Unit 7

Spending

Lesson 7A:

The Spending Decision—Colas and Hot Dogs

Rule 7: Spend wisely.

Because income is limited, people must make decisions about which goods and services to buy to maximize the satisfaction (happiness) they get from their income. These lessons look at things to consider when making choices about spending (What does it mean to get a "good deal"?) and show that "spending on saving" may be one of the best ways to spend more than may seem possible with a given income.

Lesson Description

Students help Joe, a guy at a baseball game, decide how many colas and hot dogs to buy. Joe's "best" choice is shown to depend on not only what Joe likes but also the amount of money he has and the prices charged.

Standards and Benchmarks (see page 156)

Grade Level

9-12

Concepts

Budget (income) constraint

Diminishing returns

Marginal satisfaction

Satisfaction (happiness)

Compelling Question

How do people decide what combination of goods and services to buy?

Objectives

Students will be able to

- describe a budget (income) constraint,
- determine which combination of goods provides the most satisfaction (happiness) given a budget (income) constraint, and
- describe how changes in prices may change consumer choices.

Materials

- Visual 7A.1: Joe's Satisfaction Index
- Visual 7A.2: Joe's Satisfaction Alternatives
- Visual 7A.3: Joe's Diminishing Returns
- Visual 7A.4: Joe's Marginal Satisfaction
- Handout 7A.1: How Many Colas and Hot Dogs Should Joe Buy?, one copy for each student
- Handout 7A.2: Assessment, one copy for each student
- Handout 7A.2: Assessment—Answer Key

Time Required

45 minutes

Procedure

1. Begin the class by telling the students they are going to help Joe, a hungry and thirsty baseball lover at a baseball game, decide what to eat and drink. Colas are $2 each and hot dogs are $1 each. Joe has only $8 to spend. When someone has a limited amount of money to spend, we call the amount a **budget, or income, constraint**, because it constrains, or limits, what they can buy. Discuss the following:
   - How should Joe decide how many colas and hot dogs to buy? (*Answers will vary, but students will likely say that Joe should buy more of the good he likes the most.*)

2. Display a copy of *Visual 7A.1: Joe's Satisfaction Index*. Distribute a copy of *Handout 7A.1: How Many Colas and Hot Dogs Should Joe Buy?* to each student. Explain the following:
   - The index on the visual (and on the handout) shows how much total **satisfaction**, or happiness, Joe gets from different amounts of colas and hot dogs.

- For example, 3 colas give him 24 units of happiness, while 2 hot dogs give him 21 units of happiness.
- The index illustrates a general assumption economists make about the happiness people get from consuming goods: Consuming more of a good provides greater satisfaction or makes someone happier (more is preferred).
- As the number of each good rises, so does Joe's total happiness.
- For example, 4 colas give Joe 28 units of happiness, while 3 colas give him only 24 units.

3. Have the students complete the handout to determine the best combination of colas and hot dogs Joe should buy based on his satisfaction index. Allow time for student to work and then review their answers. (*Answers will vary. Most students, assuming the goal is to maximize Joe's satisfaction, will say 2 colas and 4 hot dogs. Some may choose a combination that is not affordable—that is, that costs more than $8. Some may have trouble figuring out which combination Joe should choose.*)

4. Remind students of the PACED decisionmaking model (Unit 1, Lesson 1B). Review the five step: 1) **D**efine the problem. (2) List the **a**lternatives. (3) Determine the **c**riteria. (4) **E**valuate the alternatives. (5) Make the **d**ecision. Discuss the following:
   - What is Joe's problem? (*Joe has an $8 budget constraint. He is hungry and thirsty but has only $8 to spend.*)

5. Given that Joe has only $8, what are his possible alternatives—that is, what combinations of colas and hot dogs could he buy? (*He could purchase any of the following combinations or fewer of each.*)

Colas, $2 each	Hot dogs, $1 each
0	8
1	6
2	4
3	2
4	0

6. What is a reasonable criterion to use to rank Joe's alternatives? (*Answers will vary, but lead students to realize that the amount of satisfaction a combination of colas and hot dogs gives Joe would be a good criterion, since it would give him the most satisfaction possible.*)

7. Refer again to Visual 7A.1. Note that in the PACED model, the step after determining criteria is evaluating the alternatives. Discuss the following:
   - How much satisfaction would Joe get from each of the possible alternatives?

8. Display V*isual 7A.2: Joe's Satisfaction Alternatives*
   - Given that Joe is trying to get the most satisfaction (happiness) for his $8, which combination of colas and hot dogs should he buy? (*2 colas and 4 hot dogs, since that combination yields him the most satisfaction—49 units*)

9. Display *Visual 7A.3: Joe's Diminishing Returns*. Explain the following:
   - There is another way of calculating the best decision for Joe.
   - There are now two additional columns: The third column shows the amount of satisfaction added by each additional cola or hot dog. For example, since 2 colas give Joe 18 units of satisfaction and 1 only gives him 10 units, the second cola adds 8 units of satisfaction.
   - This additional satisfaction is the **marginal satisfaction**; that is, the extra satisfaction from consuming 1 more unit of some good or service.
   - Note that the amount of satisfaction added by each additional cola or hot dog consumed decreases. This decrease is based on a second common assumption made by economists about people's preferences: **diminishing returns**. Diminishing returns (with respect to satisfaction) means each additional unit of a good adds less satisfaction than the one before it.
   - In this example, the first hot dog would make Joe the happiest because he is hungry. As he continues to eat more hot dogs, he would get fuller, so each additional hotdog would be less satisfying.
   - The satisfaction Joe gets from each hot dog (or cola) is *not* the same—the first ones would give him more satisfaction than the later ones.
   - The last column on the table is the amount of satisfaction each good adds divided by the price of that good—it tells how much satisfaction Joe gets per dollar spent on each unit.
   - For example, for colas, the first cola would give him 10 units of satisfaction. At $2 per cola, the first cola would give him 5 units of satisfaction per dollar spent.
   - For example, for hot dogs, the first hot dog would give him 12 units of satisfaction. Since it would cost him only $1, he would get 12 units of satisfaction per dollar spent. (Provide additional examples as necessary.)
   - While Joe is buying colas and hot dogs with his money, he is really buying satisfaction. Thus, it is important to know how much satisfaction he gets from each dollar he spends.

10. Tell the students you are going to use the table to determine what Joe should buy and in what order. Discuss the following:
    - Suppose Joe has just sat down at the game and wants to get the most satisfaction for his $8. Which should he buy first, a cola or a hot dog? (*The first hot dog, because it would give him 12 units of satisfaction per dollar spent, while the first cola would only give him 5 units.*)
    - What should he buy next? (*The second hot dog, because it would give him 9 units of satisfaction per dollar, while the first cola would still only gives him 5 units of satisfaction*)
    - What should he buy next? (*The third hot dog.*)
    - What should he buy next? (*The choice is now between the fourth hot dog or the first cola. Since the first cola would give him 5 units of satisfaction per dollar and the fourth hot dog only 4 units, he should now buy the first cola.*)
    - How much has Joe spent so far? (*$5: 3 hotdogs at $1 each and 1 cola at $2*)
    - Since he still has money left, what should Joe buy next? (*Both the fourth hot dog and the second cola give him 4 units of satisfaction per dollar, so it doesn't matter which he chooses.*)
    - Suppose he chose the second cola, what should he buy next? (*The fourth hot dog—note that it is a better deal than the third cola, 4 units per dollar versus 3 units per dollar, but also note that he doesn't have enough money left to buy the third cola.*)

11. Explain that all of Joe's money has now been spent and that he ended up with the same combination as before—2 colas and 4 hot dogs. Explain that this must be the combination that gives him the most satisfaction because at each step he bought the greatest amount of satisfaction he could with his dollars.

12. Note that the amount of satisfaction generated by colas and hot dogs were fairly similar (for example, 5 colas generated 31 units of satisfaction, while 5 hot dogs generated 33 units). So, these numbers suggest that Joe likes colas and hot dogs roughly the same. Discuss the following:
    - Given that Joe likes colas and hot dogs roughly the same, why did Joe end up buying twice as many hot dogs as colas? (*The price of colas was twice as much as hot dogs, so colas were not as good of a deal in terms of satisfaction per dollar spent.*)

13. Explain that hot dogs were "a better deal" because Joe could buy the same amount of satisfaction for half the cost. This is a fundamental point of making a good spending decision: You should consider *the amount of satisfaction you get per dollar spent* when making a choice.

14. Display *Visual 7A.4: Joe's Marginal Satisfaction*. Instruct the students to determine Joe's best spending choices if hot dogs were $2 and colas were $1. (*In this case, Joe would buy the first and second colas, then a cola and a hot dog, then a hot dog, and finally another cola. He would end up buying 4 colas and 2 hot dogs—just the opposite of the other scenario!*)

15. Explain that Joe's purc1hases now—4 colas and 2 hotdogs—seem to suggest he likes colas more than hot dogs. This change in behavior, however, is *not* because his preferences have changed—he still gets the same amount of happiness from each cola and each hot dog as he did before. Hot dogs have simply become a relatively worse deal as their price rises and the price of colas falls.

Closure

16. Explain the following:

    - When making spending decisions, consider the amount of satisfaction you get from each good per dollar spent if you want to maximize the satisfaction you get from your budget.
    - In other words, instead of thinking about buying particular goods such as colas or hot dogs, you should instead think about buying units of satisfaction and buy those goods that would give you the most satisfaction per dollar.
    - Clearly, as the price of a good goes down, it becomes a better buy because you get the same amount of satisfaction for fewer dollars spent.

Assessment

17. Distribute a copy of *Handout 7A.2: Assessment* to each student and allow time for students to work (or assign as homework). Review answers with *Handout 7A.2: Assessment—Answer Key*.

Visual 7A.1: Joe's Satisfaction Index

Colas	Units of total satisfaction (☺)
1	10
2	18
3	24
4	28
5	31
6	33

Hot dogs	Units of total satisfaction (☺)
1	12
2	21
3	27
4	31
5	33
6	34
7	34.8
8	35.2

Visual 7A.2: Joe's Satisfaction Alternatives

Colas	Units of cola satisfaction	Hot dogs	Units of hot dog satisfaction	Units of total satisfaction (☺)
0	—	**8**	35.2	35.2
1	10	**6**	34	44
2	18	**4**	31	49
3	24	**2**	21	45
4	28	**0**	0	28

Visual 7A.3: Joe's Diminishing Returns

Joe's Satisfaction from Colas and Hot Dogs			
Colas	**Units of total satisfaction (☺)**	**Units of marginal satisfaction* (M☺)**	**Units of M☺ per dollar (M☺ ÷ $2)**
1	10	10	5
2	18	8	4
3	24	6	3
4	28	4	2
5	31	3	1.5
6	33	2	1

Hot dogs	**Units of total satisfaction (☺)**	**Units of marginal satisfaction* (M☺)**	**Units of M☺ per dollar (M☺ ÷ $1)**
1	12	12	12
2	21	9	9
3	27	6	6
4	31	4	4
5	33	2	2
6	34	1	1
7	34.8	0.8	0.8
8	35.2	0.4	0.4

***Remember: Marginal satisfaction is the extra satisfaction from consuming 1 more unit of a good or service.**

Visual 7A.4: Joe's Marginal Satisfaction

Joe's Satisfaction from Colas and Hot Dogs			
Colas	**Units of total satisfaction (☺)**	**Units of marginal satisfaction* (M☺)**	**Units of M☺ per dollar (M☺ ÷ $1)**
1	10	10	10
2	18	8	8
3	24	6	6
4	28	4	4
5	31	3	3
6	33	2	2

Hot dogs	Units of total satisfaction (☺)	Units of marginal satisfaction* (M☺)	Units of M☺ per dollar (M☺ ÷ $2)
1	12	12	6
2	21	9	4.5
3	27	6	3
4	31	4	2
5	33	2	1
6	34	1	0.5
7	34.8	0.8	0.4
8	35.2	0.4	0.2

Handout 7A.1: How Many Colas and Hot Dogs Should Joe Buy?

The Problem

Joe is at a baseball game and is hungry and thirsty. He has only $8 to spend. What combination of colas and hot dogs should he buy to get the most satisfaction?

Joe's Satisfaction from Colas and Hot Dogs	
Colas	**Units of total satisfaction (☺)**
1	10
2	18
3	24
4	28
5	31
6	33

Hot dogs	**Units of total satisfaction (☺)**
1	12
2	21
3	27
4	31
5	33
6	34
7	34.8
8	35.2

Joe's Budget Constraint: $8

Colas, $2 each

Hot dogs, $1 each

The Best Choice for Joe

_____ Colas and _____ Hot dogs

Handout 7A.2: Assessment

Name:_____

Directions: Based on Joe having $8 to spend on hot dogs and colas at a baseball game, answer the following questions:

1. Explain why Joe's $8 budget constrains his spending.

2. Calculate Joe's marginal satisfaction per dollar if hot dogs are $1 and colas are $1.

3. Given Joe's satisfaction index, what should he buy to get the most satisfaction?

4. Compare Joe's best spending choices now with the example in class when colas were $2 and hot dogs were $1 and Joe's best spending choice was 2 colas and 4 hotdogs. How did the change in price change Joe's choices?

Joe's Satisfaction Index			
Colas	**Units of total satisfaction (☺)**	**Units of marginal satisfaction (M☺)**	**Units of M☺ per dollar (M☺ ÷ $1)**
1	10	10	
2	18	8	
3	24	6	
4	28	4	
5	31	3	
6	33	2	

Hot dogs	**Units of total satisfaction (☺)**	**Units of marginal satisfaction (M☺)**	**Units of M☺ per dollar (M☺ ÷ $1)**
1	12	12	
2	21	9	
3	27	6	
4	31	4	
5	33	2	
6	34	1	
7	34.8	0.8	
8	35.2	0.4	

Handout 7A.2: Assessment—Answer Key

Directions: Based on Joe having $8 to spend on hot dogs and colas at a baseball game, answer the following questions:

1. Explain why Joe's $8 budget constrains his spending.
   The $8 budget limits what he can buy.

2. Calculate Joe's marginal satisfaction per dollar if hot dogs are $1 and colas are $1.
   Answers are in the "M☺ per dollar" column below.

3. Given Joe's satisfaction index, what should he buy to get the most satisfaction?
   4 colas and 4 hot dogs

4. Compare Joe's best spending choices now with the example in class when colas were $2 and hot dogs were $1 and Joe's best spending choice was 2 colas and 4 hotdogs. How did the change in price change Joe's choices?
   Joe bought 4 hot dogs and 4 colas this time because it maximized his satisfaction per dollar. Because colas and hot dogs are now $1 each, he is able to purchase more goods. In this case, he could buy 2 extra colas.

Joe's Satisfaction Index			
Colas	**Units of total satisfaction (☺)**	**Units of marginal satisfaction (M☺)**	**Units of M☺ per dollar (M☺ ÷ $1)**
1	10	10	*10*
2	18	8	*8*
3	24	6	*6*
4	28	4	*4*
5	31	3	*3*
6	33	2	*2*

Hot dogs	**Units of total satisfaction (☺)**	**Units of marginal satisfaction (M☺)**	**Units of M☺ per dollar (M☺ ÷ $1)**
1	12	12	*12*
2	21	9	*9*
3	27	6	*6*
4	31	4	*4*
5	33	2	*2*
6	34	1	*1*
7	34.8	0.8	*0.8*
8	35.2	0.4	*0.4*

Standards and Benchmarks

National Standards for Financial Literacy

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.

- Benchmark: Grade 4
    1. Economic wants are desires that can be satisfied by consuming a good, a service, or a leisure activity.
    3. People spend a portion of their income on goods and services in order to increase their personal satisfaction or happiness.
- Benchmark: Grade 12
    1. Consumer decisions are influenced by the price of a good or service, the price of alternatives, and the consumer's income as well as his or her preferences.