

# Basics of Economics

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## 1 Utility and Demand

What determines the choices made by a consumer? Where do individual's demand curves come from? Consumption Possibilities are determined by prices and income.

### 1.1 The Budget Line

The **budget line** is the boundary between combinations that an individual can afford and those that the individual cannot afford. The budget line is determined by income and prices.

#### 1.1.1 Preferences and Utility

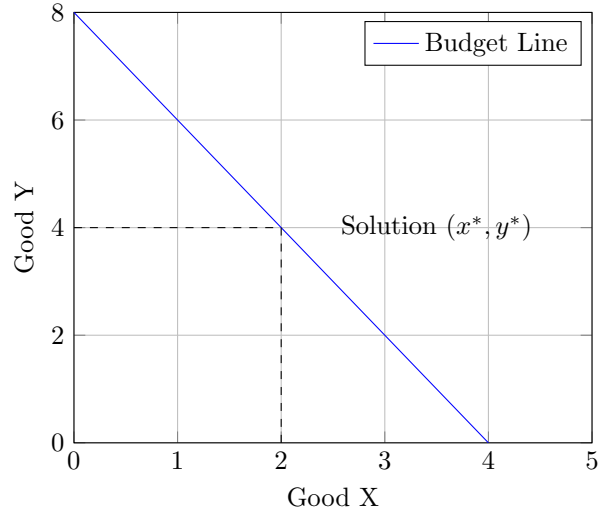
Preferences describe an individual's likes and dislikes and how they rank various bundles of goods. **Total Utility** is the total benefit or satisfaction that a person gets from consuming goods. **Marginal Utility** is the change in total utility that results from a one unit increase in the quantity of a good consumed. The Consumer's Problem is to choose the most preferred bundle among those she can afford, or, to choose the bundle that gives her the highest utility among those she can afford. An indifference curve describes all the consumption bundles among which a consumer is indifferent.

#### 1.1.2 The Consumer's Problem

Given some transitive relationship  $X > Y$ ,  $X < Y$ , or  $X \sim Y$ , there exists a function  $u(x, y)$  which yields the total utility of the goods. The problem is reduced to maximizing  $u(x, y)$ . The consumer chooses a bundle that maximizes utility within the constraints.

We will assume positive marginal utility, which means that more is always better. We will also assume diminishing marginal utility, which means the increase in utility is smaller the greater the quantity of the good. The goal is to find the preferred bundle on the budget line.

How much of Good X and Good Y a consumer can afford



$$p_x x^* + p_y y^* = m$$

$$u(x, y) = u_x(x) + u_y(y)$$

$$\frac{m u_x(x^*, y^*)}{p_x} = \frac{m u_y(x^*, y^*)}{p_y}$$

### 1.1.3 Example

$$m = 40 \quad p_x = 8 \quad p_y = 4$$

$x$	$u_x$	$y$	$u_y$
0	0	0	0
1	50	1	25
2	90	2	123
3	122	3	159
4	150	4	183
5	176	5	205
6	200	6	225
7	222	7	238
8	242	8	243
9	259	9	255
10	295	10	260

Find (x,y) on the budget line, and find the bundle on the budget line that gives the highest utility:

$x$	$y$	$u_x$	$u_y$	$u(x, y)$
0	10	0	260	260
1	8	50	248	298
2	6	90	225	315
3	4	122	183	305
4	2	150	123	273
5	0	176	0	176

$u(x, y)$  is maximized at (2,6).

You can find all my notes at <http://omgimanerd.tech/notes>. If you have any questions, comments, or concerns, please contact me at [alvin@omgimanerd.tech](mailto:alvin@omgimanerd.tech)