NCERT SOLUTIONS

CLASS - 12th

Class : 12th

Subject : Economics

Chapter : 2

Chapter Name : Theory of Consumer Behaviour

Q1 What do you mean by the budget set of a consumer?

Answer. Budget set of a consumer refers to various combinations of two commodities that a consumer can buy within the income available with the consumer and price of the commodities given.

It is given by $M > X.P_x + Y.P_y$.

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Q2 What is budget line?

Answer. Budget line is the locus of various combinations of two commodities that a consumer can buy given the income and price of the commodities. Entire income is spent on buying both the commodities. Budget line can be expressed as $\dfrac{\partial f}{\partial x}$ .where,

M= Money income of consumer

X= No. of units of commodity X

Y= No. of units of commodity Y

P_x = Price of commodity X

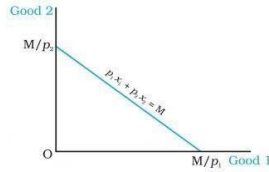P_y = Price of commodity Y

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Q3 Explain why the Budget line is downward sloping?

Answer. Budget line is the locus of various combinations of two commodities that a consumer can buy given the income and price of the commodities; and entire income is spent on buying both the commodities. It is expressed as y .; where, M is the money income of the consumer, X and Y are the two commodities and Px and Py are the respective prices.

Now, if a rational consumer wants to increase the consumption of commodity X, he has to decrease the consumption units of commodity Y because he has income constraint M. Thus the budget line is downward sloping from left to right as to remain in the given budget constraint. Thus we can say that increase in consumption of 1 good leads to decrease in consumption of another given the income and price of both the commodities .

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Q4 A consumer wants to consume two goods. The prices of two goods are Rs. 4 and Rs 5 respectively. The consumer's income is 20.

i) Write the equation of the budget line.

ii) How much of good 1 can consumer consume if he/she spends his/her entire income on that good.

iii) How much of the good 2 can the consumer consume if he/she spends his/her entire income on that good.

iv) What is the slope of the budget line?

Answer.

i) Let the units of the two commodities be X and Y.

Equation of the budget line is y .and here in the above is 20=4x +5y.

ii) y .

    20= 4x+5y

Now, y=0; Therefore, 4x=20 and x=5.

Hence, 5 units of good 1 can be consumed if the consumer spends entire income on that good.

iii) y .

    20= 4x=5y

Now, x=0: Therefore, 20=5y and y=4

Hence, 4 units of good 2 can be consumed if the consumer spends entire income on that good.

iv) Slope of the budget line = - $\dfrac{P_x}{P_y}$

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

= - 0.8

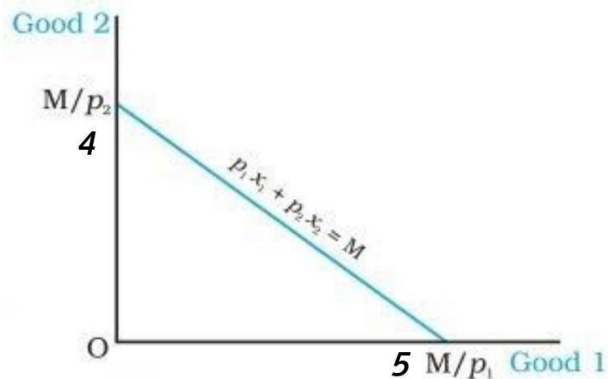Note: (-) sign has been given because budget line is negatively sloped.

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Q5 How does the budget line change if consumer's income increases to Rs. 40 but price remains unchanged?

Answer. The equation of new budget line will be $M > X.P_x + Y.P_y$ which is equal to 40= 4x + 5y

The budget line will shift parallely in the rightward direction because the money income of consumer increases.

Here, L_2M_2 is the rightward shift of the budget line when the income of the consumer increase with the price of the two commodities remaining the same.
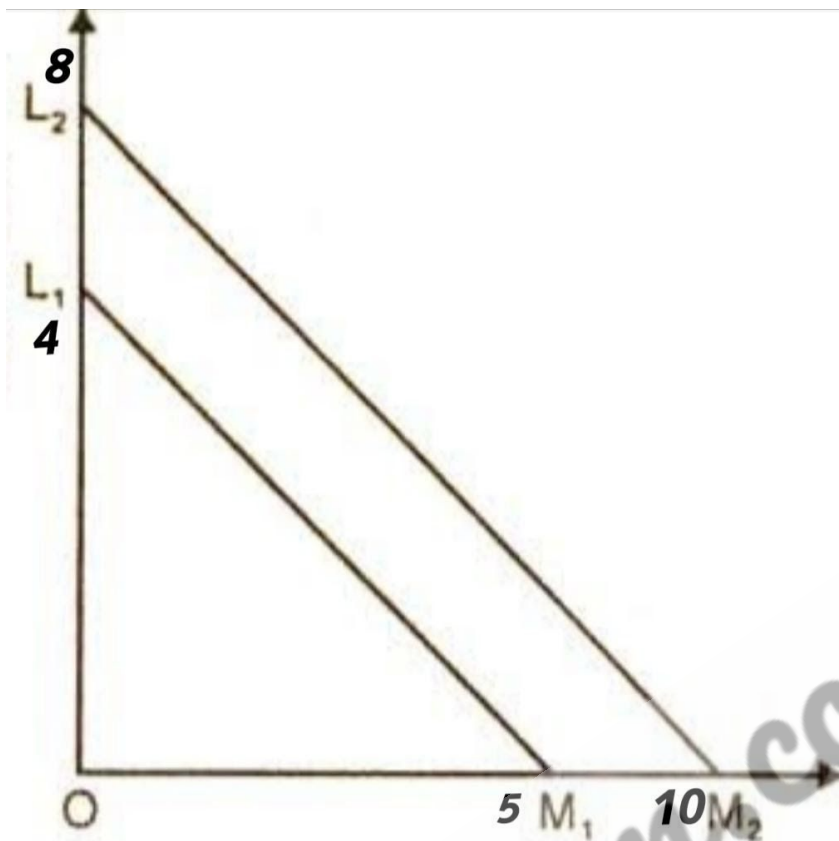
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Q6 How does the budget line change if price of good 1 and consumer income remains unchanged?

Answer. Budget line given by $M > X.P_x + Y.P_y$ .will in this case be 20= 4x+4y because of price of commodity Y decreases s form Rs. 5 to Rs. 4.

Since, the price of good X and income of consumer remains unchanged there will be an increase in the units of commodity Y and the budget line will rotate outwards as the real income of consumers increases with decrease in the price of commodity Y.

Hence, LB' (20= 4x=4y) is the outward shift budget line of the earlier budget line LB (20= 4x=5y) as the real income of consumer increases with decrease in price Y.
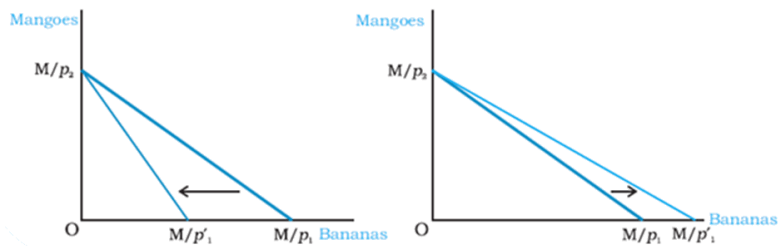
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Q7 What happens to Budget set if both price as well as income doubles.

Answer. Old Case,

M= 20, P_x = Rs. 4, P_y = Rs. 5

Budget line is 20= 4x+5y

Slope = $-\dfrac{P_x}{P_y}$ = $-x$ = -0.8

New Case,

M= 40, P_x = Rs. 8, P_y = Rs. 10

Budget line is 40= 8x+10y

Slope= $-\dfrac{P_x}{P_y}$ = $-\dfrac{8}{10}$ = -0.8

Thus we can say that though the income has increased yet rise in the price of the commodity has no effect as due to rise in price the increase in income is compensated in budget equation. Therefore, the Slope of the budget line will remain constant in both the cases. Hence, there will be no shifting and no rotation in both the cases.
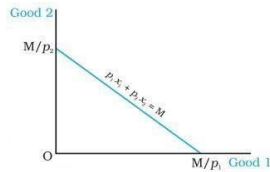
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No shift in budget line.

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Q8 Suppose a consumer can afford to buy 6 units of goods 1 and 8 units of good 2 if he spends her entire income. The prices of two goods are Rs. 6 and Rs. 8 respectively. How much is the consumer's income?

Answer. Price of good 1= Rs. 6

Units of good 1 = 6

Money spent on good 1 =Price of good1 × No of units= 6×6 = 36.

Price of good 2= Rs. 8

Units of good is 8

Money spent on good 2= Price of good × No of units = 8×8 = 64

$x^2 - 1$

$$M = 6 \times 6 + 8 \times 8 \,.$$

=36+64 = 100

Therefore, Money income is Rs. 100.

Here the consumer will spend entire income of Rs. 100 on both the commodities given the price of both the goods so as to lie on budget line.

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Q9 Suppose a consumer wants to consume two goods which are available only in integer units. The two goods are equally priced and at Rs. 10 and consumer income is 40.

i) Write down all the bundles available to the consumer.

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

Answer. The possible bundles of 2 units are, within the budget set $M > X.P_x + Y.P_y$ => 40 $\geq$ 10x+10y,

These bundles will cost either equal or less than the cost that is 40. Bundles here refers to all the possible combinations of 2 units that can be available to the consumer in a given cost and income.

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

b) (1,0) (1,2) (1,2) (1,3)

c) (2,0) (2,1) (2,2)

d) (3,0) (3,1)

e) (4,0)

ii) The bundle that will cost exactly Rs. 40 are (0,4) (1,3) (2,2) (3,1), (4,0) as budget line is $x^2 - 1$ which is equal to 40 = 10x+10y

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Q10 What do you mean by monotonic preference?

Answer. Monotonic preference refers to a situation which advocates two important situations with regard to combination of commodities-

i) An increase in the consumption of one commodity is essential as compared to previous combination

ii) But there cannot be a decrease in the consumption of other commodity as compared to previous combination.

In other words monotonic preference refers to a condition in which consumption of one commodity must increase whereas that of other commodity cannot decrease as compared to previous combination.

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Q11 If a consumer has monotonic preference can she be indifferent between bundles (10,8) and (8,6).

Answer. Monotonic preference refers to a situation which advocates two important situations with regard to combination of commodities

i) There must be an increase in the consumption of one commodity as compared to previous combination

ii) But there cannot be a decrease in consumption of other commodity as compared to previous combination.

Here consumer can't be indifferent between two bundles preferring (10,8) more than (8,6) because it has more unit of both the commodities. So, (10,8) will give him more satisfaction as compared to (8,6).

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Q12 Suppose a consumer preference is monotonic. What can you say about her preference ranking over the bundles (10,10), (10,9) and (9,9)?

Answer. Monotonic preference refers to a situation which advocates two important situations with regard to combination of commodities

i) There must be an increase in the consumption of one commodity as compared to previous combination

ii) But there cannot be a decrease in consumption of other commodity as compared to previous combination.

Consumer will rank his preference in the following order : (10,10) > (10,9) > (9,9) because consumer will prefer more number of units to attain higher satisfaction as per monotonic preference.

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Q13 Suppose your friend is indifferent to bundles (5,6) and (6,6). Are the preferences of your friend monotonic?

Answer. Since my friend is indifferent to bundles (5,6) and (6,6) it implies preference is not monotonic. Consumer will derive the same satisfaction from both the bundles as he is indifferent to them. But as (6,6) has more units than(5,6), he will prefer (6,6) over (5,6).

A monotonic consumer is one who will increase the consumption of one commodity without decreasing the consumption of the other commodity as compared to the previous consumption.

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Q14 Suppose there are two consumers in the market for a good and their demand functions are as follows:

$d_1(p) = 20 - p$ for any price less than or equal to 20 and $d_1(p) = 0$ at any price greater than 20.

$d_2(p) = 30 - 2p$ for any price equals to 15 and $d_2(p){=}0$ at any price greater than 15. Find out market demand function.

Answer. In the given demand functions first consumer does not demand goods for any price above 20 and the second consumer for any price above 15. So, the market demand will be an aggregate of the demand for both consumers.

Therefore, $D = d_1(p) + d_2(p)$

$= (20-p) + (30-2p)$, for p <15

$= 50-3p$,for p<15

For $15 \leq p \leq 20$, demand $= (20 - p) + 0 = 20-p$

For $p \geq 20$, D = 0 + 0 = 0

Hence demand function is -

 { 50- 3p, p < 15

{20 - p, $15 \leq p \leq 20$

{0, $p \geq 20$

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Q15 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 d(p)= 0 for any price greater than 10/3. What is the market demand function?

Answer. For a single consumer is 10-3p for any price equal to 10/3 and 0 for a price greater than 10/3, the market demand for 20 consumers is D= 20(10-3p) for a price equal to or less than 10/3 and $D = 20 \times 0 = 0$ for a price greater than 10/3.

So, the demand function will be as follows -

{20(10- 3p), $p \leq 10/3$

{0, p > 10/3

= { 200 - 60p, $p \leq 10/3$

  { 0, p > 10/3

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Q16 Consider a market where there are just two consumers and suppose their demand for goods are given below:

P	d_1	d_2
1	9	24
2	8	20
3	7	18
4	6	16
5	5	14
6	4	12

Calculate market demand for that good.

Answer. Market demand refers to the aggregate of demand of all the individuals in the market.

Market Demand:

P	d_1	d_2	$D = d_1 + d_2$ (Market Demand)
1	9	24	9 + 24 = 33
2	8	20	8 + 20 = 28

3	1	18	7 + 18 = 25
4	6	16	6 + 16 = 22
5	5	14	5 + 14 = 19
6	4	12	4 + 12 = 16

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Q17 What do you mean by a normal good?

Answer. Normal goods are goods which have positive income effect and negative price effect. Positive income effect means as income increases consumer will increase his demand for that good and vice-versa. Negative price effect implies with increase in the price of the good, the demand for it will decrease and vice-versa.

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Q18 What do you mean by an Inferior good? Give some examples.

Answer. Inferior goods refer to those goods which have negative income effect and positive price effect. Negative income effect implies with increase in income, demand decreases and vice versa. Positive price effect means with the decrease in price, the demand also decreases and vice-versa. Ex. low quality rice, kerosene Lamps etc.

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Q19 What do you mean by substitutes ? Give examples of goods which are substitutes of each other.

Answer. Substitute goods are those goods which can be consumed in place of one another. They give the consumer almost same satisfaction.Two goods X and Y are said to be substitute goods when the increase in the price of good X leads to an increase in demand for good Y. Ex. tea and coffee, Pepsi and Coca cola. Now if the price of Pepsi goes up, consumers can easily substitute it with coca cola thus increasing the demand of coca cola and vice versa. So this is an example of substitute goods.

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Q20 What do mean by complements? Give examples of goods which are complementary to each other.

Answer. Two goods X and Y are complementary goods if increase in the price of X lead to decrease in demand of Y. Complementary goods are those goods which are used together to get the required satisfaction. These goods are consumed together. Ex. petrol and car are complementary to each other. Now if the price of petrol rises demand for cars will decrease and vice versa. Thus here price of goods and demand of its complementary good moves in opposite direction.

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Q21 Explain price elasticity of demand?

Answer. Price elasticity of demand refers to the degree of responsiveness of change in quantity demanded due to a change in price.

Price elasticity of demand = Percentage change in quantity demanded / percentage change in price

$= (\Delta Q \times 100/ Q) \div (\Delta P \times 100/ P)$

$= (\Delta Q/ \Delta P) \div (P/Q)$

Here delta Q is change in quantity demanded and delta P is change in price. P and Q are original price and quantity demanded of the commodity respectively.

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Q22 Consider the demand for a good at price Rs. 4, the demand for the good is 25 units. Suppose price of good increases to Rs. 5 and as a result the demand for good falls to 20 units. Calculate price elasticity.

Answer. Price elasticity of demand refers to the degree of responsiveness of change in quantity demanded due to a change in price.

P_0 = Rs. 4

Q_0 = 25 units

P_1 = Rs. 5

Q_1 = 20 units

Ed = Proportionate change in quantity demanded/Proportionate change in price

$$E_d = -\frac{25-20}{5-4} \times \frac{4}{25}$$

$$= -\frac{5 \times \frac{4}{25}}{}$$

= - 0.8

Therefore, $E_d < 1$. Price elasticity is less than 1.

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Q23 Consider the demand curve D(p) = 10-3p. What is elasticity at price 5/3?

Answer. Given that the demand curve of the firm is

q = 10 - 3p.

At price = 5/3, quantity demanded is = 10 - 3 × 5÷ 3 = 5.

Again, Δq = 3Δp (From the given equation).

Hence, Δq/Δp = 3.

Price elasticity = (Δq/Δp) × (p/q)

= 3 × 5/3 ÷ 5

= 5 ÷ 5

= 1.

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Q24 Suppose the price elasticity of demand for a good is -0.2. If there is a 5% increase in price, by what percentage will demand for good go down?

Answer. E_d = Percentage change in quantity demanded/ Percentage change in price

     -0.2 = Percentage change in quantity demanded/ 5%

Therefore, the percentage change in quantity demanded is -1%

Hence, Demand for goods will go down by 1%.

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Q25 Suppose the price elasticity of demand for the good is 0.2. How will the expenditure on good be affected if there is a 10% increase in the price of goods?

Answer. Since price elasticity of demand is -0.2, the good has inelastic demand ; therefore, a 10% increase in price will not affect demand to a great extent. It will be nearly the same. In case when the elasticity of goods is defined as inelastic , there exists a positive relation between expenditure and the price of the good. Thus demand remaining the same, price increasing will ultimately increase the expenditure.. So the expenditure will rise with 10% increase in price.

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Q26 Suppose there was a 4% decrease in the price of a good and as a result, the expenditure on good increased by 2%. What can you say about the elasticity of demand?

Answer. Elasticity of demand is greater than 1 because with 4% decrease in price, the expenditure rises by 2% which implies the demand increases in good proportion. Hence the commodity has elastic demand.

The formula for computing the elasticity is -

Change in Expenditure = Change in Price {q+ (1+ed)}.

$\Delta E = \Delta p \{q + (1 + ed)\}$

Since with a fall in the price, the total expenditure increases, hence the percentage rise in demand is more than the percentage fall in the price. Hence, the elasticity of demand will be greater than 1.

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