

Practice Questions Units 1.4, 1.5 and 1.6

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

**Answer B**

Correct. The total cost is rising with cleaning up pollution, while the total benefit is decreasing. Clean up efforts should be undertaken as long as the marginal benefit of additional cleanup exceeds the marginal cost. The optimal level of cleanup is 2 because the marginal benefit of the second cleanup (\$35) exceeds the marginal cost (\$30). Beginning with the third level of cleanup, the marginal cost (\$55) exceeds the marginal benefit (\$25). Thus, the optimal level is 2.

2. Assume the following utility schedule for Aaliyah's ice cream consumption.

<u>Quantity Consumed</u>	<u>Marginal Utility</u>
1	8
2	6
3	4
4	2
5	0
6	-2

If she consumes 6 units, what is the value of her total utility from consuming ice cream?

- (A) 22
(B) 20
(C) 18
(D) 0
(E) -2



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3. Cindy and Martin both sew t-shirts in a small factory. Using the same resources, Martin can sew twelve t-shirts and Cindy can sew nine t-shirts in one day. Which of the following can be concluded from the given information?
- (A) Martin has a higher opportunity cost of sewing t-shirts than Cindy does.
 - (B) Cindy has a comparative advantage in sewing t-shirts.
 - (C) Martin has a comparative advantage in sewing t-shirts.
 - (D) Martin has an absolute advantage in sewing t-shirts. ✓
 - (E) Cindy has an absolute advantage in sewing t-shirts.

Answer D

Correct. Martin has an absolute advantage in sewing t-shirts because he can sew more t-shirts than Cindy ($12 > 9$) using the same resources.

4. Nation Alpha can produce either 3 units of good X or 1 unit of good Y with one hour of labor, whereas nation Beta can produce either 4 units of good X or 2 units of good Y with one hour of labor. Assuming that labor is the only input, which of the following is true?
- (A) Beta has an absolute advantage in the production of good X. ✓
 - (B) Alpha has an absolute advantage in the production of good Y.
 - (C) Beta has a comparative advantage in the production of good X.
 - (D) Alpha has a comparative advantage in the production of good Y.
 - (E) Alpha has both an absolute and comparative advantage in the production of good Y.

Answer A

Correct. Beta has an absolute advantage in the production of good X given that it can produce more X in an hour than Alpha can (4 is greater than 3).

5. The additional satisfaction received from consuming an additional unit of a good is called the
- (A) marginal utility ✓
 - (B) marginal product
 - (C) average product
 - (D) average utility
 - (E) total utility

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6. Both Amy and Brad produce and consume apple pie and ice cream. In one hour, Brad makes five apple pies or ten gallons of ice cream while Amy makes fifteen apple pies or fifteen gallons of ice cream.

Based on the information, one can correctly conclude that

- (A) Brad has an absolute advantage in making ice cream and will sell ice cream to Amy
- (B) Brad has a comparative advantage in making ice cream and will sell ice cream to Amy ✓
- (C) Brad does not have a comparative advantage in making either good and will not trade with Amy
- (D) Brad has an absolute advantage in making apple pies but a comparative advantage in making ice cream
- (E) Brad's opportunity cost of making ice cream is higher than Amy's

7.

	Apples	Bananas
Marginal utility of last unit	15	12
Price per unit	\$5	\$3

The table provided shows Ricardo's marginal utility of the last unit consumed of apples and bananas and the price of each good. Ricardo has \$125 to spend on apples and bananas. He currently buys 10 apples and 25 bananas. Assuming that he remains within his budget constraint, Ricardo should do which of the following to increase his utility?

- (A) Buy more of both goods
- (B) Buy fewer of both goods
- (C) Buy more bananas and fewer apples ✓
- (D) Buy more apples and fewer bananas
- (E) Continue buying the same quantities of both goods

Answer C

Correct. At the initial consumption level, the marginal utility per dollar from consuming apples is $\frac{15}{\$5} = 3$, which is less than $\frac{12}{\$3} = 4$ for bananas. Thus, Ricardo has the incentive to buy more bananas and fewer apples because he gets more marginal utility per dollar for bananas than apples.

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8. If Aurora maximizes her total utility by spending her entire budget to purchase apples and oranges, which of the following best explains her decision making?
- (A) The amount spent on apples is equal to the amount spent on oranges.
 - (B) The total utility received from consuming apples is equal to the total utility received from consuming oranges.
 - (C) The marginal utility received from consuming the last apple is equal to the marginal utility received from consuming the last orange.
 - (D) The marginal utility of the last dollar spent on apples is equal to the marginal utility of the last dollar spent on oranges. ✓
 - (E) The marginal utility received from consuming the last apple and that received from consuming the last orange are both maximized.

Answer D

Correct. A consumer maximizes total utility when the last dollar spent on different goods gives the same marginal utility, as long as the entire budget is used. Thus, Aurora will maximize total utility by consuming the quantity at which

$$\frac{\text{Marginal Utility}_{\text{apples}}}{\text{Price}_{\text{apples}}} = \frac{\text{Marginal Utility}_{\text{oranges}}}{\text{Price}_{\text{oranges}}}.$$

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9. 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?

Respond to all parts of the question:

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.



0	1
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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.



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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.



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The response accurately includes the criterion below.

- ☐ Identifies the optimal number of advertisements as 4 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.



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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.



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The response accurately includes the criterion below.

- ☐ States that AZY Foods is operating in a monopolistically competitive market structure.

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10.

	Brazil	Spain
Corn	2 hours of labor	4 hours of labor
Shoes	8 hours of labor	12 hours of labor

The table above shows the amount of labor required to produce a unit of corn and a unit of shoes in Brazil and Spain. If both countries have equal numbers of workers, what pattern of international trade between Brazil and Spain is most likely to emerge?

- (A) Brazil will export both corn and shoes.
- (B) Spain will export both corn and shoes.
- (C) No mutually beneficial trade can occur.
- (D) Brazil will export corn and import shoes.
- (E) Brazil will import corn and export shoes.



11. 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?

- (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.



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12. A city is considering building playgrounds in city parks located near residential areas. The city planner presented to the township the following cost and benefit estimates to help the city council decide how many playgrounds to build.

Number of Playgrounds	Total Cost (\$)	Total Benefit (\$)
1	20,000	30,000
2	50,000	70,000
3	80,000	105,000
4	110,000	140,000
5	160,000	150,000
6	170,000	165,000

What is the optimal number of playgrounds to maximize net benefits?

- (A) 6
(B) 5
(C) 4
(D) 3
(E) 2



Answer C

Correct. Building 4 playgrounds maximizes net benefits
(net benefits = total benefits - total costs = \$140,000 - \$110,000 = \$30,000).

13. 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.



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14. The table shows the number of labor hours it takes Alpha and Beta to produce a smartphone or a cake with the same resources.

	Smartphone	Cake
Alpha	5 hours	2 hours
Beta	2 hours	1 hour

If tasks are assigned according to comparative advantage, which of the following is true?

- (A) Alpha will produce both goods.
(B) Beta will produce both goods.
(C) Alpha will produce smartphones and Beta will produce cakes.
(D) Alpha will produce cakes and Beta will produce smartphones. ✓
(E) Alpha has an absolute advantage in producing both goods.

Answer D

Correct. The country with the lower opportunity cost in production of a good is said to have the comparative advantage in the production of that good and will specialize by producing that good. In this case, Alpha can produce $\frac{1}{5}$ of a smartphone or $\frac{1}{2}$ of a cake per labor hour; therefore, Alpha's opportunity cost of producing 1 cake is $\frac{2}{5}$ of a smartphone. Beta can produce $\frac{1}{2}$ of a smartphone or 1 cake per labor hour; therefore, Beta's opportunity cost of producing 1 cake is $\frac{1}{2}$ of a smartphone. Since Alpha's opportunity cost of producing cakes is lower than Beta's ($\frac{2}{5} < \frac{1}{2}$), Alpha has a comparative advantage in the production of cakes and will specialize in producing cakes. Similarly, Beta's opportunity cost of producing smartphones is lower than Alpha's ($2 < \frac{5}{2}$), so Beta has a comparative advantage in the production of smartphones and will specialize in producing smartphones.

Practice Questions Units 1.4, 1.5 and 1.6

15. 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.

Two countries, Marland and Teckana, can produce either clothing or food using all their available resources at constant opportunity cost. The table below shows the daily production of clothing or food in Marland and Teckana.

	Clothing	Food
Marland	120	20
Teckana	80	20

- (a) Which country has the absolute advantage in producing food? Explain.
- (b) Which country has the comparative advantage in producing food? Explain using numbers.
- (c) Assume the two countries specialize based on their comparative advantage. If the two countries engage in trade and one unit of food is exchanged for 5 units of clothing, will these terms of trade be mutually beneficial? Explain.
- (d) Suppose Teckana invented new equipment to only increase the production of clothing.
- (i) Draw a correctly labeled graph of Teckana’s initial production possibilities curve, with clothing on the horizontal axis and food on the vertical axis. Plot the numerical values above on the graph.
- (ii) Show the effect of the new equipment on Teckana’s production possibilities curve.
- Respond to all parts of the question.

Part (a)

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



0	1
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The response states that neither country has an absolute advantage in producing food and explains that both countries are producing the same amount of food.

Part (b)

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



0	1
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The response states that Teckana has a comparative advantage in producing food and explains that Teckana has a lower opportunity cost in producing food than Marland. Teckana’s opportunity cost of producing one unit of food is 4 units of clothing ($80/20 = 4$). Marland’s opportunity cost of producing one unit of food is 6 units of clothing ($120/20 = 6$).

Part (c)

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

Practice Questions Units 1.4, 1.5 and 1.6

✓

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1

The response states that the terms of trade are mutually beneficial and explains that the terms of trade fall between the opportunity costs of both countries (i.e., between 4 and 6 units of clothing).

Part (d)

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

The two criteria in Part D are not achieved independently. Students must draw a correctly labeled graph of Teckana's initial PPC_1 in order to receive the first point. Receiving the second point is dependent on receiving the first point.

✓

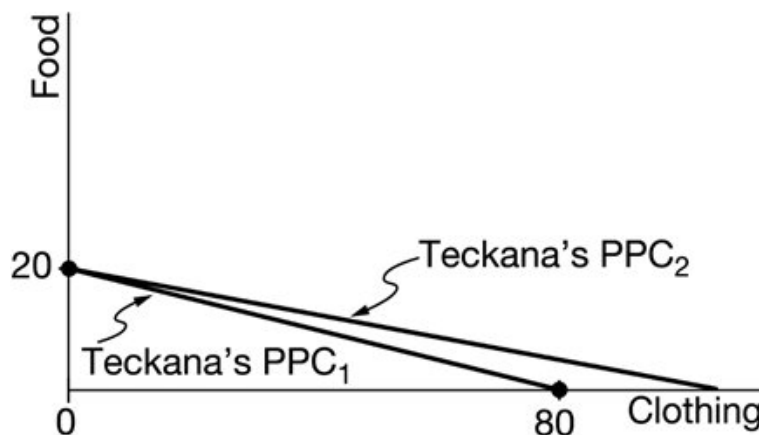
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2

The response accurately includes both of the criteria below.

- ☐ A correctly labeled graph of Teckana's PPC (PPC_1) showing 80 units of clothing on the horizontal axis and 20 units of food on the vertical axis as shown on the graph below.
- ☐ A new PPC (PPC_2) for Teckana showing more units of clothing and 20 units of food as shown on the graph below.



16. 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

✓

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17. 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 ✓
18. 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.
19. 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.

Answer C

Correct. Cost-benefit analysis involves comparing total costs and total benefits to maximize net benefits.

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20.

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

**Answer B**

Correct. The optimal number of hours to spend at the library is achieved when the marginal benefit is greater than or equal to the marginal cost. When the student spends 3 hours, the marginal benefit (6) is greater than the marginal cost (5), therefore the student should spend more hours studying in the library as long as the marginal benefit of the next hour exceeds the marginal cost. If the student spends the next hour, the fourth hour, at the library, the marginal cost (7) will exceed the marginal benefit (5). Thus, the student should spend three hours and not spend the fourth hour studying at the library.

21.

UNITS OF MANUFACTURED GOODS AND
SERVICE GOODS PRODUCED USING
ONE HOUR OF LABOR

Country	Manufactured Goods	Service Goods
A	100 units	300 units
B	75 units	150 units

According to the information in the table above, which of the following statements is true if both countries have the same number of workers?

- (A) Country A has both an absolute and a comparative advantage in manufactured goods.
 (B) Country A has an absolute advantage in manufactured goods but a comparative advantage in service goods.
 (C) Country B has a comparative advantage in service goods but no absolute advantage in either good.
 (D) Country A has an absolute advantage in service goods but a comparative advantage in manufactured goods.
 (E) Country B has an absolute advantage in manufactured goods, but without more information, it is not possible to tell in which product it has a comparative advantage.



Practice Questions Units 1.4, 1.5 and 1.6

22. Dana and Robin produce smoothies and pizza. In one hour Dana can make 20 smoothies or 10 pizzas. In one hour Robin can make 18 smoothies or 6 pizzas. Which of the following statements is true?
- (A) Robin has an absolute advantage in making smoothies and a comparative advantage in making pizzas.
 - (B) Robin has both an absolute advantage and a comparative advantage in making pizzas.
 - (C) Dana has a comparative advantage in making both smoothies and pizzas.
 - (D) Dana has a comparative advantage in making pizzas, and Robin has a comparative advantage in making smoothies. ✓
 - (E) Dana has a comparative advantage in making smoothies, and Robin has a comparative advantage in making pizzas.
23. 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
24. 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 ✓

Answer E

Correct. Given limited income and the prices of the goods, a consumer maximizes utility by choosing the combination of the two goods such that the marginal utility of the last dollar spent on one good is equal to the marginal utility of the last dollar spent on the other good. That is, the extra utility per dollar spent must be the same for the last unit of each good.

25. 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

Practice Questions Units 1.4, 1.5 and 1.6

26. For a rational consumer with diminishing marginal utility, the consumption of an additional unit of a good will result in which of the following?
- (A) Total utility will increase until it equals marginal utility.
 - (B) Total utility will increase while marginal utility will be negative.
 - (C) Total utility will increase while marginal utility will decrease. ✓
 - (D) Total utility will decrease while marginal utility will be positive.
 - (E) Total utility will decrease while marginal utility will increase.

Answer C

Correct. Rational consumers with diminishing marginal utility will consume an additional unit of a good as long as the marginal utility of the last unit consumed is positive even if that last unit provides less additional utility than previous units of the good consumed. This happens if the additional utility provided by the consumption of that unit is positive, which will increase total utility.

27. Which of the following statements regarding specialization and trade is true?
- (A) With specialization and trade, a country's production possibilities curve shifts out, showing an increase in productive capacity.
 - (B) With specialization and trade, a country will produce a combination of goods beyond its production possibilities curve.
 - (C) To gain from trade, countries specialize in producing goods and services in which they have an absolute advantage.
 - (D) With specialization and trade, a country can consume beyond its production possibilities curve. ✓
 - (E) A country must have both the comparative and the absolute advantage in a product to specialize and gain from trade.

Answer D

Correct. With specialization and trade a country remains on its production possibilities curve but produces more of the good for which it has comparative advantage. Trading some of that good for another good would allow a country to consume beyond its production possibilities curve.

28. Assume both Italy and Greece produce only two goods: wine and olive oil. If Italy holds a comparative advantage in the production of wine, then which of the following statements is NOT true?
- (A) Italy must hold an absolute advantage in the production of wine. ✓
 - (B) Greece holds a comparative advantage in the production of olive oil.
 - (C) Italy's opportunity cost of producing one additional unit of wine is lower than Greece's.
 - (D) Greece's opportunity cost of producing one additional unit of olive oil is lower than Italy's.
 - (E) If trade is open between them, these countries have an incentive to trade.

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

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

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

- (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.
30. 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

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31. 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

- Calculate the marginal benefit Kerri receives from buying the third volleyball.
- Assume the price of each volleyball is \$9.
 - Calculate Kerri's total consumer surplus if she buys two volleyballs. Show your work.
 - How many volleyballs should Kerri buy to maximize her total consumer surplus from volleyballs? Explain using marginal analysis.
- Assume that the market for volleyballs is perfectly competitive and that soccer balls are a substitute for volleyballs.
 - 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 .
 - 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).
- Assume instead that a 10 percent increase in income causes the demand for volleyballs to fall by 5 percent.
 - Calculate the income elasticity of demand for volleyballs.
 - Does the value of the income elasticity indicate that volleyballs are a normal good or an inferior good? Explain.

Respond to all parts of the question.

Part A

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



0	1
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The student earns all of the following points:

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

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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.

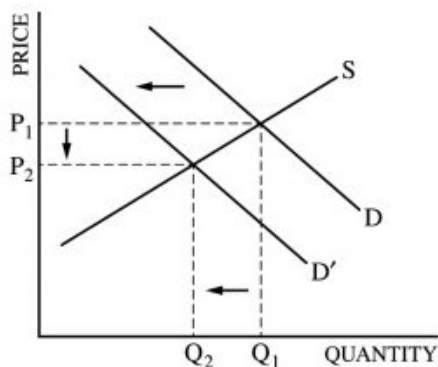
✓

0	1	2
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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



2 Points

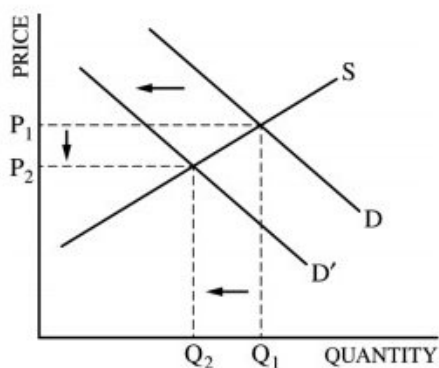
- One point is earned for drawing a correctly labeled graph for the volleyball market.
- One point is earned for showing a leftward shift of the demand curve for volleyballs, resulting in a lower equilibrium price and quantity.

✓

0	1	2
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The student earns all of the following points:

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- 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.

✓

0	1	2
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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.

32. The table below shows the number of hours it takes for Kim to install a computer or to paint a garage and for Maria to install a computer or to paint a garage.

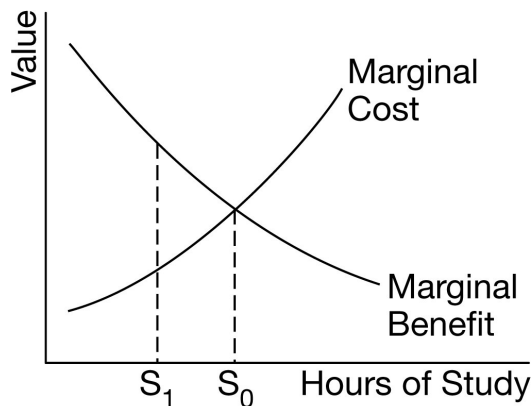
	<u>Kim</u>	<u>Maria</u>
Install computer	2 hours	4 hours
Paint garage	10 hours	12 hours

If tasks are assigned according to comparative advantage, which of the following is true?

- (A) Kim should perform both tasks.
- (B) Maria should perform both tasks.
- (C) Kim should install computers and Maria should paint garages. ✓
- (D) Kim should paint garages and Maria should install computers.
- (E) Kim and Maria should both install computers.

Practice Questions Units 1.4, 1.5 and 1.6

33.



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.

Answer C

Practice Questions Units 1.4, 1.5 and 1.6

34.

Number of Apples	Total Utility
2	130
3	180
4	220
5	250
6	270
7	280

The marginal utility per dollar spent on the last orange consumed is 75. If the price of an apple is \$0.50, how many apples would Johnny have to consume before he considers purchasing another orange?

- (A) 2
- (B) 3
- (C) 4
- (D) 5
- (E) 6

**Answer C**

Correct. The marginal utility per dollar spent on the fourth apple is $\frac{(220-180)}{\$0.50} = 80$. This is the last apple that has a marginal utility per dollar spent that is greater than 75.

35. 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

**Answer E**

Correct. A consumer's willingness to pay reflects how much the consumer values the good or service. Specifically, the demand curve reflects the marginal value of each unit of the good, which is equal to the maximum amount the consumer is willing to pay for that unit. The marginal value decreases as quantity increases.

Practice Questions Units 1.4, 1.5 and 1.6

36. When marginal utility from consuming a good is zero, the total utility from consuming the good is
- (A) zero
 - (B) negative
 - (C) maximized
 - (D) rising at a constant rate
 - (E) equal to marginal utility per dollar spent on the good

Answer C

Correct. Marginal utility represents the change in total utility as a result of consuming one more unit of a good. Once the consumption of a good has reached the point where the marginal utility is zero, additional consumption of the good will result in negative marginal utility and thus a reduction in total utility. Therefore, when marginal utility from consuming a good is zero, total utility has been maximized.

37.

Milkshake Cups	Total Utility (utils)
1	50
2	100
3	145
4	185
5	220

Which of the following is true based on Rosco's utility data given in the table provided?

- (A) Rosco's marginal utility from the fourth cup is 185 utils.
- (B) Rosco's marginal utility from the fifth cup is 35 utils.
- (C) Rosco's marginal utility from the third cup is greater than the marginal utility from the second cup.
- (D) Rosco's marginal utility from the fourth cup is greater than the marginal utility from the third cup.
- (E) Rosco's total utility and marginal utility both increase as he consumes more cups of milkshake.

Answer B

Correct. Marginal utility is calculated as the change in total utility/change in units consumed, which is $\frac{220-185}{5-4} = 35$ utils in this case.

Practice Questions Units 1.4, 1.5 and 1.6

38. 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



Practice Questions Units 1.4, 1.5 and 1.6

39. 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

- Nirali spends 3 hours studying microeconomics and 2 hours studying history. Calculate her gain from the second hour spent studying history.
- Calculate Nirali's opportunity cost of the second hour spent studying history.
- Assume Nirali increases the time she allocates to studying history. What happens to the opportunity cost of studying history? Explain.
- 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?
- 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.

Respond to all parts of the question.

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:

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).

Practice Questions Units 1.4, 1.5 and 1.6



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.

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.

Practice Questions Units 1.4, 1.5 and 1.6

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.

Practice Questions Units 1.4, 1.5 and 1.6

40. The table shows the marginal utility that Olivia derives from consuming two goods: chocolate bars and slices of pizza.

Quantity of Chocolate Bars	Marginal Utility of Chocolate Bars (in utils)	Quantity of Pizza Slices	Marginal Utility of Pizza Slices (in utils)
1	10	1	26
2	6	2	20
3	5	3	15
4	4	4	12
5	2	5	10
6	1	6	9

Olivia has a limited weekly income of 10 and spends it all on chocolate bars and slices of pizza. Assume the price of each chocolate bar is 1 and the price of each slice of pizza is \$2. What combination of chocolate bars and pizza slices will maximize Olivia's total utility given her weekly income?

- (A) 0 chocolate bars and 5 slices of pizza
 (B) 1 chocolate bar and 2 slices of pizza
 (C) 2 chocolate bars and 4 slices of pizza
 (D) 4 chocolate bars and 3 slices of pizza
 (E) 6 chocolate bars and 2 slices of pizza



Answer C

Correct. Consumers maximize their total utility by consuming up to the point where marginal utility per dollar of one good is equal to that of the other good, while also spending their entire budget. In this example, the marginal utility per dollar spent on 2 chocolate bars is equal to $\frac{6}{\$1} = 6$, and the marginal utility per dollar spent on 4 slices of pizza is equal to $\frac{12}{\$2} = 6$. Additionally, Olivia spends $(\$1 \times 2) + (\$2 \times 4) = \$10$, which is the entire budget. Since Olivia consumes both goods up to the point where the marginal utility per dollar spent on each good is equal, and she spends the entire budget, Olivia must be maximizing total utility by consuming 2 chocolate bars and 4 slices of pizza.

Practice Questions Units 1.4, 1.5 and 1.6

41. If Nation X produces coffee at a higher opportunity cost than Nation Y, which of the following is true?

- (A) Nation X must have an absolute advantage in producing coffee.
- (B) Nation X must have a comparative advantage in producing coffee.
- (C) Nation Y must have an absolute advantage in producing coffee.
- (D) Nation Y must have a comparative advantage in producing coffee. ✓
- (E) There is insufficient information to determine both absolute and comparative advantage.

Answer D

Correct. Given that Nation Y has a lower opportunity cost than Nation X, it must have a comparative advantage.

42. 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

43. 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.

Practice Questions Units 1.4, 1.5 and 1.6

44. 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.

Respond to all parts of the question.

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 \$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
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Practice Questions Units 1.4, 1.5 and 1.6

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 \4×3), 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.



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.

45. 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



Practice Questions Units 1.4, 1.5 and 1.6

46. The table below shows the total labor hours required to produce a unit of gold and the total labor hours required to produce a unit of sugar in Portugal and Spain, respectively.

	<u>Portugal</u>	<u>Spain</u>
Gold	1 hour	2 hours
Sugar	4 hours	3 hours

Which country has an absolute advantage in sugar production?

- (A) Neither Spain nor Portugal, because both require fewer labor hours to produce a unit of gold than to produce a unit of sugar.
- (B) Spain, because the opportunity cost of sugar in terms of gold is lower.
- (C) Spain, because it requires fewer total labor hours than Portugal to produce a unit of sugar. ✓
- (D) Portugal, because it requires more total labor hours than Spain to produce a unit of sugar.
- (E) Portugal, because it takes only a quarter of an hour to produce a unit of sugar.

Practice Questions Units 1.4, 1.5 and 1.6

47. 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.

Assume both Atlantis and Zanadu produce helmets and baseballs. Using equal amounts of resources, Atlantis can produce 100 helmets or 200 baseballs, whereas Zanadu can produce 100 helmets or 400 baseballs.

- (a) Assume both Atlantis and Zanadu experience constant opportunity costs in producing helmets and baseballs. Draw a correctly labeled graph illustrating the production possibilities curves (PPCs) for Atlantis and Zanadu, showing helmets on the horizontal axis and baseballs on the vertical axis. Plot the numerical values provided above on your graph.
- (b) Calculate the opportunity cost of one helmet for Atlantis. Show your work.
- (c) Which country has an absolute advantage in the production of baseballs?
- (d) Which country has a comparative advantage in the production of baseballs? Explain.
- (e) If Atlantis and Zanadu specialize based on comparative advantage and trade, would they be able to gain from trade if the terms of trade are 1 helmet for 3 baseballs? Explain.

Respond to all parts of the question.

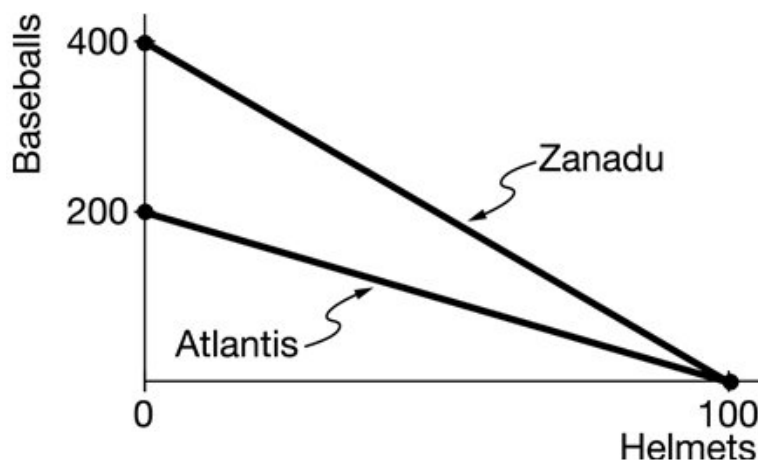
Part (a)

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



0	1
---	---

The response includes a correctly labeled graph of the production possibilities curves for Atlantis and Zanadu with helmets on the horizontal axis and baseballs on the vertical axis and using the numerical values provided (see graph below).



Part (b)

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



0	1
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Practice Questions Units 1.4, 1.5 and 1.6

The response correctly calculates the opportunity cost of one helmet for Atlantis as 2 baseballs and shows in the work that the opportunity cost = $200 \text{ baseballs} / 100 \text{ helmets} = 2 \text{ baseballs per helmet}$

Part (c)

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



0	1
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The response states that Zanadu has an absolute advantage in the production of baseballs.

Part (d)

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



0	1
---	---

The response indicates that Zanadu has a comparative advantage in the production of baseballs and explains that Zanadu has a lower opportunity cost of producing a baseball ($1/4$ of a helmet) than Atlantis's opportunity cost of producing a baseball ($1/2$ of a helmet).

Part (e)

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



0	1
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The response correctly answers with "yes" and explains that the terms of trade fall between the opportunity costs of producing helmets in the two countries (i.e., between 2 baseballs in Atlantis and 4 baseballs in Zanadu).

Practice Questions Units 1.4, 1.5 and 1.6

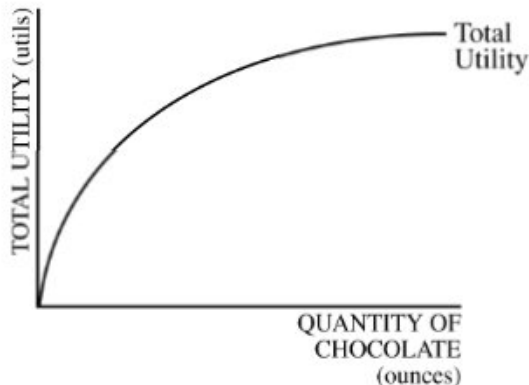
48. Cost-benefit analysis assumes rational agents do which of the following?

- (A) Always make a decision that is best for society
- (B) Compare additional costs and additional benefits when making a decision ✓
- (C) Consider only what they will lose when making a decision
- (D) Consider only what they will gain when making a decision
- (E) Always make the same decision

Answer B

Correct. To maximize benefit, rational individuals compare additional costs and additional benefits when making a decision. As long as the additional benefit of an action exceeds the additional cost it will be beneficial to undertake the activity.

49.



The diagram above shows Sally's utility function for chocolate.

Her utility function illustrates the principle of

- (A) trade-offs when making choices
- (B) diminishing marginal utility ✓
- (C) income and substitution effects
- (D) increasing opportunity cost
- (E) constrained utility maximization

50. Suppose that in one week Sam can knit 5 sweaters or make 4 blankets and Rob can knit 10 sweaters or make 6 blankets. Which of the following is true?

- (A) Sam has an absolute advantage in making blankets.
- (B) Sam has an absolute advantage in knitting sweaters.
- (C) Sam has a comparative advantage in making blankets. ✓
- (D) Sam has a comparative advantage in knitting sweaters.
- (E) Sam has neither a comparative nor an absolute advantage in knitting sweaters or making blankets.

Practice Questions Units 1.4, 1.5 and 1.6

51. Sasha is a utility-maximizing consumer who spends all of her income on peanuts and bananas, both of which are normal goods.
- 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.
 - If the price of a unit of peanuts is \$1 and Sasha is maximizing utility, calculate the price of a unit of bananas.
 - 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?
 - 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.
 - Assume that the price of bananas increases.
 - Will the substitution effect increase, decrease, or have no effect on the quantity of bananas demanded?
 - What happens to Sasha's real income?

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

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)

Practice Questions Units 1.4, 1.5 and 1.6

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.

52. Nation Aga can produce either 3 units of good X or 1 unit of good Y with one hour of labor, while nation Kaza can produce either 4 units of good X or 2 units of good Y with one hour of labor. Assuming that labor is the only input, mutually beneficial exchange can take place between Aga and Kaza if

- (A) Aga exchanges $\frac{1}{2}$ unit of good X for 1 unit of good Y from Kaza.
- (B) Aga exchanges $1\frac{1}{2}$ units of good X for 1 unit of good Y from Kaza.
- (C) Aga exchanges $2\frac{1}{2}$ units of good X for 1 unit of good Y from Kaza.
- (D) Kaza exchanges 1 unit of good Y for 1 unit of good X from Aga.
- (E) Kaza exchanges 2 units of good Y for 1 unit of good X from Aga.



Answer C

Correct. Kaza's opportunity cost of producing 1 unit of Y is 2 units of X and Aga's opportunity cost of producing 1 unit of Y is 3 units of X; thus, exchanging 1 unit of Y for $2\frac{1}{2}$ units of X is beneficial to both nations.

Practice Questions Units 1.4, 1.5 and 1.6

53. 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

Answer D

Correct. The opportunity cost of washing windows is the next-best alternative the worker has given up to wash windows. If it takes 5 hours to mow the one-acre lawn and 2.5 hours to wash the windows, the opportunity cost of mowing one lawn is washing the windows of two houses; the opportunity cost of washing the windows of one house is mowing .5 lawns. Thus, in washing the windows of four houses the worker is expending 10 hours, the time in which he could cut two lawns; or 4 houses multiplied by .5 lawns equals two lawns and the pay that he would have earned.

54.

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

Answer C

Correct. Cost-benefit analysis involves comparing total costs and total benefits to maximize net benefits. When comparing the net benefits of each choice, net benefits are maximized when building a new bridge (\$40 million).

Practice Questions Units 1.4, 1.5 and 1.6

55. 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.

- Using the concept of marginal utility per dollar spent, identify the combination of apples and oranges the consumer will purchase. Explain your reasoning.
- With the prices of apples and oranges remaining constant, assume that the consumer's income increases to \$12. Identify each of the following.
 - The combination of apples and oranges the consumer will now purchase
 - The total utility the consumer will receive from consuming the combination in (i)
- With income remaining at 12, assume the price of oranges increases to 4 each. Identify each of the following.
 - The combination of apples and oranges the consumer will now purchase
 - The total utility the consumer will receive from consuming the combination in (i)

Respond to all parts of the question.

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)



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)

Practice Questions Units 1.4, 1.5 and 1.6

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
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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



0	1	2
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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

56. A country can consume beyond its present production possibilities curve when it

(A) trades with other countries, thus taking advantages of different opportunity costs



(B) reduces unemployment, thus increasing output

(C) experiences decreasing opportunity costs.

(D) faces an upward-sloping production possibilities curve

(E) faces a downward-sloping production possibilities curve

Practice Questions Units 1.4, 1.5 and 1.6

57. 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 $\div$ price of candy = marginal utility of gum $\div$ price of gum ✓
- (B) Total utility of candy $\div$ price of candy = total utility of gum $\div$ price of gum
- (C) Marginal utility of candy $\div$ total utility of candy = marginal utility of gum $\div$ total utility of gum
- (D) Marginal utility of candy $\times$ price of candy = marginal utility of gum $\times$ price of gum
- (E) Total utility of candy $\times$ price of candy = total utility of gum $\times$ price of gum

Answer A

Correct. To maximize utility, Josephine must allocate her income so that the marginal utility per dollar spent on the last unit of each good is equal. The formula for maximizing utility is $\frac{\text{MU of candy}}{\text{Price of candy}} = \frac{\text{MU of gum}}{\text{Price of gum}}$.

58. In the country Beta it takes two hours of labor to produce a unit of tea and four hours of labor to produce a unit of bread. In the country Zeta it takes three hours of labor to produce a unit of tea and nine hours of labor to produce a unit of bread. Which of the following is true?

- (A) Country Zeta has an absolute advantage in producing both tea and bread.
- (B) Country Zeta has an absolute advantage and a comparative advantage in producing tea.
- (C) Country Beta has an absolute advantage and a comparative advantage in producing tea.
- (D) Country Beta has the lower opportunity cost in producing bread and therefore a comparative advantage in producing bread. ✓
- (E) Country Beta, with trade, will export both tea and bread to country Zeta.

Answer D

Correct. A country has a comparative advantage in producing a good if it has the lowest opportunity cost of producing the good. In Beta it takes 2 hours to produce a unit of tea and 4 hours to produce a unit of bread; the opportunity cost of a unit of bread is two units of tea. In Zeta it takes 3 hours to produce a unit of tea and 9 hours to produce a unit of bread; the opportunity cost of a unit of bread is 3 units of tea. Since two teas (Beta) is less than three teas (Zeta) for a unit of bread, Beta has the comparative advantage in producing bread.