NCERT Solutions for Class 12 Micro Economics

Chapter 2 – Theory of Consumer Behaviour

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1.

What do you mean by the budget set of a consumer?

Ans: Based on their price range, a budget set is a collection of two or more items that a consumer desires and can afford. A budget set is also known as an opportunity set.

2.

What is budget line?

Ans: If a buyer knows how much money they have and how much both goods cost on the market, a budget line shows the different ways they can buy two goods that are both affordable.

Let 1 X_1 be the amount of good 1.

X_2 be the amount of good 2.

P_1 be the price of good 1.

P_2 be the price of good 1.

P_1X_1 = Total money spent on good 1.

P_2X_2 = Total money spent on good 2.

Then, the budget line will be: $P_1X_1 + P_2X_2 = M$
The consumer's income is the same amount that all of the spending packages on the budget line cost.

3.

Explain why the budget line is downward sloping.

Ans: A budget line is a visual depiction of the limitations a customer faces while purchasing multiple items within a certain budget. Any time prices, tastes, or income change, a budget line will also change. An alternative name for it is a consumption possibility line. In this case, it is assumed that the customer purchases the bundle of products with all of their revenue.

4.

A consumer wants to consume two goods. The prices of the two goods are Rs 4 and Rs 5 respectively. The consumer's income is Rs 20.

(i) Write down the equation of the budget line.

(ii) How much of good 1 can the consumer consume if she spends her entire income on that good?

(iii) How much of good 2 can she consume if she spends her entire income on that good?

(iv) What is the slope of the budget line?

Ans:

(i) P_1= Rs 4

P_2 = Rs 5

M = Rs 20

Equation of the budget line = $P_1X_1 + P_2X_2 = M$

$4X_1 + 5X_2 = 20$

(ii) Since the consumer has no money left over after spending Rs 20 on good 1, the amount of good 2 that is demanded would be zero i.e, 2 0 x =.

$4X_1 + 5(0) = 20$

$4X_1 = 20$

$X_1 = \frac{20}{4}$

$X_1 = 5$

Amount of good 1 consumed = 5 units

(iii) Since the consumer has no money left over to spend on good 1, $X_1 = 0$ if Rs 20 is spent totally on good 2.

$4(0) + 5X_2 = 20$

$5X_2 = 20$

$X_2 = \frac{20}{4}$

$X_2 = 4$

Amount of good 2 consumed = 4 units

(iv) Slope of the budget line = $\frac{-P_1}{P_2}$

$= \frac{-\text{Price of good 1}}{\text{Price of good 2}} = -\frac{4}{5}$

= -0.8

Questions 5, 6 and 7 are related to question 4.

5.

How does the budget line change if the consumer's income increases to Rs 40 but the prices remain unchanged?

Ans:

M_2= Rs. 40

P_1= Rs. 4

P_2= Rs. 5

Initial equation of the budget line:

$4X_1 + 5X_2 = 20$

New equation of the budget line:

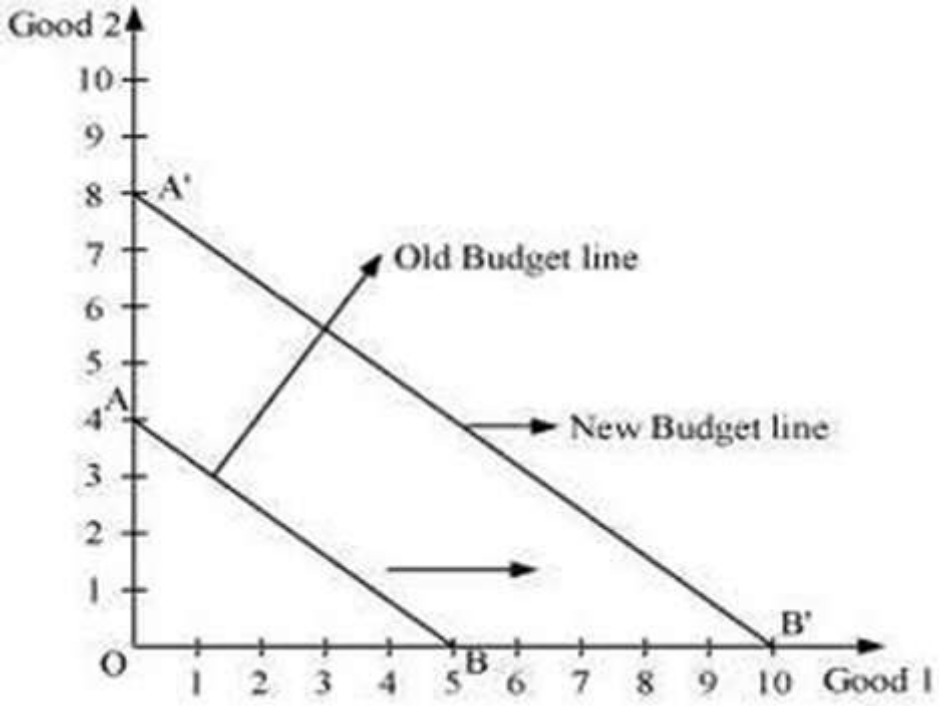
$4X_1 + 5X_2 = 40$

With the increase in M, the consumer is now able to acquire greater quantities of both goods, resulting in a parallel outward shift of the budget line from AB to A'B'.

Horizontal intercept will be = $\frac{M}{P_2} = \frac{40}{4} = 10$

Vertical intercept will be = $\frac{M}{P_2} = \frac{40}{5} = 8$

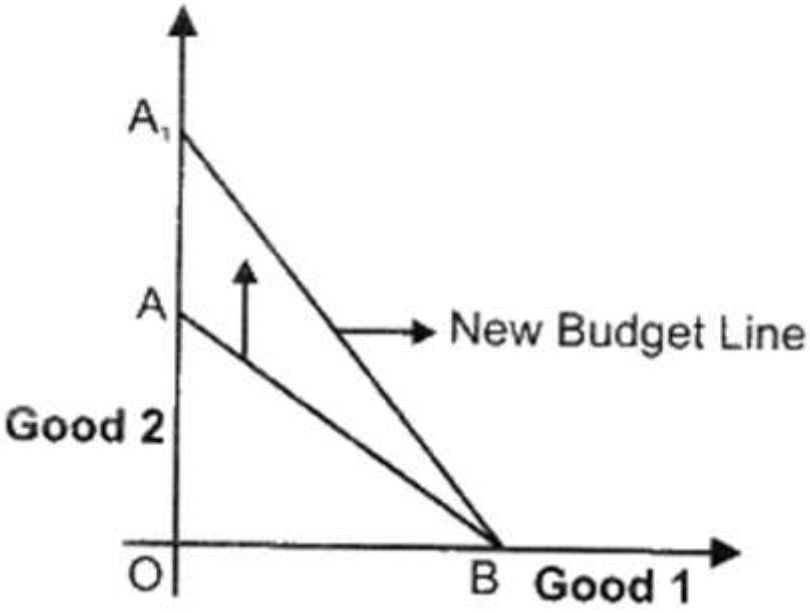
The new budget line will have the same slope as the previous one. $\frac{-P_1}{P_2} = \frac{4}{5}$



6.

How does the budget line change if the price of good 2 decreases by a rupee but the price of good 1 and the consumer's income remain unchanged?

Ans: If the price of good 2 lowers, the consumer will be able to consume more of it. As a result, there will be an upward movement in the vertical axis.



7.

What happens to the budget set if both the prices as well as the income double?

Ans: Even if both prices and income double, the budget will remain the same.

8.

Suppose a consumer can afford to buy 6 units of good 1 and 8 units of good 2 if she spends her entire income. The prices of the two goods are Rs 6 and Rs 8 respectively. How much is the consumer's income?

Ans:

P_1 = Rs. 6

P_2 = Rs. 8

X_1 = 6

X_2 = 8

Budget line = M = $P_1X_1 + P_2X_2$

M = 6X6 + 8X8

M = 36 + 64

M = 100

Thus, the consumer's income is Rs 100.

9.

Suppose a consumer wants to consume two goods which are available only in integer units. The two goods are equally priced at Rs 10 and the consumer's income is Rs 40.

(i) Write down all the bundles that are available to the consumer.

(ii) Among the bundles that are available to the consumer, identify those which cost her exactly Rs 40.

Ans:

(i) P_1 = Rs. 10

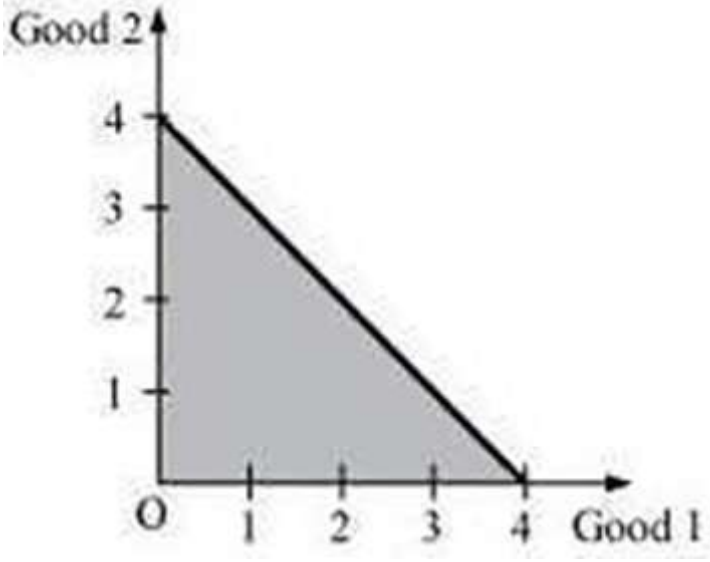
P_2= Rs. 10

M = Rs. 40

Budget set = $P_1X_1 + P_2X_2 \leq M$

$10X_1 + 10X_2 \leq 40$

The bundles that are available to the consumer should cost less than or equal to Rs 40.



Horizontal intercept = $\frac{M_2}{P_1} = \frac{40}{10} = 4$

Vertical intercept = $\frac{M_2}{P_2} = \frac{40}{10} = 4$

Slope = $\frac{-P_1}{P_2} = \frac{-10}{10} = -1$

The consumer has access to all bundles in the shaded zone ()
AOB Δ, including those on line AB.

(0, 0) (0, 1) (0, 2) (0, 3) (0, 4)

(1, 0) (1, 1) (1, 2) (1, 3) (1, 4)

(2, 0) (2, 1) (2, 2) (2, 3) (2, 4)

(3, 0) (3, 1) (3, 2) (3, 3) (3, 4)

(4, 0) (4, 1) (4, 2) (4, 3) (4, 4)

(ii) The coordinates on line AB cost the same as the consumer's income. Bundles are as follows:

(0,4) (1,3) (2,2) (3,1) (4,0)

10.

What do you mean by 'monotonic preferences'?

Ans: The idea that a logical customer will always choose "more" of a certain product over "less" is known as monotonic preference. This implies that packages that offer larger quantities of things will always result in happier customers.

11.

If a consumer has monotonic preferences, can she be indifferent between the bundles (10, 8) and (8, 6)?

Ans: No, he/she cannot be indifferent between these two bundles since bundle I contains a greater quantity of both goods compared to bundle II. They will choose bundle I instead of bundle II because it includes 10 units of good 1 and 8 units of good 2, whereas bundle II has 8 units of good 1 and 6 units of good 2.

12.

Suppose a consumer's preferences are monotonic. What can you say about her preference ranking over the bundles (10, 10), (10, 9) and (9, 9)?

Ans: If the consumer's preferences are monotonic, then the bundles can be ranked as:

Rank 1 – (10, 10)

Rank 2 – (10, 9)

Rank 3 – (9, 9)

Consumers that are monotonous will always choose bundles (10, 10).

13.

Suppose your friend is indifferent to the bundles (5, 6) and (6, 6). Are the preferences of your friend monotonic?

Ans: My friend exhibits indifference towards the bundles (5, 6) and (6, 6). This indicates that their preferences are not monotonic. If an individual is indifferent between both bundles, it indicates that they derive equal satisfaction from each and assign them the same rank. The second bundle contains a greater quantity of both goods. Therefore, based on the monotonicity assumption, the individual must exhibit a preference for the second bundle over the first.

14.

Suppose there are two consumers in the market for a good and their demand functions are as follows: d1 (p) = 20 – p for any price less than or equal to 20, and d1 (p) = 0 at any price greater than 20. d2 (p) = 30 – 2p for any price less than or equal to 15 and d1 (p) = 0 at any price greater than 15.

Find out the market demand function.

Ans:

$d_1(P) = 20 - P \begin{cases} P \leq 20 \\ P > 20 \end{cases}$

$d_2(P) = 30 - 2P \begin{cases} P \leq 15 \\ P > 15 \end{cases}$

For price less than Rs 15 $(P \leq 15)$

Market demand for a good = $d_1(P) + d_2(P)$

= 20 – P + 30 - 2P

= 50 – 3P

For price more than Rs 15 but less than Rs 20 $(15 < P \leq 20)$

Market demand = $d_1(P) + d_2(P)$

= 20 – P + 0 (∵ for p>15, $d_2(P) = 0$)

= 20 – P

For price more than 20 (P>20)

Market demand = $d_1(P) + d_2(P)$

= 0 + 0 ($\therefore$ for $P > 10, d_1(P) = 0, d_2(P) = 0$)

= 0

Thus, market demand

= 50 – 3P if P ≤ = 15

20 – P if 15 < P ≤ 20

= 0 if P > 20

15.

Suppose there are 20 consumers for a good and they have identical demand functions: d(p) = 10 – 3p for any price less than or equal to 10 3 and d1 (p) = 0 at any price greater than 10/3 .

What is the market demand function?

Ans:

$d(P) = 10 - 3P$ if $P \leq \frac{10}{3}$

$d_1(P) = 0$ if $P > \frac{10}{3}$

Market demand is defined as the aggregate demand from all consumers within the market.

For Price $\leq \frac{10}{3}$

Market demand = $20 \sum d(P)$ [Since consumers have identical demand curve]

= 20 X (10 - 3P)

= 200 – 60P

For Price $> \frac{10}{3}$

Market demand = 20 X $d_1(P)$

=20 X 0 = 0

Market demand function = $\begin{cases} 200 - 60P & \text{if } P \leq \frac{10}{3} \\ 0 & \text{if } P > \frac{10}{3} \end{cases}$

16.

Consider a market where there are just two consumers and suppose their demands for the good are given as follows: Calculate the market demand for the good.

P	D_1	D_2
1	9	24
2	8	20
3	7	18
4	6	16
5	5	14
6	4	12

Ans:

P	D1	D2	Market Demand = D = d1 + d2
1	9	24	9 + 24 = 33
2	8	20	8 + 20 = 28
3	7	18	7 + 18 = 25
4	6	16	6 + 16 = 22
5	5	14	4 + 12 = 16
6	4	12	4 + 12 = 16

17.

What do you mean by a normal good?

Ans: An item is considered normal if consumer demand rises in tandem with rising incomes or salaries. Let's take a fruit like an apple as an example. As the income of consumers rises, so does the demand for apples.

18.

What do you mean by an 'inferior good'? Give some examples.

Ans: As a consumer's income rises, desire for inferior goods falls. For instance, think about things like cheap smokes, cheap furniture, and cheap fast food. Even though they cost more, there are always better options than these ones. In other words, when people can buy better goods, they don't need as many of them.

19.

What do you mean by substitutes? Give examples of two goods which are substitutes of each other.

Ans: Substitutes are commodities within the same category that can be utilized interchangeably to a certain degree. For instance, let us examine the commodities tea and coffee. Both goods belong to the same category of hot beverages, satisfy comparable needs, and are similarly priced. Consequently, a consumer will transition to coffee if the price of tea escalates and vice versa.

20.

What do you mean by complements? Give examples of two goods which are complements of each other.

Ans: Complements are commodities that are frequently consumed together and compliment one another. Examples include tea and sugar, as well as printers and cartridges. The pricing of complementary commodities influence each other's demand. For example, if the price of sugar rises, the demand for tea is expected to fall dramatically.

21.

Explain price elasticity of demand.

Ans: When the price of a good changes, how much does the desire for that good change? This is called price elasticity of demand. It can be calculated by dividing the change in a good's price by the change in demand for that good.

$$e_d = \frac{\text{Percentage change in the price of a good}}{\text{Percentage change in the price of a good}}$$

$$e_d = \frac{\Delta Q}{\Delta P} X \frac{P}{Q}$$

Where,

$\Delta Q = Q_2 - Q_1$, change in demand

$\Delta P = P_2 - P_1$, change in price

P = initial price

Q = initial quantity

22.

Consider the demand for a good. At price Rs 4, the demand for the good is 25 units. Suppose price of the good increases to Rs 5, and as a result, the demand for the good falls to 20 units. Calculate the price elasticity .

Ans:

$P_1 = 4, Q_1 = 25$

$P_2 = 5, Q_2 = 20$

$\Delta P = P_2 - P_1 = 5 - 4 = 1$

$\Delta Q = Q_2 - Q_1 = 20 - 25 = -5$

$$e_d = \frac{\Delta Q}{\Delta P} X \frac{P}{Q}$$

$$= \frac{-5}{1} X \frac{4}{25}$$

$$= \frac{-4}{5}$$

$$e_d = -0.8$$

23.

Consider the demand curve D (p) = 10 – 3p. What is the elasticity at price 5/3 ?

Ans:

D(P) = 10 – 3P

$\frac{\Delta D(P)}{\Delta P} = -3$ = Change in demand per unit change in price.

$$e_d = \frac{\Delta Q}{\Delta P} X \frac{P}{Q}$$

$\varphi - 3 X \frac{P}{10-3P} \varphi \frac{-3P}{10-3P}$,

At Price $P = \frac{5}{3}$,

$$e_d = \frac{-3X\frac{5}{3}}{10 - 3\left(\frac{5}{3}\right)}$$

$e_d \varphi \frac{-5}{5} = -1$

i.e., the elasticity of demand at price $p = \frac{5}{3}$ is unitary elastic

24.

Suppose the price elasticity of demand for a good is – 0.2. If there is a 5 % increase in the price of the good, by what percentage will the demand for the good go down?

Ans:

$e_d = -0.2$

Percentage change in price = 5%

$$e_d = \frac{\text{Percentage Change in Demand}}{\text{Percentage Change in Price}}$$

$$0.2 = \frac{\text{Percentage Change in Demand}}{5}$$

1.0 = percentage change in demand = 1%

25.

Suppose the price elasticity of demand for a good is – 0.2. How will the expenditure on the good be affected if there is a 10 % increase in the price of the good?

Ans:

Price elasticity of demand = -0.2

Percentage increase in price = 10%

$$e_d = \frac{\text{Percentage Change in Demand}}{\text{Percentage Change in Price}}$$

$$0.2 = \frac{\text{Percentage Change in Demand}}{10}$$

-2 = percentage change in demand

Consequently, the percentage decline in demand is inferior to the percentage rise in price. This indicates that as prices rise and

26.

Suppose there was a 4 % decrease in the price of a good, and as a result, the expenditure on the good increased by 2 %. What can you say about the elasticity of demand?

Ans:

Percentage decrease in price = 4%

Increase in expenditure = 2%

$$\Delta E = \Delta P\{q + (1 + e_d)\}$$

The cost of the good will rise as a result of the price reduction. This suggests that the proportion of demand change has risen higher than the proportion of price decline.

$$\text{Thus, elasticity} = \frac{\text{Percentage change in demand}}{\text{Percentage change in price}}$$

Compared to the denominator, the numerator is greater. Elasticity is therefore greater than 1. We can conclude that the demand is elastic since the slight price adjustment has caused a larger change in demand.