

## Consumption and marginal utility

The following table represents the total utility that Augusto receives from his consumption of cookies and glasses of chocolate milk.

| Cookies and glasses of chocolate milk | Total Utility cookies | Total Utility chocolate milk |
|---------------------------------------|-----------------------|------------------------------|
| 1                                     | 14                    | 10                           |
| 2                                     | 26                    | 18                           |
| 3                                     | 36                    | 24                           |
| 4                                     | 44                    | 28                           |
| 5                                     | 48                    | 28                           |
| 6                                     | 48                    | 27                           |
| 7                                     | 44                    | 24                           |

1. Calculate the marginal utilities.
2. Suppose Augusto visits a friend's house, whose family policy is "eat as much as you want". According to the table, how many cookies will he eat and how many glasses of chocolate milk will he drink?
3. Suppose the price of cookies is 25 cents each and that of a glass of milk is 50 cents. If Augusto only had 2.25 pesos to spend, would he buy 4 cookies and 2 glasses of chocolate milk? Why or why not? If the answer is no, how many cookies and how many glasses of chocolate milk would he buy?
4. If he now had 4 pesos to spend, how many cookies and glasses of chocolate milk would he buy? And if he had a budget of 7.25 pesos?

## Solutions

1. Marginal utilities:

| Cookies and glasses of chocolate milk | Total Utility cookies | Total Utility chocolate milk | Marginal Utility cookies | Marginal Utility chocolate milk |
|---------------------------------------|-----------------------|------------------------------|--------------------------|---------------------------------|
| 1                                     | 14                    | 10                           |                          |                                 |
| 2                                     | 26                    | 18                           | 12                       | 8                               |
| 3                                     | 36                    | 24                           | 10                       | 6                               |
| 4                                     | 44                    | 28                           | 8                        | 4                               |
| 5                                     | 48                    | 28                           | 4                        | 0                               |
| 6                                     | 48                    | 27                           | 0                        | -1                              |
| 7                                     | 44                    | 24                           | -4                       | -3                              |

2. **Augusto will eat 6 cookies and drink 5 glasses of chocolate milk, since before reaching that point, an additional glass of chocolate milk or an extra cookie yields him utility.**
3. Buying 4 cookies and 2 glasses of chocolate milk would cost  $4 * 0.25 + 0.5 * 2 = 2$ . And he would have a utility of:  $44 + 18 = 62$ . But he can spend more money since he has 0.25 left, with this he could buy another cookie and would have a higher utility. The point where utility will be maximized is when the price ratio equals the marginal utilities ratio:

$$\frac{\text{Price of cookies}}{\text{Price of chocolate milk}} = 0.25/0.5 = 1/2$$

We look for a situation where the consumption of cookies and chocolate milk generates a ratio of marginal utilities equal to  $1/2$ .

$$\frac{\text{Marginal utility of cookies}}{\text{Marginal utility of chocolate milk}} = 4/8 = 1/2$$

**This occurs when 5 cookies and 2 glasses of chocolate milk are consumed. This generates a cost of 2.25 which just matches the available money.**

4. **If there are 4 pesos to spend, then it is as if there were no monetary restriction since the basket that was obtained in the case of free goods can be reached. 5 cookies and 6 glasses of chocolate milk. The same happens in the case of 7 pesos.**