# Utility Maximization with Perfect Substitutes 2

Consider a consumer who views two goods $x_1$ and $x_2$ as perfect substitutes The consumer regards one unit of $x_1$ as equivalent to two units of $x_2$ The prices are given by $p_1 = 8$ and $p_2 = 3$ and the income is $M = 100$.

## Solution

Since the goods are perfect substitutes the indifference curves are linear with a constant slope Given that one unit of $x_1$ is equivalent to two units of $x_2$ the slope of the indifference curve is

$$MRS = 2$$

The slope of the budget line is determined by the price ratio

$$Slope_{budget} = \frac{p_1}{p_2} = \frac{8}{3}$$

Comparing the slopes we note that

$$MRS < Slope_{budget}$$

This implies that the consumer obtains more utility per unit cost from $x_2$ than from $x_1$ and will therefore spend the entire income on $x_2$

Thus the optimal consumption bundle is

$$x_1^* = 0$$

$$x_2^* = \frac{M}{p_2} = \frac{100}{3}$$