

AP[®] MICROECONOMICS
2012 SCORING GUIDELINES

Question 2

6 points (3 + 1 + 1 + 1)

(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.

(b) 1 point:

- 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.

(c) 1 point:

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

(d) 1 point:

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

2A₁₄₂

2. 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

TU
10
18
24
28
31
33

- (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? 24
 - (ii) Theresa's weekly income is \$11, the 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. not change
- (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? ~~sub~~ $\frac{\Delta Q}{\Delta P}$ pos = normal
- (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. $\frac{\Delta Q_{DA}}{\Delta P_B} = \frac{-4}{10} = -0.4$ (negative)

(a) i. TU = 24

~~possible combinations~~

Q Bagels	MU/p	cars	MU/p
1	4	10	
2	3.5	8	
3	3	6	
4	2.5	4	
5	2	3	
6	1.5	2	

\$6 1 bagel, 4 cars: TU = 8 + 28 = 36

\$11 3 bagels, 5 cars: TU = 21 + 31 = 52

~~\$16 5 bagels, 6 cars: TU =~~

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ii (continued). Theresa should purchase 3 bagels and 5 cars. At this point,

$$\frac{MU}{P} = \frac{MU}{P}$$

she is spending all 11 dollars, and of all possible combinations, this is where her total utility is greatest.

(b) if the price of an input increases, this will decrease the supply. A change in supply ~~and~~ affects the quantity demanded, not the demand. Therefore, Theresa's demand will not change.

(c) Income elasticity = ~~100~~ $\frac{\% \Delta QD}{\% \Delta I}$

If negative, they are inferior goods. Since they are -0.2 , bagels are inferior goods.

(d) cross price elasticity: $\frac{\% \Delta QD_A}{\% \Delta P_B}$ A = bagels B = cars

$$\frac{-4}{10} = \boxed{-0.4 \text{ (negative)}}$$

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2B 192

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- (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.

2ai 24 utils

$$2aii \frac{MU_{TC}}{P_{TC}} = \frac{MU_B}{P_B} \quad \frac{3}{\$1} = \frac{6}{\$2}$$

Theresa will buy 3 bagels and 3 toy cars.
 The marginal utility divided by the price of both items is proportional

2b Theresa's demand for bagels will decrease, because the price of the input of bagels (wheat) will result in a higher price of bagels

2c Teresa's income elasticity indicates that bagels are normal goods because at a higher ~~price~~ income Teresa is willing to purchase a ^{larger} similar quantity of bagels.

$$2d \quad \frac{-5\%}{10\%} = \frac{-4\%}{x} = -8\%$$

The cross-price elasticity for toy cars and ~~toys~~ blocks is -0.5 .

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- (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.

a)

i) Her total utility for three cars is 18.

ii) To maximize her utility she should ~~spend~~ purchase 4 bagels and three toy cars because this maximizes her utility. 4 bagels gives her 20 utility while three toy cars gives her 18 utility for a total of 38 utility.

b) Theresa's demand for bagels will decrease, because the price of bagels will increase.

c) This indicates that bagels are inferior goods to Theresa.

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2C 242

Additional answer page for Question 2.

2) There is a negative cross-price elasticity.

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AP[®] MICROECONOMICS
2012 SCORING COMMENTARY

Question 2

Overview

Part (a) of this question tested students' ability to find total utility on the basis of marginal utility, and to identify the optimal consumption bundle. Part (b) assessed whether students understood that a change in the price of an input affects the supply curve and not the demand curve. Part (c) tested whether students knew how to interpret a negative value for income elasticity. Part (d) assessed whether students could calculate the value of cross-price elasticity.

Sample: 2A

Score: 6

The student answers all parts of the question correctly and so earned all 6 points.

Sample: 2B

Score: 3

The student lost 1 point in part (b) for incorrectly stating that "demand ... will decrease." The student lost 1 point in part (c) for incorrectly stating that "bagels are normal goods." The student lost 1 point in part (d) for failing to correctly calculate the cross-price elasticity for toy cars and blocks.

Sample: 2C

Score: 1

The student earned 1 point in part (c) for correctly stating that "bagels are inferior goods."