c

1.

Levels of Cleanup	Total Cost of Cleanup ($)	Total Benefit of Cleanup ($)
0	0	0
1	7	45
2	37	80
3	92	105
4	172	125
5	272	140

The table above shows the total cost and the total benefit of cleaning up pollution in a community. Which of the following cleanup levels is socially optimal?

(A) 1

(B) 2 ✓

(C) 3

(D) 4

(E) 5

2. Assume the following utility schedule for Aaliyah's ice cream consumption. If she consumes 6 units, what is the value of her total utility from consuming ice cream?

Quantity Consumed	Marginal Utility
1	8
2	6
3	4
4	2
5	0
6	-2

(A) 22

(B) 20

(C) 18 ✓

(D) 0

(E) -2

3. The additional satisfaction received from consuming an additional unit of a good is called the

c

(A) marginal utility ✓
(B) marginal product
(C) average product
(D) average utility
(E) total utility

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Ahmet derives from consuming two goods, books and Good D.

Quantity of Books	Marginal Benefit of Books	Quantity of Good D	Marginal Benefit of Good D
1	$28	1	$32
2	$16	2	$16
3	$4	3	$8
4	$2	4	$4
5	$1	5	$2
6	$0	6	$1

Ahmet has a limited weekly income of $18, and he spends it all on books and Good D. Assume the price of each book is $4 and the price of Good D is $1 per unit.

(a) Calculate the total consumer surplus from books if Ahmet buys 5 books. Show your work.

(b) Given his weekly income, would Ahmet be able to buy 3 books and 2 units of Good D? Explain using numbers.

(c) Identify the quantity of books and the quantity of Good D that will maximize Ahmet's total benefit given his weekly income. Explain using marginal analysis.

(d) Assume books are is produced in a perfectly competitive market and that there is an increase in the number of buyers in the market for books.
(i) Would Ahmet's total consumer surplus from books if he buys 5 books increase, decrease, or stay the same compared to your answer in part (a) ? Explain.
(ii) Will the quantity of books that will maximize Ahmet's total benefit increase, decrease, or stay the same? Explain.

c

4. Respond to all parts of the question.



Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the total consumer surplus as $31 and shows the work.

$$\text{Total Consumer Surplus} = \text{Total Benefit} - \text{Total Expenditures} = 51 - 20 = 31$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, Ahmet would be able to buy 3 books and 2 units of Good D and explains that his total expenditures would be $14

$$(= 3 \times \$4 + 2 \times \$1)$$

, which is less than his weekly income of $18.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that 3 books and 6 units of Good D will maximize Ahmet's total benefit given his weekly income of $18 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of books (1) is equal to the ratio of the marginal benefit to the price of Good D (1), or

c

$$\frac{MB_{Book}}{Price_{Book}} = \frac{MB_{Good\ D}}{Price_{Good\ D}}$$

$$\frac{\$4}{\$4} = \frac{\$1}{\$1}$$

$$1 = 1$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that Ahmet's total consumer surplus would decrease and explains that an increase in the number of consumers in the market for books would increase the demand for books, which would increase the price of books, and an increase in the price of books would increase the total cost of 5 books while the total benefit of 5 books remains the same.

· States that the quantity of books that will maximize Ahmet's total benefit will decrease and explains that there has been an increase in the price of books which decreases the marginal benefit per dollar spent that Ahmet gets from each additional book.

c

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Andrew derives from consuming two goods, cheeseburgers and Good J.

Quantity of Cheeseburgers	Total Benefit of Cheeseburgers	Quantity of Good J	Total Benefit of Good J
0	$0	0	$0
1	*$40*	*1*	*$30*
2	*$70*	*2*	*$50*
3	*$90*	*3*	*$65*
4	*$100*	*4*	*$75*
5	*$105*	*5*	*$80*
6	*$105*	*6*	*$83*

Andrew has a limited weekly income of $65, and he spends it all on cheeseburgers and Good J. Assume the price of each cheeseburger is $10 and the price of Good J is $5 per unit.

(a) Calculate Andrew's consumer surplus from the second unit of Good J. Show your work.

(b) Identify the quantity of cheeseburgers and the quantity of Good J that will maximize Andrew's total benefit given his weekly income. Explain using marginal analysis.

(c) If Andrew's weekly income increases from $65 to $75, would Andrew be able to buy 5 cheeseburgers and 6 units of Good J? Explain using numbers.

(d) Suppose the price of Good J decreases by 10% and Andrew buys 12% more of Good J and 8% more of Good S. Based on this change, identify whether Good J and Good S are substitutes, complements, or not related. Explain using numbers.

(e) Suppose instead that cheeseburgers are produced in a perfectly competitive market and the price of beef, an input to the production of cheeseburgers, decreases. If cheeseburgers are a normal good, will the quantity of cheeseburgers that will maximize Andrew's total benefit increase, decrease, or stay the same? Explain.

5. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

c

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates consumer surplus as $15 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \$20 - 5 = \$15$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that 4 cheeseburgers and 5 units of Good J will maximize Andrew's total benefit given his weekly income of $65 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of cheeseburgers (1) is equal to the ratio of the marginal benefit to the price of Good J (1), or

$$\frac{MB_{Frisbees}}{Price_{Frisbees}} = \frac{MB_{Good\ J}}{Price_{Good\ J}}$$

$$\frac{\$10}{\$10} = \frac{\$5}{\$5}$$

$$1 = 1$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no, , Andrew would not be able to buy 5 cheeseburgers and 6 units of Good J and explains that his total expenditures would be $80 ($= \$10 \times 5 + \$5 \times 6$), which is greater than his weekly income of $75.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

c

0	1 ✓

The response identifies that Good J and Good S are complements and explains that the cross-price elasticity of demand is negative because a 10% decrease in the price of Good J led to an 8% increase in the demand for Good S.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the quantity of cheeseburgers that will maximize Andrew's total benefit will increase and explains that a decrease in the price of an input to production will increase the supply of cheeseburgers, which will decrease the price of cheeseburgers and increase the marginal benefit per dollar spent for each additional unit consumed.

c

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total cost and total benefit of advertisements placed by AZY Foods, a firm in the retail food market.

Number of Advertisements	Total Cost ($)	Total Benefit ($)
1	300	1,200
2	500	2,200
3	800	3,000
4	1,300	3,600
5	2,100	4,000
6	3,000	4,200
7	4,100	4,200

(a) Calculate the total net benefit of placing three advertisements. Show your work.

(b) Calculate the marginal net benefit of the third advertisement. Show your work.

(c) What is the optimal number of advertisements placed by AZY Foods? Explain using marginal analysis.

(d) Suppose over the next year the marginal benefit that AZY Foods receives from each advertisement increases by $300. Identify the optimal number of advertisements.

(e) There are many firms in the retail food market. Each firm places its own firm-specific advertisements without considering the actions of its competitors. In what market structure is AZY Foods operating?

6. Respond to all parts of the question:

Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.

c

0	1 ✓

The response accurately includes the criterion below.

- ☐ Calculates the total net benefit of placing three advertisements as

$$\$2,200$$

and show your work:

$$\text{Total net benefit } = \$3,000 - \$800 \ = \$2,200$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.

0	1 ✓

The response accurately includes the criterion below.

- ☐ Calculates the marginal net benefit of the third advertisement as $\$500$ and shows the work:

$$\text{Marginal net benefit } = (\$3,000 - \$2,200) - (\$800 - \$500) = \$800 - \$300$$
$$= \$500$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response accurately includes the criterion below.

- ☐ Identifies the optimal number of advertisements as

c

and explains that the marginal net benefit of the 4th advertisement is positive

$$(\$600 - \$500 = \$100)$$

, but the marginal net benefit of the 5th advertisement is negative $(\$400 - \$800 = -\$400)$.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response accurately includes the criterion below.

- ☐ Identifies the optimal number of advertisements as

$$4$$

.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response accurately includes the criterion below.

- ☐ States that

$$\text{AZY}$$

Foods is operating in a monopolistically competitive market structure.

7. Which of the following is true if consuming one unit of a good yields 100 utils and consuming the second unit of the good increases satisfaction by 20 utils?

c

(A) The marginal utility of the first unit is 20.
(B) The marginal utility of the second unit is 80.
(C) The marginal utility of the second unit is 120.
(D) The total utility of consuming two units is 120. ✓
(E) The total utility of consuming one unit is greater than the total utility of consuming two units.

8. Carlos has a van with 20 seats and charges $10 per person per ride to the airport from downtown. Carlos' cost of the trip is $140 for any number of passengers. On one trip, Carlos has 19 seats filled when a person offers him $5 for the last seat. Should Carlos accept the offer?

(A) No, since the $5 fare offered is below his average cost of $7.
(B) No, since the average variable cost is greater than $5.
(C) No, since it is illegal to charge different prices for the same service.
(D) Yes, since the marginal benefit exceeds the marginal cost. ✓
(E) Yes, since his total revenue exceeds his total cost by $5.

9. All of the following are included in computing the opportunity cost of attending college EXCEPT

(A) interest paid on student loans
(B) wages the student gave up to attend college
(C) money spent on college tuition
(D) money spent on clothing expenses ✓
(E) money spent on books and supplies

10. If a good is available free of charge, an individual will consume it until

(A) marginal utility is zero ✓
(B) average utility is zero
(C) total utility is zero
(D) marginal utility equals average utility
(E) marginal utility equals total utility

11. Marginal analysis suggests that an individual will consume one additional unit of a good if the

(A) sunk cost can be recovered
(B) total benefit is less than the total cost
(C) total benefit is greater than the total cost
(D) additional benefit is less than the additional cost
(E) additional benefit is greater than the additional cost ✓

c

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The following is a table showing Dana's marginal benefit from purchasing bottles of water and good X from a grocery store.

Quantity of Water(in bottles)	Marginal Benefit of Water(in dollars)	Quantity of Good X(in units)	Marginal Benefit of Good X(in dollars)
1	24	1	24
2	18	2	18
3	12	3	12
4	6	4	6
5	3	5	3

(a) What is Dana's total benefit from purchasing 2 bottles of water and 1 unit of good X? Show your work.

(b) Assume the price of a unit of good X is $5. Calculate the total consumer surplus if Dana purchases 3 units of good X. Show your work.

(c) Now assume the price of a bottle of water is $3 and the price of a unit of good X is $6. Dana spends her entire budget of $30 on bottles of water and good X.

(i) Explain why Dana does not maximize her benefit when she purchases 2 bottles of water and 4 units of good X. Use marginal analysis to explain your answer.

(ii) What are the optimal quantities of good X and bottles of water at these prices?

(iii) Suppose the price of a unit of good X drops to $3. Calculate Dana's cross-price elasticity of demand for bottles of water with respect to the price of good X, and state whether the two goods are substitutes or complements. Show your work.

12. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.

c

0	1 ✓

The response calculates Dana's total benefit from purchasing 2 bottles of water and 1 unit of good X as $66 and shows the work.

- $\$24 + \$18 + \$24 = \$66$
- $\$42 + \$24 = \$66$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response must show appropriate work in order to receive the point.

0	1 ✓

The response calculates Dana's total consumer surplus from purchasing 3 units of good X as $39 and shows the work.

- $(\$24 - \$5) + (\$18 - \$5) + (\$12 - \$5) = \$39$
- $\$54 - \$15 = \$39$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

The response to part (c) (i) must use marginal analysis in the explanation in order to receive the point.

The response to part (c) (iii) must show appropriate work in order to receive the point.

The response to part (c) (iii) must be consistent with (c)(ii).

0	1	2	3 ✓

The response does all the following.

- ☐ Explains that Dana does not maximize her benefit because the marginal utility per dollar spent on bottles of water is greater than the marginal utility per dollar spent on good X.

c

$(18/\$3 > 6/\$6$; OR $6 > 1$; OR $6 \neq 1$; OR $MB_W/P_W > MB_X/P_X)$

- ☐ States that the optimal quantities of good X and bottles of water are 3 units and 4 bottles respectively.
- ☐ Calculates the cross-price elasticity of demand for bottles of water with respect to the price of good X, shows the work, and states that the goods are complements.
  $(\%\text{ change in the quantity of bottles of water}) / (\%\text{ change in the price of good X})$
  $= (25\% / -50\%) = -0.5$
  (Using the mid-point formula is also acceptable: $(1/4.5) / (-3/4.5) = -0.33$

13. To maximize utility, a consumer with a fixed budget will purchase quantites of goods so that the ratios of the marginal utility of each good to its

(A) total utility are the greatest
(B) total utility are the same
(C) price are the greatest
(D) price are equal to one
(E) price are equal ✓

14. According to the law of diminishing marginal utility, which of the following is true?

(A) Total satisfaction decreases as more units of a good are consumed.
(B) The additional satisfaction received from consuming extra units of a good decreases as consumption of the good increases. ✓
(C) The additional satisfaction received from consuming extra units of a good decreases as consumption of the good decreases.
(D) The additional satisfaction received from consuming extra units of a good increases as consumption of the good increases.
(E) When marginal utility is decreasing, total utility is decreasing.

15. Using cost-benefit analysis, a local government would decide to build a new bridge if

(A) The additional tax paid by an individual resident is greater than the additional benefit of building the bridge for all residents.
(B) The toll paid by an individual resident crossing the bridge is less than the resident's benefit from crossing the bridge.
(C) The total costs of building the bridge are less than the total benefits from building the bridge. ✓
(D) The total costs of building the bridge are greater than the total benefits from building the bridge.
(E) Total costs are at a minimum and total benefits are at a maximum.

c

16.

Hours at the Library

Total Benefit

Total Cost

1	12	10
2	20	13
3	26	18
4	31	25
5	33	33
6	35	42

The table provided shows the total benefits and costs of studying at the library. If the student is rational, the optimal number of hours to spend at the library is

(A) 2

(B) 3 ✓

(C) 4

(D) 5

(E) 6

c

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Courtney derives from consuming two goods, Good F and candy bars.

Quantity of Good F	Total Benefit of Good F	Quantity of Candy Bars	Total Benefit of Candy Bars
0	$0	0	$0
1	$40	1	$80
2	$70	2	$120
3	$90	*3*	*$140*
4	*$100*	*4*	*$152*
5	*$103*	*5*	*$156*
6	*$105*	*6*	*$156*

Courtney has a limited weekly income of $20, and she spends it all on Good F and candy bars. Assume the price of Good F is $2 per unit and the price of a candy bar is $4.

(a) Identify the quantity of Good F and the quantity of candy bars that will maximize Courtney's total benefit given her weekly income. Explain using marginal analysis.

(b) Calculate Courtney's consumer surplus from the fourth candy bar. Show your work.

(c) If Courtney's weekly income decreases from $20 to $18, would Courtney be able to buy 5 units of Good F and 2 candy bars? Explain using numbers.

(d) Suppose that candy bars are produced in a perfectly competitive market and the price of sugar, an input to the production of candy bars, increases. If candy bars are a normal good, will the quantity of candy bars that will maximize Courtney's total benefit increase, decrease, or stay the same? Explain.

(e) Suppose instead that the price of Good F increases by 9% and Courtney buys 6% less of Good F and 3% less of Good W. Based on this change, identify whether Good F and Good W are substitutes, complements, or not related. Explain using numbers.

17. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

c

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that 4 units of Good F and 3 candy bars will maximize Courtney's total benefit given her weekly income of $20 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good F (5) is equal to the ratio of the marginal benefit to the price of candy bars (5), or

$$\frac{MB_{Good\ F}}{Price_{Good\ F}} = \frac{MB_{Candy\ Bars}}{Price_{Candy\ Bars}}$$

$$\frac{\$10}{\$2} = \frac{\$20}{\$4}$$

$$5 = 5$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates consumer surplus as $8 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \ \$12 - \$4 = \$8$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, Courtney would be able to buy 5 units of Good F and 2 candy bars and explains that her total expenditures would be $18 $(= \$2 \times 5 + \$4 \times 2)$, which is equal to her weekly income of $18.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

c

0	1 ✓

The response states that the quantity of candy bars that will maximize Courtney's total benefit will decrease and explains that an increase in the price of an input to the production of candy bars would decrease the supply of candy bars, which would increase the price of candy bars and decrease the marginal benefit per dollar spent for each additional unit consumed.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies Good F and Good W as complements and explains that the cross-price elasticity of demand is negative because a 9% increase in the price of Good F led to a 3% decrease in the demand for Good W.

18. Suppose that a consumer purchases two goods X and Y and that the marginal utility of X is MU_x, the total utility of X is TU_x, the marginal utility of Y is MU_y, and the total utility of Y is TU_y. If the prices of X and Y are P_x and P_y, respectively, which of the following expressions defines consumer equilibrium?

(A) $TU_x = TU_y$
(B) $MU_x = MU_y$
(C) $TU_x/P_x = TU_y/P_y$
(D) $MU_x/P_x = MU_y/P_y$ ✓
(E) $(MU_x)(P_x) + (MU_y)(P_y) = 1$

19. The opportunity cost of owning a business is equal to which of the following?

I. The economic profits earned in the business

II. The accounting profits earned in the business

III. The profits that could be earned in another business using the same amount of resources

(A) I only
(B) II only
(C) III only ✓
(D) I and III only
(E) I, II, and III

c

20. Which of the following best describes how a consumer maximizes total utility from the consumption of a bundle of goods and services?

(A) By choosing the quantity of each good such that the quantity demanded of each good is equal to the quantity supplied

(B) By choosing the quantity of each good such that the marginal utility from each good is equal to zero

(C) By choosing the quantity of each good such that the price is equal to the marginal revenue

(D) By choosing the level of output where marginal revenue is equal to marginal cost

(E) By choosing the combination of goods such that the marginal utility per dollar spent on the last unit of each good is equal ✓

21. Which of the following best defines opportunity cost?

(A) It is the cost of producing those goods most desired by a given economy.

(B) It is the cost of the input mix that will lead to the greatest rate of growth for a given company.

(C) It is the amount of one product that must be given up in order to produce an additional unit of another product. ✓

(D) It is the use of the least-cost method of production.

(E) It is the cost of labor used in the production process.

22. At her current level of consumption, a consumer is willing to pay up to $1.50 for a bottle of water and up to $1,500 for a diamond ring because the

(A) total utility of diamond rings is greater than the total utility of water

(B) total utility of water is less than the marginal utility of a diamond ring

(C) marginal utility of a bottle of water is less than the marginal utility of a diamond ring ✓

(D) marginal utility of a bottle of water is greater than the marginal utility of a diamond ring

(E) consumer is irrational and does not understand that water is more important than a diamond

23. In a given time period, a person consumes more and more of a good or service and, as a result, enjoys each additional unit less and is willing to pay less for each additional unit. This behavior is consistent with the law of

(A) diminishing returns

(B) diminishing marginal product

(C) diminishing marginal utility ✓

(D) increasing costs

(E) scarce resources

24. Garcia is currently spending his entire lunch budget on 3 sodas and 4 hot dogs. At his current level of consumption, Garcia's marginal utility for sodas is 5 utils and his marginal utility for hot dogs is 10 utils. In order to maximize his total utility, Garcia should

c

(A) consume more sodas and fewer hot dogs regardless of the prices

(B) consume more hot dogs and fewer sodas regardless of the prices

(C) maintain his current level of consumption of sodas and hot dogs regardless of the prices

(D) maintain his current level of consumption if the price of a soda is $1 and the price of a hot dog is $2 ✓

(E) maintain his current level of consumption if the price of a soda is $2 and the price of a hot dog is $1

25. Assume a consumer is spending all her income on two goods: X and Y. At the current consumption combination of the two goods, if the marginal utility per dollar spent on the last unit of good X exceeds that of the marginal utility per dollar spent on the last unit of good Y, what should the consumer do to maximize utility?

(A) Purchase more units of X and more units of Y.

(B) Decrease the price of good X.

(C) Purchase more units of X and less units of Y. ✓

(D) Increase income to buy more of both good Y and good X.

(E) Nothing; utility is maximized at current consumption bundles.

26. An opportunity cost is entailed in which of the following situations?

I. A student decides to attend college full-time.

II. A family uses its $20,000 savings to purchase an automobile.

III. A farmer decides to grow more wheat and less corn.

(A) I only

(B) II only

(C) III only

(D) I and III only

(E) I, II, and III ✓

27. Assume that a consumer spends all her income on the purchase of two goods. If the consumer's income doubles and the prices of the two goods also double, the quantity of the two goods purchased will

(A) also double

(B) more than double

(C) increase, but it will be less than double

(D) not change ✓

(E) depend on the slope of the demand curve

c

28.

Goods	Price	Quantity Purchased (units)	Marginal Utility (utils)
Soda	$1	10	10
Apples	$2	5	25

Jane spends all her weekly allowance to buy only two goods: soda and apples. According to the table above, if her preferences are characterized by the law of diminishing marginal utility, then which of the following statements is correct?

(A) Jane is maximizing her utility.

(B) Jane can buy more apples and less soda to maximize her utility. ✓

(C) Jane can buy more soda and fewer apples to maximize her utility.

(D) Jane can buy more apples and the same amount of soda to maximize her utility.

(E) Jane can buy more soda and the same amount of apples to maximize her utility.

29. Assume that Clark spends his entire income on the purchase of two goods, X and Y. If his income and the prices of good X and Y all double, Clark will

(A) double the purchase of goods X and Y

(B) buy more of good X and less of good Y

(C) buy less of good X and more of good Y

(D) buy less of both goods X and Y

(E) buy the same amounts of goods X and Y ✓

30. The following chart shows the total utility that Juan receives from consuming various amounts of chocolate candy bars each day.

Number of Candy Bars Consumed per Day	Total Utility
0	0
1	40
2	70
3	90
4	100
5	80

Which of the following statements about Juan's marginal utility is correct?

c

(A) His marginal utility from the first candy bar is greater than his marginal utility from the second candy bar. ✓

(B) His marginal utility from the fourth candy bar is greater than his marginal utility from the third candy bar.

(C) His marginal utility increases at a constant rate.

(D) He first experiences diminishing marginal utility with the consumption of the fifth candy bar.

(E) His greatest marginal utility comes from his consumption of the fourth candy bar.

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

*The table below shows the marg*inal benefit, in dollars, that Kareem derives from consuming two goods, Good X and cereal.

Quantity of Good X	Marginal Benefit of Good X	Quantity of Cereal	Marginal Benefit of Cereal
1	$18	1	$32
2	$16	2	$28
3	$12	3	$24
4	$6	4	$20
5	$2	5	$16
6	$0	6	$12

Kareem has a limited weekly income of $18, and he spends it all on Good X and cereal. Assume the price of Good X is $2 per unit and the price of cereal is $4 per unit.

(a) Given his weekly income, would Kareem be able to buy 3 units of Good X and 5 units of cereal? Explain using numbers.

(b) Calculate the total consumer surplus from Good X if Kareem consumes 4 units of Good X. Show your work.

(c) Identify the quantity of Good X and the quantity of cereal that will maximize Kareem's total benefit given his weekly income. Explain using marginal analysis.

(d) Assume Good X is produced in a perfectly competitive market and that there is a decrease in the number of consumers in the market for Good X.
(i) Will the quantity of Good X that will maximize Kareem's total benefit increase, decrease, or stay the same? Explain.
(ii) Would Kareem's total consumer surplus from Good X if he consumes 4 units of Good X increase, decrease, or stay the same compared to your answer in part (b) ? Explain.

c

31. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no, Kareem would not be able to buy 3 units of Good X and 5 units of cereal and explains that his total expenditures would be $26

$$(= \$2 \times 3 + \$4 \times 5)$$

, which is greater than his weekly income of $18.

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the total consumer surplus as $44 and shows the work.

$$\text{Total Consumer Surplus} = \text{Total Benefit} - \text{Total Expenditures} = \$52 - \$8 = \$44$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies 3 units of Good X and 3 units of cereal will maximize Kareem's total benefit given his weekly income of $18 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good X (6) is equal to the ratio of the marginal benefit to the price of cereal (6), or

c

$$\frac{MB_{Good\ X}}{Price_{Good\ X}} = \frac{MB_{Cereal}}{Price_{Cereal}}$$

$$\frac{\$12}{\$2} = \frac{\$24}{\$4}$$

$$6 = 6$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the quantity of Good X that will maximize Kareem's total benefit will increase and explains that a decrease in the number of consumers in the market for Good X will decrease the demand for Good X, which will decrease the price of Good X and increase the marginal benefit per dollar spent that Kareem gets from each additional unit of the good.

· States that Kareem's total consumer surplus would increase and explains that a decrease in the price of Good X would decrease the total cost of consuming 4 units of Good X while the total benefit of consuming 4 units of cereal remains the same.

32. Karen works part-time at a local convenience store and earns $10 per hour. She wants to spend next Saturday afternoon attending a music concert. The full price of a concert ticket is $75, but Karen was able to get a discounted price of $50 from a friend who purchased the ticket but has become unable to attend. If Karen took 4 hours off from her job to attend the concert, what was her opportunity cost of attending the concert?

(A) $40
(B) $50
(C) $75
(D) $90 ✓
(E) $115

c

Kerri goes shopping for volleyballs. The table below shows the dollar value of the total benefit she receives from buying various quantities of volleyballs.

Volleyballs	Total Benefit
0	$0
1	$50
2	$95
3	$125
4	$146
5	$156
6	$160
7	$161

a. Calculate the marginal benefit Kerri receives from buying the third volleyball.

b. Assume the price of each volleyball is $9.

   i. Calculate Kerri's total consumer surplus if she buys two volleyballs. Show your work.

   ii. How many volleyballs should Kerri buy to maximize her total consumer surplus from volleyballs? Explain using marginal analysis.

c. Assume that the market for volleyballs is perfectly competitive and that soccer balls are a substitute for volleyballs.

   i. Draw a correctly labeled graph of the market for volleyballs, and label the equilibrium price as P_1 and the equilibrium quantity as Q_1.

   ii. If the price of soccer balls decreases, show the effect on the equilibrium price and quantity of volleyballs on your graph in part c(i).

d. Assume instead that a 10 percent increase in income causes the demand for volleyballs to fall by 5 percent.

   i. Calculate the income elasticity of demand for volleyballs.

   ii. Does the value of the income elasticity indicate that volleyballs are a normal good or an inferior good? Explain.

c

33. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

One point is earned for stating that the marginal benefit of the 3rd volleyball is $30.

0	1 ✓

The student earns all of the following points:

One point is earned for stating that the marginal benefit of the 3rd volleyball is $30.

Part B

2 Points

- One point is earned for the correct calculation of the total consumer surplus and showing the work. CS = ($95 - $18) = $77 OR CS = ($50 - $9 + $45 - $9) = $77
- One point is earned for stating that Kerri should buy 5 volleyballs to maximize her total consumer surplus, and for explaining that the marginal benefit from purchasing the fifth ball is $10 which is greater than the price, $9. The marginal benefit from the 6th ball is less than the price.

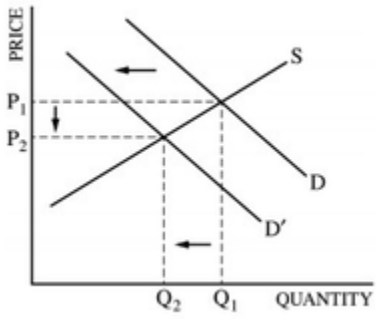
0	1	2 ✓

The student earns all of the following points:

- One point is earned for the correct calculation of the total consumer surplus and showing the work. CS = ($95 - $18) = $77 OR CS = ($50 - $9 + $45 - $9) = $77
- One point is earned for stating that Kerri should buy 5 volleyballs to maximize her total consumer surplus, and for explaining that the marginal benefit from purchasing the fifth ball is $10 which is greater than the price, $9. The marginal benefit from the 6th ball is less than the price.

Part C

c

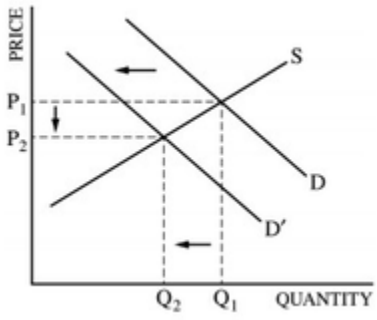


2 Points

- One point is earned for drawing a correctly labeled graph for the volleyball market.
- One point is earned for showing a leftward shift of the demand curve for volleyballs, resulting in a lower equilibrium price and quantity.

0	1	2 ✓

The student earns all of the following points:



- One point is earned for drawing a correctly labeled graph for the volleyball market.
- One point is earned for showing a leftward shift of the demand curve for volleyballs, resulting in a lower equilibrium price and quantity.

Part D

- One point is earned for correctly calculating the income elasticity of demand for volleyballs: IE = (-5/10) = -1/2, and
- One point is earned for stating that volleyballs are inferior goods because the income elasticity is negative indicating that an increase in income decreases the demand for volleyballs.

c

0	1	2 ✓

The student earns all of the following points:

- One point is earned for correctly calculating the income elasticity of demand for volleyballs: IE = (-5/10) = -1/2, and
- One point is earned for stating that volleyballs are inferior goods because the income elasticity is negative indicating that an increase in income decreases the demand for volleyballs.

34. The table below shows the per-unit prices and marginal utility for the last unit of video games and comic books that Kyle purchased.

	Video Games	Comic Books
Price per unit	$25	$10
Marginal utility	50	50

Kyle spent all of his allocated budget on video games and comic books. To maximize his utility, Kyle should have purchased

(A) more video games and fewer comic books

(B) fewer video games and more comic books ✓

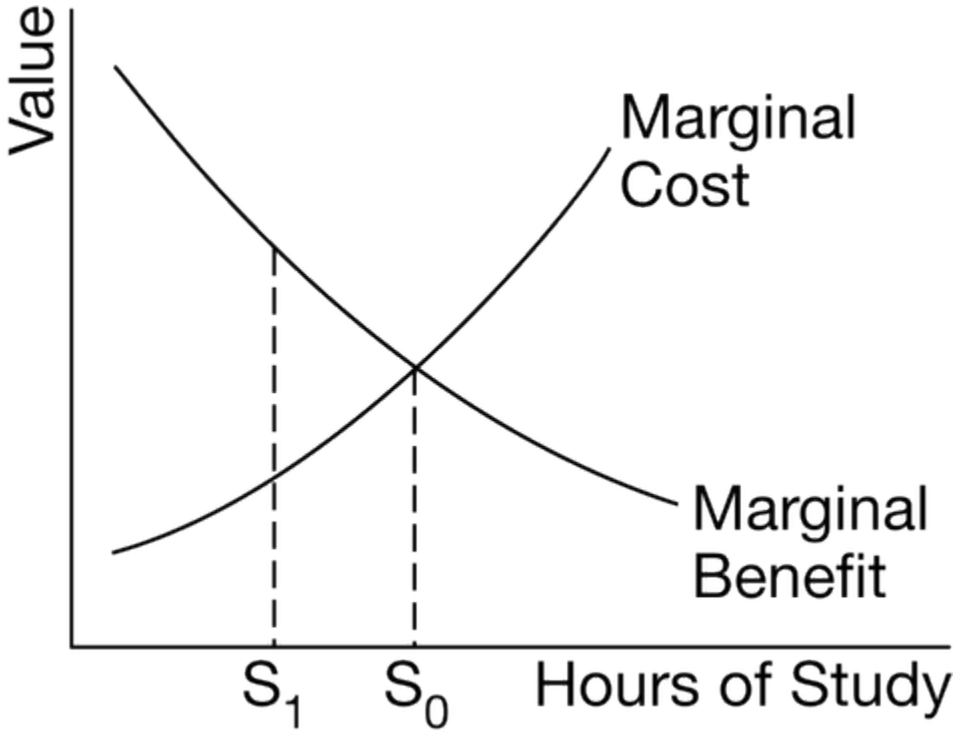
(C) fewer of both goods

(D) equal amounts of both goods

(E) more of both goods

c

35.



The graph above shows the marginal benefit that a student receives from additional hours of study, and the marginal cost the student will incur from additional hours of study. Which of the following is true?

(A) Beyond S_0 hours of study, there is no further benefit from devoting additional hours to study.

(B) At S_1 hours of study, the extra cost of study time exceeds the extra benefit of study time.

(C) The optimal number of hours that the student should study is S_0 hours. ✓

(D) The rational individual should study more than S_0 hours.

(E) The marginal cost of studying decreases as more time is spent studying.

Marginal analysis is essential to microeconomics decision making. Discuss how marginal analysis is used in each of the following cases.

a. To derive the supply curve for a perfectly competitive firm

b. To identify the least-cost combination of capital and labor used to produce a given level of output.

c. To regulate an industry that produces a product that generates negative externalities

36. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

c

Part A

2 Points

- **1 -** for equating MR = MC or P = MC
- **1** - for MC curve above AVC curve (or shut down price)

0	1	2 ✓

The student earns all of the following points:

- **1 -** for equating MR = MC or P = MC
- **1** - for MC curve above AVC curve (or shut down price)

Part B

1 Point

1 - for winner takes all.

0	1 ✓

The student earns all of the following points:

1 - for winner takes all.

Part C

2 Points

- **1 -** for observe that with a negative externality MSC>MPC. Thus, there is a need to regulate (e.g., per unit taxt) to make marginal private cost equal marginal social cost so as to achieve the equality to MSB and MSC.

OR

- **1 -** for equate the MB of reducing pollution to the MC of reducing pollution.

0	1	2 ✓

c

The student earns all of the following points:

- **1 -** for observe that with a negative externality MSC>MPC. Thus, there is a need to regulate (e.g., per unit taxt) to make marginal private cost equal marginal social cost so as to achieve the equality to MSB and MSC.

OR

- **1 -** for equate the MB of reducing pollution to the MC of reducing pollution.

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Maria derives from consuming two goods, bandanas and Good G.

Quantity of Bandanas	Total Benefit of Bandanas	Quantity of Good G	Total Benefit of Good G
0	$0	0	$0
1	$10	1	$38
2	$17	2	$70
3	$21	3	$96
4	$24	4	$116
5	$26	5	*$130*
6	*$26*	*6*	*$138*

Maria has a limited weekly income of $9, and she spends it all on bandanas and Good G. Assume the price of each bandana is $1 and the price of Good G is $2 per unit.

(a) Calculate Maria's consumer surplus from the fifth unit of Good G. Show your work.

(b) Identify the quantity of bandanas and the quantity of Good G that will maximize Maria's total benefit given her weekly income. Explain using marginal analysis.

(c) If Maria's weekly income increases from $9 to $12, would Maria be able to buy 3 bandanas and 4 units of Good G? Explain using numbers.

(d) Suppose the price of Good G decreases by 5% and Maria buys 2% more of Good G and 4% more of Good R. Based on this change, identify whether Good G and Good R are substitutes, complements, or not related. Explain using numbers.

(e) Suppose instead that bandanas are produced in a perfectly competitive market and the price of the fabric used to make bandanas decreases. If bandanas are a normal good, will the quantity of bandanas that will maximize Maria's total benefit increase, decrease, or stay the same? Explain.

c

37. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates consumer surplus as $12 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \ \$14 - \$2 = \$12$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that that 1 bandana and 4 units of Good G will maximize Maria's total benefit given her weekly income of $9 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good G (10) is equal to the ratio of the marginal benefit to the price of bandanas (10), or

$\frac{MB_{Bandana}}{Price_{Bandana}} = \frac{MB_{Good\ G}}{Price_{Good\ G}}$

$\frac{\$10}{\$1} = \frac{\$20}{\$2}$

$10 = 10$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, Maria would be able to buy 3 bandanas and 4 units of Good G and explains that her total

c

expenditures would be \$11

$$(= \$3 \times 1 + \$2 \times 4)$$

, which is less than her weekly income of \$12.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies Good G and Good R as complements and explains that the cross-price elasticity of demand is negative because a 5% decrease in the price of Good G led to a 4% increase in the demand for Good R.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the quantity of bandanas that will maximize Maria's total benefit will increase and explains that a decrease in the price of an input to production will increase the supply of bandanas, which will decrease the price of bandanas and increase the marginal benefit per dollar spent for each additional unit consumed.

38. The marginal benefit of consuming a good is

(A) the change in average utility that results from consuming one more unit of the good

(B) the same as the total benefit

(C) equal to the marginal cost of the good

(D) the change in total expenditures as a result of buying one more unit of the good

(E) the maximum amount a consumer is willing to pay for one more unit of the good ✓

c

Martha has a fixed budget of $20, and she spends it all on two goods, X and Y. The price of X is $4 per unit, and the price of Y is $2 per unit. The table below shows the total benefit, measured in dollars, Martha receives from the consumption of each good.

Quantity of X	Total Benefit from X	Quantity of Y	Total Benefit from Y
0	$0	0	$0
1	$16	1	$10
2	$28	2	$18
3	$36	3	$24
4	$40	4	$28
5	$41	5	$30

a. What is Martha's marginal benefit of the fifth unit of good X?

b. Calculate the total consumer surplus if Martha consumes 5 units of X. Show your work.

c. Martha is currently consuming 4 units of X and 2 units of Y. Use marginal analysis to explain why this combination is not optimal for Martha.

d. What is Martha's optimal combination of goods X and Y?

e. Indicate whether each of the following will cause the optimal quantity of good Y to increase, decrease, or stay the same.

   i. The price of good Y doubles.

   ii. Martha's income falls to $10 with no changes in prices.

   iii. Martha's income doubles, and the price of both goods double.

39. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

1 point is earned for: stating that the marginal benefit is $1.

c

0	1 ✓

The student response earns all of the following points:

1 point is earned for: stating that the marginal benefit is $1.

Part B

1 point is earned for: correctly calculating the total consumer surplus from consuming 5 units of X.

CS = ($16 −$4) + ($12−$4) + ($8−$4) + ($4−$4) + ($1−$4)= $21
OR
CS=$41−$20 = $21

0	1 ✓

The student response earns all of the following points:

1 point is earned for: correctly calculating the total consumer surplus from consuming 5 units of X.

CS = ($16 −$4) + ($12−$4) + ($8−$4) + ($4−$4) + ($1−$4)= $21
OR
CS=$41−$20 = $21

Part C

1 point is earned for: explaining that this combination of X and Y is not optimal because the marginal benefit per dollar of good X (MB_x/P_x=$4/$4 =1) is less than the marginal benefit per dollar of good Y (MB_y/P_y=$8/$2=4). (This can also be stated as $MB_x/MB_y < P_x/P_y$.)

($MB_x/P_x = 1$) is not equal to ($MB_y/P_y = 4$) is acceptable.

MB_x/P_x is less than MB_y/P_y is acceptable.

MB_y/P_y is greater than MB_x/P_x is acceptable.

0	1 ✓

The student response earns all of the following points:

c

1 point is earned for: explaining that this combination of X and Y is not optimal because the marginal benefit per dollar of good X (MB_x/P_x=\$4/\$4 =1) is less than the marginal benefit per dollar of good Y (MB_y/P_y=\$8/\$2=4). (This can also be stated as $MB_x/MB_y < P_x/P_y$.)

($MB_x/P_x = 1$) is not equal to ($MB_y/P_y = 4$) is acceptable.

MB_x/P_x is less than MB_y/P_y is acceptable.

MB_y/P_y is greater than MB_x/P_x is acceptable.

Part D

1 point is earned for: stating that Martha's optimal combination is 3 units of X and 4 units of Y.

0	1 ✓

The student response earns all of the following points:

1 point is earned for: stating that Martha's optimal combination is 3 units of X and 4 units of Y.

Part E

1 point is earned for: stating that the optimal quantity of good Y will decrease.

1 point is earned for: stating that the optimal quantity of good Y will decrease.

1 point is earned for: stating that the optimal quantity of good Y will stay the same.

0	1	2	3 ✓

The student response earns all of the following points:

1 point is earned for: stating that the optimal quantity of good Y will decrease.

1 point is earned for: stating that the optimal quantity of good Y will decrease.

1 point is earned for: stating that the optimal quantity of good Y will stay the same.

40. An art student spends all of her income on pencils and drawing pads. The student currently buys 30 pencils at \$1 each and 10 pads at \$5 each. If the marginal utility of the 30th pencil is 100 utils and the marginal utility of the 10th pad is 400 utils, to maximize utility the student should change her purchases of pencils and pads in which of the following ways?

c

(A)

Pencils	Pads
Not change	Buy more

(B)

Pencils	Pads
Buy more	Buy more

(C) ✓

Pencils	Pads
Buy more	Buy less

(D)

Pencils	Pads
Buy less	Buy more

(E)

Pencils	Pads
Buy less	Buy less

41. Assume that Larry spends his entire allowance on the purchase of pretzels and ice-cream cones. The price of a bag of pretzels is $\$1$, and the price of an ice-cream cone is $\$2$. At his current consumption combination, the marginal utility of pretzels is 20 and of ice-cream cones is 60. To maximize his utility, Larry should

(A) buy more of both goods

(B) buy less of both goods

(C) buy more pretzels and fewer ice-cream cones

(D) buy fewer pretzels and more ice-cream cones ✓

(E) maintain his current consumption level

c

42. Mickey has a $20 gift card that she is planning to use to download 10 songs and 5 games. The download price for each song is $1 and the download price for each game is $2. Her marginal utility from the tenth song is 30, and her marginal utility from the fifth game is 70. Based on this information, which of the following statements is true?

(A) Mickey's plan will maximize her utility.

(B) Mickey can increase utility by buying more songs and fewer games.

(C) Mickey can increase utility by buying more games and fewer songs. ✓

(D) Since games are twice as expensive as songs, Mickey should buy twice as many songs.

(E) Since games are twice as expensive as songs, Mickey should buy twice as many games.

43. Mr. Carpenter devotes his working time to producing tables and chairs. An increase in the demand for chairs will result in

(A) an increase in the amount of time he devotes to producing tables

(B) an increase in his opportunity cost of producing tables ✓

(C) a decrease in the price of lumber

(D) a decrease in the price of chairs

(E) a decrease in his total revenue

44. When marginal utility is falling but positive, total utility will

(A) decrease at an increasing rate

(B) decrease at a decreasing rate

(C) remain constant

(D) increase at an increasing rate

(E) increase at a decreasing rate ✓

45. According to the theory of consumer behavior, which of the following decreases first as additional units of a product are consumed?

(A) Total utility

(B) Average utility

(C) Marginal utility ✓

(D) Marginal physical product

(E) Total physical product

c

46. The information below shows the marginal utilities a student receives from the consumption of pizza and pens. Assume that the marginal utility of each good is independent of the quantity of the other good consumed.

Units of Pizza	Marginal Utility of Pizza	Units of Pens	Marginal Utility of Pens
1	20	1	8
2	18	2	7
3	16	3	6
4	14	4	5
5	12	5	4
6	10	6	3
7	9	7	2
8	8	8	1

If the student purchases 2 units of pizza and 2 units of pens, the student's total utility will be

(A) 4 utils
(B) 25 utils
(C) 28 utils
(D) 50 utils
(E) 53 utils ✓

c

Nirali is a student at the University of Ainsley. She has 5 hours to study for two exams today. The tables below show Nirali's expected scores given the amount of time she studies for each exam.

Number of Hours Spent Studying Microeconomics	Expected Score on Microeconomics Exam (100-point scale)
5	100
4	96
3	90
2	82
1	60
0	0

Number of Hours Spent Studying History	Expected Score on History Exam (100-point scale)
0	0
1	40
2	60
3	72
4	77
5	80

a. Nirali spends 3 hours studying microeconomics and 2 hours studying history. Calculate her gain from the second hour spent studying history.

b. Calculate Nirali's opportunity cost of the second hour spent studying history.

c. Assume Nirali increases the time she allocates to studying history. What happens to the opportunity cost of studying history? Explain.

d. Assume that Nirali has a goal of maximizing the sum of her test scores (the score on microeconomics plus the score on history). How many hours should she study for each exam?

e. Nirali learns that her tennis practice has been canceled, freeing up an additional hour for studying. Given your answer to part (d), will Nirali allocate the additional hour to studying microeconomics or to studying history to maximize the sum of her test scores? Explain using marginal analysis.

47. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

1 point(s) maximum

1 point(s) earned for: correctly calculating the gain, 20 points.

0	1 ✓

The student response earns one of the following points:

c

1 point(s) maximum

1 point(s) earned for: correctly calculating the gain, 20 points.

Part B

1 point(s) maximum

1 point(s) earned for: correctly calculating the opportunity cost, 6 points for that hour (or 6/20).

0	1 ✓

The student response earns one of the following points:

1 point(s) maximum

1 point(s) earned for: correctly calculating the opportunity cost, 6 points for that hour (or 6/20).

Part C

1 point(s) maximum

1 point(s) earned for: stating that the opportunity cost increases and for using one the following explanations:

- The expected score on microeconomics decreases at an increasing rate with each additional hour spent studying history.
- The marginal cost is rising (expected score on microeconomics decreases) for each additional hour spent studying history.

0	1 ✓

The student response earns one of the following points:

1 point(s) maximum

1 point(s) earned for: stating that the opportunity cost increases and for using one the following explanations:

- The expected score on microeconomics decreases at an increasing rate with each additional hour spent studying history.
- The marginal cost is rising (expected score on microeconomics decreases) for each additional hour spent studying history.

c

Part D

1 point(s) maximum

1 point(s) earned for: stating that Nirali should spend 2 hours on studying microeconomics and 3 hours on studying history to maximize the sum of expected scores.

0	1 ✓

The student response earns one of the following points:

1 point(s) maximum

1 point(s) earned for: stating that Nirali should spend 2 hours on studying microeconomics and 3 hours on studying history to maximize the sum of expected scores.

Part E

1 point(s) maximum

1 point(s) earned for: stating that Nirali will spend the additional hour studying microeconomics because studying microeconomics will increase her expected total score by 8 points compared to 5 points if spent studying history.

0	1 ✓

The student response earns one of the following points:

1 point(s) maximum

1 point(s) earned for: stating that Nirali will spend the additional hour studying microeconomics because studying microeconomics will increase her expected total score by 8 points compared to 5 points if spent studying history.

48. Opportunity cost is defined as

(A) excess demand for a good

(B) unlimited resources and unlimited wants

(C) a comparative advantage in the production of a good

(D) the value of the next best alternative that is forgone when an activity is pursued ✓

(E) the value of all other possible alternatives that are forgone when an activity is pursued

c

49. After graduating from high school, Maria chose to go to college, while Omar chose to work full- time. Which of the following best describes the opportunity costs for these decisions?

(A) Maria's opportunity cost includes the salary she could have earned if she had gone to work. ✓

(B) Maria's opportunity cost is her living expenses while attending college.

(C) Omar's opportunity cost is the salary he will earn from working.

(D) Omar's opportunity cost is the tuition and expenses he would have paid for college.

(E) Omar's opportunity cost is definitely greater than Maria's.

50. Oscar spent his entire income on only two goods: good X and good Y. At his current consumption of the two goods, the marginal utility of X is 8 and the marginal utility of Y is 2. If the price of X is $4.00 and the price of Y is $0.50, then to maximize his total utility, Oscar should have

(A) bought more X and more Y

(B) bought more X and less Y

(C) bought less X and more Y ✓

(D) bought less X and less Y

(E) maintained his current consumption

51. Assume Pat spends all of her allowance to purchase 4 apples and 4 candy bars. Pat's marginal utility of the fourth apple is 20 utils, and her marginal utility of the fourth candy bar is 40 utils. If an apple costs $1.00 and a candy bar $0.50, to maximize utility Pat should

(A) purchase more apples and more candy bars

(B) maintain the current purchase of 4 apples and 4 candy bars

(C) purchase more apples and fewer candy bars

(D) purchase fewer apples and more candy bars ✓

(E) purchase fewer apples and fewer candy bars

c

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Patrick derives from consuming two goods, apples and Good B.

Quantity of Apples	Marginal Benefit of Apples	Quantity of Good B	Marginal Benefit of Good B
1	$14	1	$36
2	$6	2	$28
3	$4	3	$20
4	$3	4	$12
5	$1	5	$2
6	$0	6	$0

Patrick has a limited weekly income of $30, and he spends it all on apples and Good B. Assume the price of each apple is $2 and the price of Good B is $4 per unit.

(a) Calculate the total consumer surplus from Good B if Patrick consumes 2 units of Good B. Show your work.

(b) Given his weekly income, would Patrick be able to buy 2 apples and 3 units of Good B? Explain using numbers.

(c) Identify the quantity of apples and the quantity of Good B that will maximize Patrick's total benefit given his weekly income. Explain using marginal analysis.

(d) Assume Good B is produced in a perfectly competitive market and that there is a decrease in the number of consumers in the market for Good B.
(i) Would Patrick's total consumer surplus from Good B if he consumes 2 units of Good B increase, decrease, or stay the same compared to your answer in part (a) ? Explain.
(ii) Will the quantity of Good B that will maximize Patrick's total benefit increase, decrease, or stay the same? Explain.

52. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

c

0	1 ✓

The response calculates the total consumer surplus as $56 and shows the work.

$$\text{Total Consumer Surplus} = \text{Total Benefit} - \text{Total Expenditures} = \$64 - \$8 = \$56$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, Patrick would be able to buy 2 apples and 3 units of Good B and explains that his total expenditures would be $16

$$(= \$2 \times 2 \times \$4 \times 3)$$

, which is less than his weekly income of $30 .

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that 5 apples and 5 units of Good B will maximize Patrick's total benefit given his weekly income of $30 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of apples (0.5) is equal to the ratio of the marginal benefit to the price of Good B (0.5), or

$$\frac{MB_{Apples}}{Price_{Apples}} > \frac{MB_{Good\ B}}{Price_{Good\ B}}$$

$$\frac{\$1}{\$2} = \frac{\$2}{\$4}$$

$$0.5 = 0.5$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

c

0	1	2 ✓

The response does both of the following:

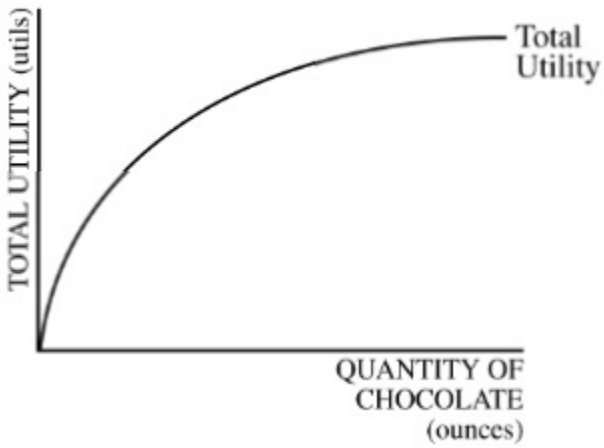
· States that Patrick's total consumer surplus would increase and explains that a decrease in the number of consumers in the market for Good B would decrease the demand for Good B, which would decrease the price of Good B, and a decrease in the price of Good B would decrease the total cost of consuming 2 units of Good B while the total benefit of consuming 2 units of Good B remains the same.

· States that the quantity of Good B that will maximize Patrick's total benefit will increase and explains that there has been a decrease in the price of Good B and an increase in the marginal benefit per dollar spent that Patrick gets from each additional unit of the good.

53. After graduating from high school, Peggy Smith decided to enroll in a two-year program at the local community college rather than to accept a job that offered a salary of $12,000 per year. If the annual tuition and fees are $4,600, the annual opportunity cost of attending the community college is

(A) $4,600
(B) $7,400
(C) $12,000
(D) $16,600 ✓
(E) $24,000

54.



The diagram above shows Sally's utility function for chocolate. Her utility function illustrates the principle of

c

(A) trade-offs when making choices

(B) diminishing marginal utility ✓

(C) income and substitution effects

(D) increasing opportunity cost

(E) constrained utility maximization

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Sam derives from consuming two goods, Good C and candles.

Quantity of Good C	*Marginal Benefit of Good C*	*Quantity of Candles*	*Marginal Benefit of Candles*
1	*$20*	1	$30
2	$16	2	$27
3	$12	3	$24
4	$8	4	$21
5	$6	5	$18
6	$4	6	$12

Sam has a limited weekly income of $21, and he spends it all on Good C and candles. Assume the price of Good C is $2 per unit and the price of each candle is $3.

(a) Given his weekly income, would Sam be able to buy 3 units of Good C and 3 candles? Explain using numbers.

(b) Calculate the total consumer surplus from Good C if Sam consumes 6 units of Good C. Show your work.

(c) Identify the quantity of Good C and the quantity of candles that will maximize Sam's total benefit given his weekly income. Explain using marginal analysis.

(d) Assume Good C is produced in a perfectly competitive market and that there is a decrease in the number of consumers in the market for Good C.
(i) Will the quantity of Good C that will maximize Sam's total benefit increase, decrease, or stay the same? Explain.
(ii) Would Sam's total consumer surplus from Good C if he consumes 6 units of Good C increase, decrease, or stay the same compared to your answer in part (b) ? Explain.

c

55. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, Sam would be able to buy 3 units of Good C and 3 candles and explains that his total expenditures would be $\$15 (= \$2 \times 3 + \$3 \times 3)$, which is less than his weekly income of $21.

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the total consumer surplus as $54 and shows the work.

$$\text{Total Consumer Surplus} = \text{Total Benefit} - \text{Total Expenditures}$$
$$= \$66 - \$12 = \$54$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that 3 units of Good C and 5 candles will maximize Sam's total benefit given his weekly income of $21 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good C (6) is equal to the ratio of the marginal benefit to the price of candles (6), or

$$\frac{MB_{Good\ C}}{Price_{Good\ C}} = \frac{MB_{Candles}}{Price_{Candles}}$$

c

$\frac{\$12}{\$2} = \frac{\$18}{\$3}$

$6 = 6$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the quantity of Good C that will maximize Sam's total benefit will increase and explains that a decrease in the number of consumers in the market for Good C will decrease the demand for Good C, which will decrease the price of Good C and increase the marginal benefit per dollar spent that Sam gets from each additional unit of the good.

· States that Sam's total consumer surplus would increase and explains that a decrease in the price of Good C would decrease the total cost of consuming 6 units of Good C while the total benefit of consuming 6 units of candles remains the same.

56. Assume a worker can either cut grass or wash windows in a given day. It takes 5 hours to mow a one-acre lawn and 2.5 hours to wash all the windows in a house. When a worker chooses to wash the windows of four houses in a neighborhood, what is the opportunity cost of this decision?

(A) The pay the worker receives for washing the windows in the four houses

(B) The pay the worker would receive for cutting one lawn

(C) Cutting the grass at the same four houses

(D) The pay the worker would have received from cutting the grass at two houses ✓

(E) The pay the worker would receive for cutting .25 lawns

57. The amount of product Z that must be forgone in order to obtain some amount of product Y is called

(A) factor payments

(B) opportunity cost ✓

(C) marginal product

(D) income effect

(E) substitution effect

c

Theresa consumes both bagels and toy cars.

Quantity of Bagels	Marginal Utility from Bagels (utils)	Quantity of Toy Cars	Marginal Utility from Toy Cars (utils)
1	8	1	10
2	7	2	8
3	6	3	6
4	5	4	4
5	4	5	3
6	3	6	2

a. The table above shows Theresa's marginal utility from bagels and toy cars.

   i. What is her total utility from purchasing three toy cars?

   ii. Theresa's weekly income is $11, price of a bagel is $2, and the price of a toy car is $1. What quantity of bagels and toy cars will maximize Theresa's utility if she spends her entire weekly income on bagels and toy cars? Explain your answer using marginal analysis.

b. Assume that the price of wheat, an input for the production of bagels, increases. Will Theresa's demand for bagels increase, decrease, or not change? Explain.

c. Suppose that Theresa's income elasticity for bagels is -0.2.Does the value of Theresa's income elasticity indicate that bagels are normal goods, inferior goods, substitutes, or complements?

d. Suppose that when the price of toy cars increases by 10 percent, Theresa buys 5 percent fewer toy cars and 4 percent less of a different toy, blocks. Calculate the cross-price elasticity for toy cars and blocks and indicate if it is positive or negative.

58. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

3 Points

- One point is earned for determining the total utility, which is 24.
- One point is earned for stating that three bagels and five toy cars will be purchased.
- One point is earned for explaining that with this combination of bagels and toys, the marginal utility per dollar spent on bagels equals the marginal utility per dollar spent on toy cars.

c

0	1	2	3 ✓

The student earns all of the following points:

- One point is earned for determining the total utility, which is 24.
- One point is earned for stating that three bagels and five toy cars will be purchased.
- One point is earned for explaining that with this combination of bagels and toys, the marginal utility per dollar spent on bagels equals the marginal utility per dollar spent on toy cars.

Part B

One point is earned for stating that Theresa's demand for bagels will not change because the increase in the price of wheat will affect the supply of bagels, not the demand.

0	1 ✓

The student earns all of the following points:

One point is earned for stating that Theresa's demand for bagels will not change because the increase in the price of wheat will affect the supply of bagels, not the demand.

Part C

One point is earned for stating that bagels are inferior goods.

0	1 ✓

The student earns all of the following points:

One point is earned for stating that bagels are inferior goods.

Part D

One point is earned for calculating the cross-price elasticity for toy cars and blocks: -0.04/0.10 = -0.4

c

0	1 ✓

The student earns all of the following points:

One point is earned for calculating the cross-price elasticity for toy cars and blocks: -0.04/0.10 = -0.4

c

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Polina derives from consuming two goods, sandwiches and Good E.

Quantity of Sandwiches	Total Benefit of Sandwiches	Quantity of Good E	Total Benefit of Good E
0	$0	0	$0
1	$120	1	$120
2	$210	2	$180
3	$270	3	$210
4	$300	4	$222
5	$310	5	$225
6	$315	6	$225

Polina has a limited weekly income of $24, and she spends it all on sandwiches and Good E. Assume the price of each sandwich is $3 and the price of Good E is $6 per unit.

(a) Calculate Polina's consumer surplus from the third unit of Good E. Show your work.

(b) Identify the quantity of Good E and the quantity of sandwiches that will maximize Polina's total benefit given her weekly income. Explain using marginal analysis.

(c) If Polina's weekly income increases from $24 to $28, will Polina be able to buy 4 sandwiches and 3 units of Good E? Explain using numbers.

(d) Suppose the price of Good E increases by 8% and Polina buys 2% less of Good E and 4% more of Good Y. Based on this change, identify whether Good E and Good Y are substitutes, complements, or not related. Explain using numbers.

(e) Suppose instead that sandwiches are produced in a perfectly competitive market and the price of bread, an input to the production of sandwiches, decreases. If sandwiches are a normal good, will the quantity of sandwiches that will maximize Polina's total benefit increase, decrease, or stay the same? Explain.

59. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

c

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates consumer surplus as $24 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \ \$30 - 6 = \$24$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that 4 sandwiches and 2 units of Good E will maximize Polina's total benefit given her weekly income of $24 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good E (10) is equal to the ratio of the marginal benefit to the price of sandwiches (10), or

$$\frac{MB_{Good\ E}}{Price_{Good\ E}} = \frac{MB_{Sandwich}}{Price_{Sandwich}}$$

$$\frac{\$30}{\$3} = \frac{\$60}{\$6}$$

$$10 = 10$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no, Polina would not be able to buy 4 sandwiches and 3 units of Good E and explains that her total expenditures would be $30

$$(= \$3 \times 4 + \$6 \times 3)$$

, which is greater than her weekly income of $28.

Part D

c

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that Good E and Good Y are substitutes and explains that the cross-price elasticity of demand is positive because an 8% increase in the price of Good E led to a 4% increase in the demand for Good Y.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the quantity of sandwiches that will maximize Polina's total benefit will increase and explains that a decrease in the price of an input to the production of sandwiches would increase the supply of sandwiches, which would decrease the price of sandwiches and increase the marginal benefit per dollar spent for each additional unit consumed.

c

60. Sasha is a utility-maximizing consumer who spends all of her income on peanuts and bananas, both of which are normal goods.

a. Assume that the last unit of peanuts consumed increased Sasha's total utility from 40 utils to 48 utils and that the last unit of bananas consumed increased her total utility from 52 utils to 56 utils.

i. If the price of a unit of peanuts is $1 and Sasha is maximizing utility, calculate the price of a unit of bananas.

ii. If the price of a unit of peanuts increases and the price of a unit of bananas remains unchanged from the price you determined in part (a)(i), how will Sasha's purchase of peanuts change?

b. Assume that the cross-price elasticity of demand between peanuts and bananas is positive. A widespread disease has destroyed the banana crop. What will happen to the equilibrium price and quantity of peanuts in the short run? Explain.

c. Assume that the price of bananas increases.

i. Will the substitution effect increase, decrease, or have no effect on the quantity of bananas demanded?

ii. What happens to Sasha's real income?

Please respond on separate paper, following directions from your teacher.

Part A

2 points:

- One point is earned for calculating the price of a unit of bananas, $4/8 = $0.50.
- One point is earned for stating that Sasha will purchase fewer peanuts.

0	1	2 ✓

Student receives 2/2 point(s)

2 points:

- One point is earned for calculating the price of a unit of bananas, $4/8 = $0.50.
- One point is earned for stating that Sasha will purchase fewer peanuts.

Part B

c

2 points:

- One point is earned for stating that the equilibrium price and quantity of peanuts will both increase.
- One point is earned for explaining that peanuts and bananas are substitutes, and since the price of bananas increased, it would cause the demand for peanuts to increase.

0	1	2 ✓

Student receives 2/2 point(s)

2 points:

- One point is earned for stating that the equilibrium price and quantity of peanuts will both increase.
- One point is earned for explaining that peanuts and bananas are substitutes, and since the price of bananas increased, it would cause the demand for peanuts to increase.

Part C

2 points:

- One point is earned for stating that the substitution effect causes the quantity of bananas demanded to decrease.
- One point is earned for stating that Sasha's real income will decrease.

0	1	2 ✓

Student receives 2/2 point(s)

2 points:

- One point is earned for stating that the substitution effect causes the quantity of bananas demanded to decrease.
- One point is earned for stating that Sasha's real income will decrease.

c

61.

Project	Total Costs(in millions)	Total Benefits(in millions)
Widening existing highways	$100	$80
Building new highways	$100	$90
Building a new bridge	$100	$140
Building a new tunnel	$100	$115
Expanding an existing airport	$100	$130

The table above shows the costs and benefits for new construction projects the government is considering. Based on these costs and benefits, which of the construction projects should the government undertake?

(A) Widening existing highways

(B) Building new highways

(C) Building a new bridge ✓

(D) Building a new tunnel

(E) Expanding an existing airport

c

The table below shows total utility in utils that a utility-maximizing consumer receives from consuming two goods: apples and oranges.

Apples		Oranges	
Quantity	Total utility	Quantity	Total utility
0	0	0	0
1	20	1	30
2	35	2	50
3	45	3	65
4	50	4	75
5	52	5	80

Assume that apples cost $1 each, oranges cost $2 each, and the consumer spends the entire income of $7 on apples and oranges.

a. Using the concept of marginal utility per dollar spent, identify the combination of apples and oranges the consumer will purchase. Explain your reasoning.

b. With the prices of apples and oranges remaining constant, assume that the consumer's income increases to $12. Identify each of the following.

    i. The combination of apples and oranges the consumer will now purchase

    ii. The total utility the consumer will receive from consuming the combination in (i)

c. With income remaining at $12, assume the price of oranges increases to $4 each. Identify each of the following.

    i. The combination of apples and oranges the consumer will now purchase

    ii. The total utility the consumer will receive from consuming the combination in (i)

62. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

Part a: The utility-maximizing consumer will exhaust her income, purchasing quantities of each good such that for each commodity the marginal utility of the last unit purchased divided by the price of the commodity is equal. This consumer will purchase 3 apples and 2 oranges. The marginal utility per dollar of each commodity is equal: 10/$1 for apples and 20/$2 for oranges.

1 point: 3 apples and 2 oranges
1 point: Marginal analysis: equalization of MU/$ or 10/1 (apples) = 20/2 (oranges)

c

0	1	2 ✓

Student receives 2/2 point(s)

Part a: The utility-maximizing consumer will exhaust her income, purchasing quantities of each good such that for each commodity the marginal utility of the last unit purchased divided by the price of the commodity is equal. This consumer will purchase 3 apples and 2 oranges. The marginal utility per dollar of each commodity is equal: 10/$1 for apples and 20/$2 for oranges.

1 point: 3 apples and 2 oranges
1 point: Marginal analysis: equalization of MU/$ or 10/1 (apples) = 20/2 (oranges)

Part B

Part b: With the increase in income, the consumer will now purchase 4 apples and 4 oranges and have 125 utils (50 from apples and 75 from oranges).

1 point: 4 apples and 4 oranges

1 point: 50+75 = 125 utils

0	1	2 ✓

Student receives 2/2 point(s)

Part b: With the increase in income, the consumer will now purchase 4 apples and 4 oranges and have 125 utils (50 from apples and 75 from oranges).

1 point: 4 apples and 4 oranges

1 point: 50+75 = 125 utils

Part C

Part c: With the increase in the price of oranges, the consumer will now purchase 4 apples and 2 oranges and have 100 utils (50 from apples and 50 from oranges).

1 point: 4 apples and 2 oranges

1 point: 50+50 = 100 utils

c

0	1	2 ✓

Student receives 2/2 point(s)

Part c: With the increase in the price of oranges, the consumer will now purchase 4 apples and 2 oranges and have 100 utils (50 from apples and 50 from oranges).

1 point: 4 apples and 2 oranges

1 point: 50+50 = 100 utils

63. When total utility is at its maximum, marginal utility is

(A) increasing
(B) negative
(C) equal to zero ✓
(D) at a maximum
(E) at minimum

64. Which of the following is a key assumption of consumer choice theory?

(A) Consumers buy goods as long as implicit costs are greater than explicit costs.
(B) Consumers maximize their utility. ✓
(C) As income rises, consumers buy more of all goods.
(D) Marginal utility is always increasing.
(E) As more inputs are used, consumers get less and less additional output.

65. Josephine is buying candy and gum. If she is maximizing her utility for the combination of candy and gum she buys, which of the following must hold?

(A) Marginal utility of candy ÷ price of candy = marginal utility of gum ÷ price of gum ✓
(B) Total utility of candy ÷ price of candy = total utility of gum ÷ price of gum
(C) Marginal utility of candy ÷ total utility of candy = marginal utility of gum ÷ total utility of gum
(D) Marginal utility of candy × price of candy = marginal utility of gum × price of gum
(E) Total utility of candy × price of candy = total utility of gum × price of gum

c

Utility maximization is a fundamental assumption in consumer theory.

a. Explain what is meant by diminishing marginal utility.

b. Assume that a consumer buys only two goods:X and Y. What is the utility-maximizing decision rule for the consumer in allocating total income to good X and good Y?

c. Assume that a utility- maximizing consumer is spending all of her income on the two goods, X and Y. The price per unit of good X is $2, and the price per unit of good Y is $3. The marginal utility of the last unit of good Y consumed is 15. What is the marginal utility of the last unit of good X consumed?

d. Assume that good X is a normal good and good Y is an inferior good. Assume that the consumer's income does not change. Assume that the price of good X increases.

    i. Indicate how the substitution effect of the increase in the price of good X will affect purchases of

        1. good X

        2. good Y

    ii. Indicate how the income effect of the increase in the price of good X will affect purchases of

        1. good X

        2. good Y

66. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

1 Point

- One point is earned for stating that as more of a good is consumed, utility increases at a diminishing rate.

0	1 ✓

The student earns all of the following points:

- One point is earned for stating that as more of a good is consumed, utility increases at a diminishing rate.

Part B

c

1 Point

- One point is earned for stating that MUx/Px = MUy/Py.

0	1 ✓

The student earns all of the following points:

- One point is earned for stating that MUx/Px = MUy/Py.

Part C

1 Point

- One point is earned for stating that MUx =10. (10/$2 = 15/$3)

0	1 ✓

The student earns all of the following points:

- One point is earned for stating that MUx = 10. (10/$2 = 15/$3)

Part D

4 Points

- One point is earned for stating less X.
- One point is earned for stating more Y.
- One point is earned for stating less X.
- One point is earned for stating more Y.

0	1	2	3	4 ✓

The student earns all of the following points:

- One point is earned for stating less X.

c

- One point is earned for stating more Y.
- One point is earned for stating less X.
- One point is earned for stating more Y.

67.

Quantity of Apples	Total Benefit ($)
1	10
2	18
3	24
4	28
5	30
6	31

The table above shows the total benefit Tony gets from eating different quantities of apples. If apples cost $3 each, how many should he buy to maximize his consumer surplus?

(A) 1
(B) 2
(C) 3
(D) 4 ✓
(E) 5

68. Assume the price of a candy bar is $2 and the price of a bag of chips is $3. Assume Lilly's marginal utility from consuming an additional candy bar is 10 utils and her marginal utility from consuming an additional bag of chips is 12 utils. If Lilly is spending her fixed weekly allowance on candy bars and bags of chips, which of the following actions will maximize Lilly's total utility?

(A) Buying more candy bars and bags of chips
(B) Buying more candy bars and fewer bags of chips ✓
(C) Buying fewer candy bars and more bags of chips
(D) Buying fewer candy bars and bags of chips
(E) Buying the same number of candy bars and bags of chips

c

69. Let MU_s be the marginal utility of a sandwich, MU_h be the marginal utility of a hot dog, P_s be the price of a sandwich, and P_h be the price of a hot dog. When the price of the goods is zero, Pat eats a sandwich. When Pat has to pay, she eats a hot dog. When Pat has to pay, which of the following is necessarily true?

(A) $MU_s = MU_h = P_s = P_h$

(B) $(MU_s / P_s) > (MU_h / P_h)$

(C) $P_s < P_h$

(D) $P_s > P_h$ ✓

(E) $MU_s = 0$

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the marginal benefit, in dollars, that Yanick derives from consuming two goods, Good A and shirts.

Quantity of Good A	Marginal Benefit of Good A	Quantity of Shirts	Marginal Benefit of Shirts
1	$64	1	$48
2	$40	2	$40
3	$24	3	$32
4	$12	4	$24
5	$4	5	$16
6	$0	6	$8

Yanick has a limited weekly income of $10, and he spends it all on Good A and shirts. Assume the price of Good A is $2 per unit and the price of each shirt is $4.

(a) Given his weekly income, would Yanick be able to buy 2 units of Good A and 2 shirts? Explain using numbers.

(b) Calculate the total consumer surplus from Good A if Yanick consumes 3 units of Good A. Show your work.

(c) Identify the quantity of Good A and the quantity of shirts that will maximize Yanick's total benefit given his weekly income. Explain using marginal analysis.

(d) Assume Good A is produced in a perfectly competitive market and that there is an increase in the number of consumers in the market for Good A.
(i) Will the quantity of Good A that will maximize Yanick's total benefit increase, decrease, or stay the same? Explain.
(ii) Would Yanick's total consumer surplus from Good A if he consumes 3 units of Good A increase, decrease, or stay the same compared to your answer in part (b) ? Explain.

c

70. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no Yanick would not be able to consume 2 units of Good A and 2 shirts and explains that his total expenditures would be $12

$$(= \$2 \times 2 + \$4 \times 2)$$

, which is greater than his weekly income of $10.

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the total consumer surplus as $128 and shows the work.

$$\text{Total Consumer Surplus} = \text{Total Benefit} - \text{Total Expenditures}$$
$$= \$128 - \$6 = \$122$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that 3 units of Good A and 1 shirt will maximize Yanick's total benefit given his weekly income of $10 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good A (12) is equal to the ratio of the marginal benefit to the price of shirts (12), or

c

$$\frac{MB_{Good\ A}}{Price_{Good\ A}} = \frac{MB_{Shirts}}{Price_{Shirts}}$$

$$\frac{\$24}{\$2} = \frac{\$48}{\$4}$$

$$12 = 12$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the quantity of Good A that will maximize Yanick's total benefit will decrease and explains that an increase in the number of consumers in the market for Good A will increase the demand for Good A, which will increase the price of Good A and decrease the marginal benefit per dollar spent that Yanick gets from each additional unit of the good.

· States that Yanick's total consumer surplus would decrease and explains that an increase in the price of Good A would increase the total cost of consuming 3 units of Good A while the total benefit of consuming 3 units of Good A remains the same.

c

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total benefit, in dollars, that Zeynep derives from consuming two goods, Good H and slices of pizza.

Quantity of Good H	Total Benefit of Good H	Slices of Pizza	Total Benefit of Pizza
0	$0	0	$0
1	*$100*	*1*	*$15*
2	*$148*	*2*	*$27*
3	*$172*	*3*	*$36*
4	*$184*	*4*	*$42*
5	*$190*	*5*	*$45*
6	*$192*	*6*	*$45*

Zeynep has a limited weekly income of $12, and she spends it all on Good H and slices of pizza. Assume the price of Good H is $2 per unit and the price of a slice of pizza is $1.

(a) Identify the quantity of Good H and slices of pizza that will maximize Zeynep's total benefit given her weekly income. Explain using marginal analysis.

(b) Calculate Zeynep's consumer surplus from the second slice of pizza. Show your work.

(c) If Zeynep's weekly income decreases from $12 to $10, would Zeynep be able to buy 5 units of Good H and 3 slices of pizza? Explain using numbers.

(d) Suppose that pizza is produced in a perfectly competitive market and the price of cheese, an input to the production of pizza, increases. If pizza is a normal good, will the number of slices of pizza that will maximize Zeynep's total benefit increase, decrease, or stay the same? Explain.

(e) Suppose instead that the price of Good H decreases by 3% and Zeynep buys 6% more of Good H and 2% less of Good Z. Based on this change, identify whether Good H and Good Z are substitutes, complements, or not related. Explain using numbers.

c

71. Respond to all parts of the question.

Please respond on separate paper, following directions from your teacher.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that 4 units of Good H and 4 slices of pizza will maximize Zeynep's total benefit given her weekly income of $12 and explains that for the last unit of each good consumed the ratio of the marginal benefit to the price of Good H (6) is equal to the marginal benefit to the price of slices of pizza (6), or

$$\frac{MB_{Good\ H}}{Price_{Good\ H}} = \frac{MB_{Slices\ of\ Pizza}}{Price_{Slices\ of\ Pizza}}$$

$$\frac{\$12}{\$2} = \frac{\$6}{\$1}$$

$$6 = 6$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates consumer surplus as $11 and shows the work.

$$\text{Consumer Surplus} = \text{Marginal Benefit} - \text{Price} = \ \$12 - 1 = \$11$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

c

The response states that no, Zeynep would not be able to buy 5 units of Good H and 3 slices of pizza and explains that her total expenditures would be \$13 $(= \$2 \times 5 + \$1 \times 3)$, which is greater than her weekly income of \$10.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the number of slices of pizza that will maximize Zeynep's total benefit will decrease and explains that an increase in the price of an input to production will decrease the supply of pizza, which will increase the price of pizza, and an increase in the price of pizza would increase the total cost of pizza purchased while the total benefit remains the same.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies Good H and Good Z as substitutes and explains that the cross-price elasticity of demand is positive because a 3% decrease in the price of Good H led to a 2% decrease in the demand for Good Z.