts.

Also, in many cases the Jump$tart National Standards encompass additional concepts that go beyond the legislated list reflected in column A. For example, Jump$tart concept 15 in the left column below, "Develop a personal financial plan," presumably must include the Colorado legislature's requirement "design and maintain a household budget," however the benchmarks following this Jump$tart standard require coverage of net worth statements and investing plans, among others. Thus, the correlation suggested in the matrix below provides only a rough approximation.

Columns B, C and D represent respectively, the Wisconsin, Georgia and Arizona financial literacy standards or concepts, as applicable. Wisconsin's Model Academic Standards for Personal Financial Literacy were chosen because these standards are widely recognized among experts as a benchmark against which to compare one's own state standards. Georgia and Arizona were chosen because in my review of state standards, I found the approaches taken by these states as appropriate models for Colorado. Column E represents the concepts that are covered in the highly-regarded *Financial Fitness for Life* curriculum developed in 2001 by the Council for Economic Education.

Examining Table 1 suggests that the benchmark comparisons in columns B – E list many of the same concepts, but they also omit many of the Jump$tart standards. While the Jump$tart standards provide a very useful list of possible concepts to be included in Colorado's financial literacy standards, at 29 concepts, the list is quite long, and the resulting standards would likely end up violating CDE's philosophy expressed in the Frequently Asked Questions passage on its website: "fewer standards and benchmarks that represent essential content." In addition, given the focus on 21st Century ***Skills*** (***emphasis*** added) and our previous discussion in this Report on developing an "economic way of thinking," the recommendation of this Report is that we adopt the short list of concepts included in Table 2 on page 9.

Table 1: Jump$tart National Standards, Legislative Requirements (A) and Other Benchmark Comparisons (columns B – E)

(see legend at bottom)

Jump$tart Standards	**A**	**B**	**C**	**D**	**E**
A. Financial Responsibility & Decision Making					
1. Take responsibility for personal financial decisions		√			√
2. Find & evaluate financial information from a variety of sources					
3. Summarize major consumer protection laws		√			√
4. Systematically considering alternatives & consequences			√		√
5. Develop communication strategies for discussing financial issues					
6. Control personal information					√
B. Income & Careers					
7. Explore career options		√		√	√
8. Identify sources of personal income		√	√		√
9. Describe factors affecting take-home pay		√			√
C. Planning & Money Management					
10. Develop a plan for spending and saving	√	√	√	√	√
11. Develop a system for keeping and using financial records		√			√
12. Describe how to use different payment methods	√	√			
13. Apply consumer skills to purchase decisions		√			
14. Consider charitable giving		√			
15. Develop a personal financial plan	√	√			√
16. Examine the purpose & importance of a will					
D. Credit & Debt					
17. Identify the costs and benefits of various types of credit	√	√	√	√	√
18. Explain credit record & identify borrowers' credit report rights	√	√	√	√	√
19. Describe ways to avoid or correct debt problems	√	√			
20. Summarize major consumer credit laws		√			√
E. Risk Management & Insurance					
21. Identify common types of risks & basic risk management methods		√			√
22. Explain purpose & importance of property & liability insurance		√	√		√
23. Explain purpose/importance of health, disability, & life insurance		√			√
F. Saving and Investing					
24. Saving now versus saving later	√	√	√		√
25. Short- and long-term saving and investment strategies	√	√	√	√	√
26. Evaluate alternative investment decisions	√	√	√	√	√
27. Describe how to buy and sell investments		√			
28. Explain how taxes affect the rate of return on investments					
29. Investigate how agencies protect investors with regulation		√			

A: Colorado Revised Statute 22-2-127
B: Wisconsin Standards
C: Georgia Standards
D: Arizona Standards
E: *Financial Fitness for Life* curriculum

The concepts in Table 2 are bundled into 5 major categories, A through E. In some cases, the concept terms do not match exactly with the language used in CRS 22-2-127, however the JumpStart terminology is maintained when it provides a broader and more applicable concept description. If the exact legislative language must be used somewhere in the standards, then perhaps the specific grade-level benchmarks (or examples) can be worded appropriately.

Table 2: Recommended "Short-List" of Key Financial Literacy Concepts

Concepts Bundled by Major Category	CRS 22-2-127
A. Economic Way of Thinking Applied to Personal Decisions	
1. Apply choice & opportunity cost reasoning to personal decisions	
2. Systematically considering alternatives & consequences	
B. Earned Income, Skills and Productivity	
3. Identify sources of personal income	
4. Describe the benefits and costs of entrepreneurship	
C. Planning & Money Management	
5. Develop a plan for spending and saving	Design/maintain household budget; Manage saving
6. Describe how to use different payment methods	Manage checking accounts
7. Identify common types of risks & basic risk management methods	
D. Credit & Debt	
8. Identify the costs and benefits of various types of credit	Understand consumer credit
9. Explain credit record & identify borrowers' credit report rights	Manage credit options
10. Describe ways to avoid or correct debt problems	Manage personal debt
E. Saving and Investing	
11. Saving now versus saving later and time value of money	
12. Short- and long-term saving and investment strategies	Understand short-term and long-term investment options
13. Evaluate alternative investment decisions: risk vs. return	Manage investments
14. Understand diversification and mutual funds	

Specific Explanatory Notes Regarding the Concepts Listed in Table 2:

- All 8 CRS legislative requirements are included in this list, as required by House Bill 08-1168.
- Additional concepts have been added, based on a comparison with the benchmarks (options B – E) included in Table 1 and an assessment of the minimum essential concepts that are required to equip graduates with the ability to think and to continuously learn and adapt to the financial and economic environment that is certain to change many times during one's lifetime. Knowledge focusing on present laws, products, and technologies

will soon become obsolete, but the economic way of thinking applied to financial literacy will prepare our graduates for lifelong learning.

- The concepts added (over and above CRS requirements) and a brief justification of each is provided in the table below.

Table 2 Concept	Justification for Inclusion in Colorado Financial Literacy Standards
1	**Apply choice and opportunity cost reasoning to personal decisions**. Although personal financial literacy involves the same "scarcity – choice – cost – incentives" model that is addressed in standard microeconomic theory, I recommend separately treating the **personal** decision-making skill from the perspective usually taken in microeconomic theory – explaining **societal** outcomes driven by choices made. Although the general concept will be familiar to those who learn microeconomics, the individual-personal decision perspective is sufficiently different that I recommend it be added under the financial literacy standard or benchmark.
2	**Systematically considering alternatives and consequences.** It is very important that personal financial literacy start by offering students a framework for systematically making decisions, through a consideration of alternatives and criteria for selection.
3	**Identify sources of personal income.** Understanding the "labor market" and the factors that generate higher income (education/skills increase productivity; demand for labor type is "derived" from demand for goods/services produced) is a critical component of personal financial literacy and health. The establishment of financial goals and objectives requires some understanding of the labor market.
4	**Describe the benefits and costs of entrepreneurship.** Given the importance of entrepreneurs to our economy and society, and the opportunities of such endeavors, I recommend adding this concept.
7	**Identify common types of risks & basic risk management methods.** Understanding how insurance works – spread risk among people in a pool – is an important concept in financial literacy education and involves economic concepts. A person who understands the concept realizes the source of the costs and benefits of purchasing insurance and can learn about specific insurance types and policies, as required.
11	**Saving now versus saving later and time value of money.** This concept involves the critically important topic of compound interest and rates of return. Understanding that saving now has a cost (foregone current consumption) and a benefit (compound future growth) is so important to financial literacy that I strongly recommend including this concept in BOTH the mathematics and the economics standards. Understanding short-term and long-term investment opportunities requires a strong understanding of the time value of money. The National Assessment Governing Board's decision to include "the time value of money" in the content list for the *Economics Framework for the 2006 NAEP* examination is indicative of the importance of this concept in the economics standards. Further, recent research has concluded that "what appears most crucial is a **lack of knowledge about**

11 (continued)	**interest compounding**, which makes sense since basic number sense is crucial for doing calculations about retirement savings." This study by Lusardi and Mitchell discovered that those who display financial knowledge (and compounding is the "most crucial" component) are more likely to conduct financial planning, are more likely to save and invest in complex assets, and possessed higher wealth holdings.[3] Since this concept applies very directly to financial literacy, I highly recommend its inclusion in our short list.
14	Understand diversification and mutual funds. Understanding the tradeoff between risk and return is the critical concept that is involved in evaluating investment options (thus, risk vs. return is added to concept 13) and understanding the importance of diversification and how it works is MOST important to achieving financial literacy.

Embedding Financial Literacy Concepts in the Mathematics Standards.

The legislation requires that the State Board of Education:

- "…identify the financial literacy standards that are appropriately assessed within a mathematics assessment."

Although not clearly stated in House Bill 08-1168, I recommend that the Mathematics Content Standards be revised, as appropriate, to incorporate the financial literacy standards that are identified as appropriate for mathematics assessment. Thus, the mathematics standards themselves must be reviewed for needed revisions to include financial literacy mathematics.

Mathematics, like English, is a "language" that is useful "across the curriculum." We use English in financial literacy without even thinking about what reading or writing standards apply to financial literacy, because they are pervasive throughout. In much the same way, financial literacy involves many applications of simple mathematics concepts that are addressed throughout the mathematics standards – adding, subtracting, multiplying, decimals, percentages, etc. The focus of this Report is on those financial literacy concepts that are most critical for financial literacy and are not as "routine" as the simpler topics already mentioned.

While the legislative language specifies that the State Board "identify the financial literacy ***standards*** that are appropriately assessed [***emphasis*** added]," the actual process requires identifying mathematics concepts at the lower benchmark level, rather than the level of a standard. In Table 3 below, I list the applicable financial literacy concept and then identify the appropriate mathematics concept, an example economic application and finally, the mathematics standard that currently addresses this concept.

Based on this discussion, it is recommended that questions involving the concepts shown in Table 3 below be included in the mathematics assessment. Further, for the assessments administered in lower grades (as well as high school level), questions applying simple calculations (e.g., percentages) could assess understanding of Mathematics Standards 1 and 6.

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[3] *Financial Literacy and Planning: Implications for Retirement Wellbeing*, 2006

The mathematics standards currently include coverage of all the basic mathematical tools and topics required for most standard financial literacy concepts. Therefore, the mathematics standards themselves do not require revision to accommodate the applications for financial literacy. However, the benchmarks might be revised to specifically add the recommended financial literacy applications, so that teachers and students understand how the mathematics applies. This is particularly the case for the concepts listed in the Table below, as these are more specialized applications of the mathematics tools to financial literacy concepts.[4]

Table 3: Financial Literacy Concepts Appropriately Assessed within a Mathematics Assessment.

Financial Literacy Topic or Concept	Mathematics Tool	Economic Application	Mathematics Standard
8. Identify cost & benefit of credit	Interest formulas - amortization	Credit card interest; car loan; mortgage loan	2
11. Time value of money	Compound interest – geometric & arithmetic mean – present value	Compound annual growth rate (typical term used by investment industry) Present value of a bond	2
13. Risk vs. Return	Measures of central tendency and variability.	Expected return versus risk (as measured by standard deviation).	3
14. Diversification	Correlation	Mutual funds; diversified portfolio	3

Embedding Financial Literacy Concepts in the Economics Standards.

In this section, we consider alternative ways of incorporating the recommended financial literacy concepts into the Economics Standards. Given the present constraints, I discuss two main alternatives in this Report:

- Alternative 1: Embed the financial literacy concepts within the existing three Model Content Standards for Economics.
- Alternative 2: Revise the existing Model Content Standards for Economics to add one (or more) standards for financial literacy.

Discussion of Alternative 1:

- Advantages:
  - If all the financial concepts must be incorporated into the existing three economics standards, then most, if not all, of the financial literacy concepts in Table 2 fit best within Economics Standard 1. This is likely why the original standards committee included a small coverage of financial literacy concepts in the third benchmark of the first standard. Since Standard 1 essentially provides some key principles related to "the economic way

[4] While it is possible that one or more of these mathematics concepts are typically covered in semesters following the assessment test administration, in setting forth these recommendations we have ignored these timing issues, as the situation may change in the future.

of thinking," this does make some sense – personal financial literacy is an application of the economic way of thinking.

o Under this alternative, no changes would be required to the Economics standards, except to add the selected number of financial literacy benchmarks to Standard 1, benchmark 3 or perhaps 4 and beyond. This alternative has the advantage of being simpler to accomplish.

- Disadvantages:
  - Although the principles underlying the economic way of thinking are the same whether applied to the standard microeconomic theory presentation or to personal financial literacy, there is a pedagogical difficulty. The economic way of thinking applied to the microeconomics model tends to use these concepts to explain the choice of consumers and producers in the economy. The study of personal financial literacy, while using the same "way of thinking," is applied to a different set of circumstances and a different perspective. Thus, while the concepts would be the same, the perspective would be different and students could easily be confused if a teacher covered these topics in an integrated fashion. I have been teaching personal financial literacy as part of my microeconomics course for over 30 years, but I have never attempted to simultaneously cover these two perspectives – I distinctly separate the two presentations, but I do indicate to the students that we are using the same economic "tools."
  - Since personal financial literacy is likely to be taught by different departments depending on the school or the school district, embedding financial literacy concepts within the existing three standards might be problematic. For example, if the social studies department is responsible for the traditional economics content, but the business department or family and consumer sciences has responsibility for financial literacy, it may be difficult to split the responsibilities along clear lines.

Discussion of Alternative 2:

- Advantages:
  - Given the different perspectives taken when using the principles of the economic way of thinking in developing the microeconomic model versus the perspective applicable when teaching personal financial literacy, it is best to provide a clear separation between the two applications of the economic way of thinking.
  - Similarly, by clearly separating the financial literacy standard from the other economic standards, we facilitate the division of these standards among different academic departments in the various school districts.
- Disadvantages:
  - This approach requires revising the existing economics standards. However, since the standards must be reviewed and revised in accordance with Senate Bill 08-212, additional revisions associated with financial literacy requirements may be relatively easy.
  - Since this approach increases the number of standards, it may violate the CDE expressed desire for "fewer" standards.

<u>Conclusions and Recommendations</u>.

Incorporation of Financial Literacy: My recommendation to CDE is that the financial literacy concepts be introduced into the economics standards using **Alternative 2**, revise the existing economics standards to add a fourth standard dedicated to financial literacy. Since CDE prefers fewer standards, if feasible, the recommendation is to add only one additional standard.

Suggested approach:
- Title of fourth standard: *Economic Principles Applied to Personal Finance*.
- Benchmarks: The 5 benchmarks, labeled A through E, included in Table 2.

This recommendation follows from a consideration of the pros and cons discussed. Given that financial literacy and the more traditional economics content may be taught by different academic departments, a separation of the financial literacy standard from the standards addressing the traditional economic model appears to have substantial advantages. Further, as discussed before, while the principles of the economic way of thinking are the same, the applications are sufficiently different that the advantages of treating separately are significant.

While not addressed earlier in this report, but perhaps a significant consideration, the intent of House Bill 08-1168 appears to be that financial literacy be elevated above a benchmark status. Since the House Bill explicitly lists financial literacy parallel with 12 other disciplines, all of which already have separate dedicated standards documents (except Reading and Writing which are lumped together), it seems appropriate to create at least a separate standard for financial literacy within the economics standards.

Note that this Report recommends that the concepts identified in Table 3 as appropriate for inclusion in the mathematics assessment *are also recommended for coverage in the financial literacy standard*. The House Bill does not preclude including the same standards in both mathematics and economics. There are several reasons for recommending the inclusion of these topics in both the mathematics and economics standards:
- The focus of mathematics tends to be on the actual formulas and calculations.
- Understanding the concepts is enhanced if integrated in a logical fashion with other related concepts, as occurs when the concepts arise in financial literacy education.
- Mathematics tends to be very challenging for many, yet it is most important to understand. Seeing the concepts twice, once in mathematics and again in financial literacy, may help many students better understand.
- Too often, mathematics is taught in one class and not used in any other class, even though the applications are quite appropriate. Students then begin to believe that mathematics is not applicable because it is not used in other classes, even though applicable to the material. Thus, I recommend that the mathematics-related concepts appear in both the mathematics standards (given that appropriate concepts will be assessed) and the economics standards (to reinforce the usefulness of the skill and strengthen the depth of student understanding).

Revising the Economics Standards to Accommodate Financial Literacy.

In order to best accommodate an additional financial literacy standard, I would also recommend that the other economic standards be modified as follows:
- Standard 1: Microeconomics (or the "Market Economy" as the NAEP Framework titles it)
- Standard 2: Macroeconomics (or the "National Economy" as NAEP titles)
- Standard 3: International Economics (or the "International Economy" as NAEP titles)

- Standard 4: Economic Principles Applied to Personal Finance

Revising the economics standards in this way has several advantages: (i) it makes the Colorado standards more consistent with the approach taken by many states, (ii) it makes the Colorado approach consistent with the NAEP Framework, which was developed through much discussion and expert opinion, and (iii) it matches the traditional divisions of these areas of economics – microeconomics, macroeconomics, and international economics, with financial literacy added as an application of the economic way of thinking. The subject matter under each standard is then more clearly understood because it matches the way in which professional economists divide these topics, write textbooks, and design courses. Finally, the “economic way of thinking” will be embodied directly in Standard 1 on Microeconomics (as it is in all microeconomics courses and textbooks) and then the way of thinking that is developed in Standard 1 will be applied separately to financial literacy education. This approach offers a clean, clear and pedagogically sound set of standards.

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