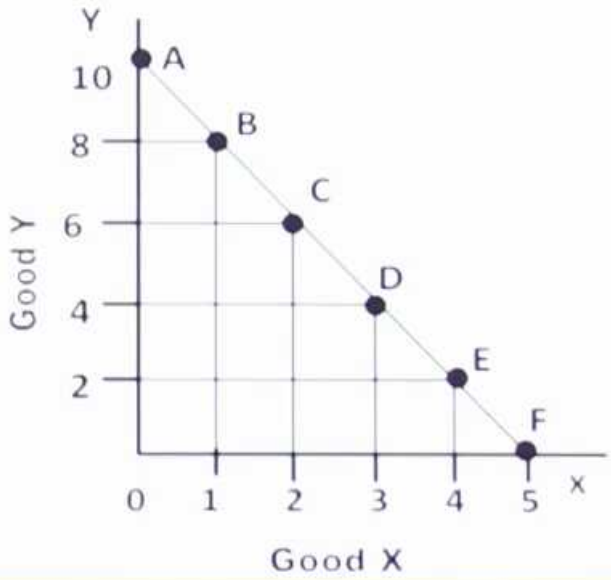
Budget Constraint (Budget Line)

Budget constraint refers to the limit on consumption combination (bundles) that a consumer can afford with his given income.

It can be explained with the help of table & diagram :

Suppose, a consumer has a budget (Income) of Rs. 20 to be spent on Good X and on Good Y, Price of good X is Rs. 4each and Price of Good Y is Rs. 2 each.

Comb.	Good X	Good Y
A	5	0
B	4	2
C	3	4
D	2	6
E	1	8
F	0	10



Income = 20₹

P_X = 4₹

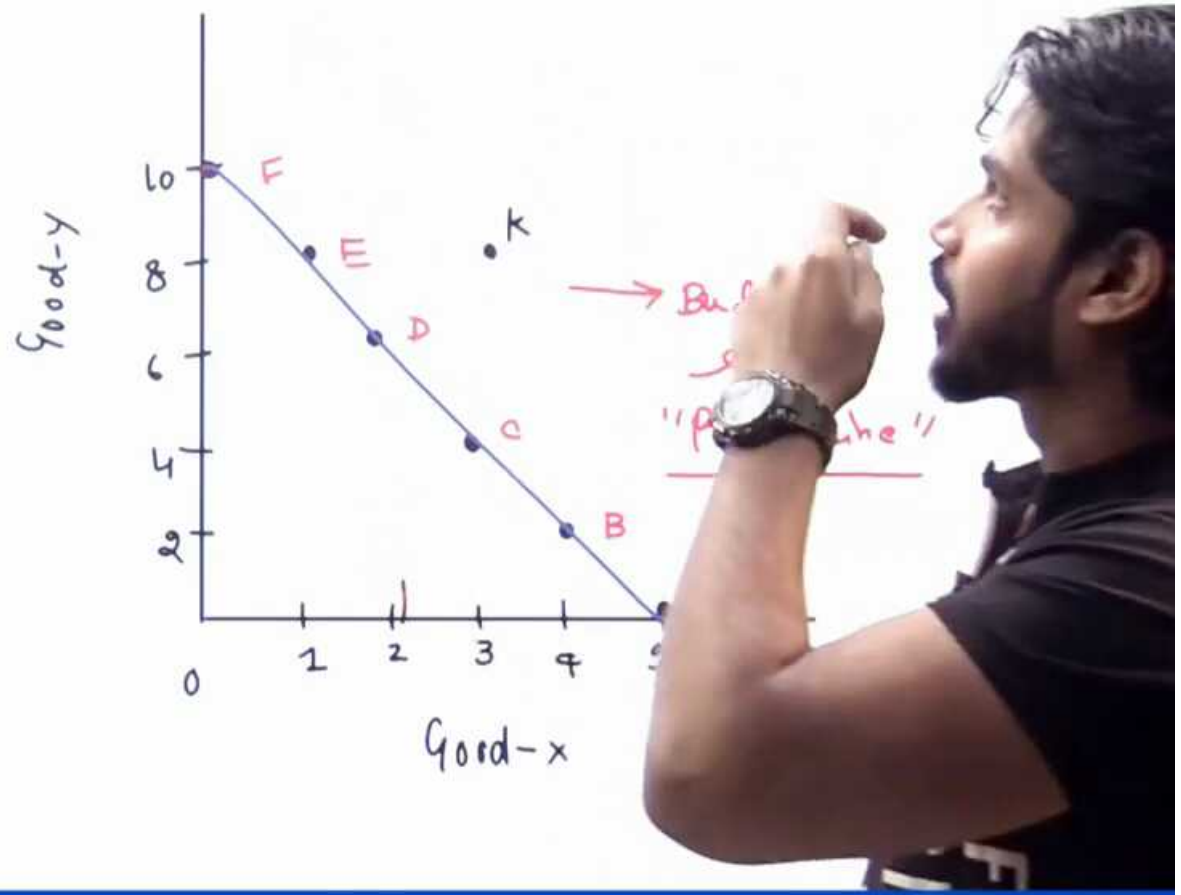
P_Y = 2₹

Comb.	Good X	Good Y
A	5	0
B	4	2
C	3	4
D	2	6
E	1	8
F	0	10

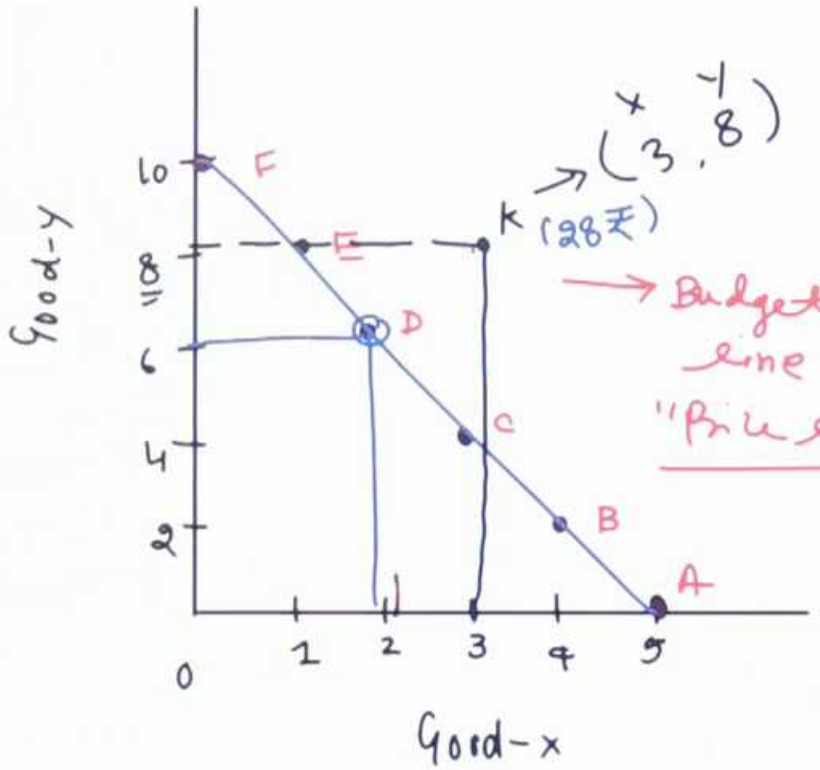
3 × 4 = 12₹

Y = 8₹

Comb.	Good X	Good Y
A	5	0
B	4	2
C	3	4
D	2	6
E	1	8
F	0	10



Good Y
0
2
4
6
8
10



→ Budget line "Price line"

$X = 3 \times 4 = 12₹$

$Y = 8 \times 2 = 16₹$

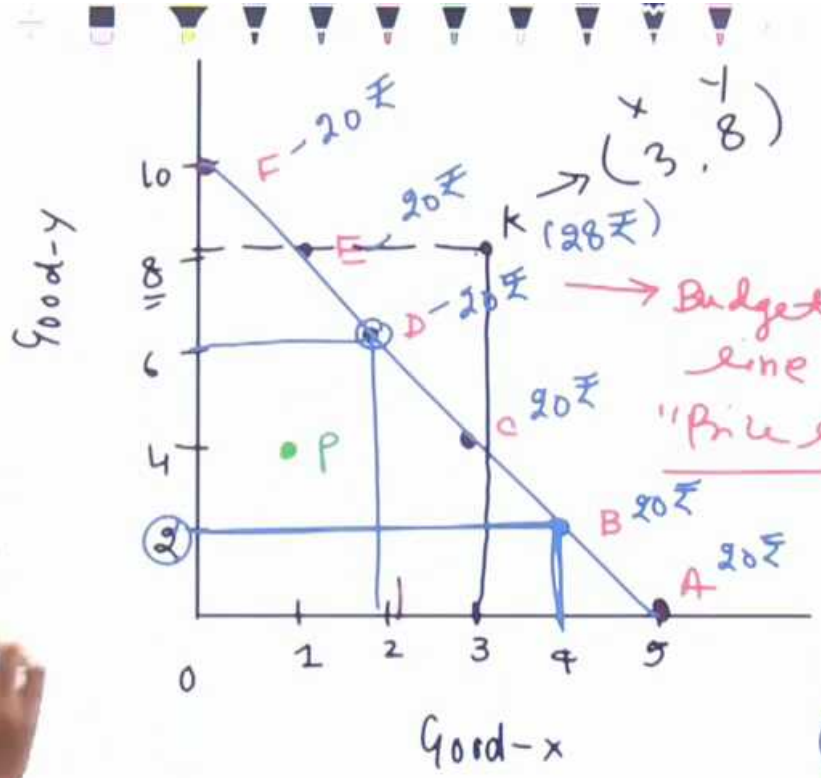
$28₹$

$D \begin{bmatrix} X & Y \\ 2 & 6 \end{bmatrix}$

$X = 2 \times 4 = 8$

$Y = 6 \times 2 = 12$

20



Budget line "Price line"

$Y = 8 \times 2 = 16₹$

28₹

$D \begin{bmatrix} X & Y \\ 2 & 6 \end{bmatrix}$

$X = 2 \times 4 = 8$

$Y = 6 \times 2 = 12$

20

(B) $\begin{bmatrix} X & Y \\ 4 & 2 \end{bmatrix}$

$X = 4\text{unit} \times 4 = 16$

$Y = 2\text{unit} \times 2 = 4$

20₹

Income = 20₹

P_X = 4₹

P_Y = 2₹

Comb	Good X	Good Y
A	5	0
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By joining all these points, we get straight line 'AF' known as Budget Line or Price

Meaning of Budget Line : A budget line is a line which shows all possible combinations of two goods that a consumer can buy with his given income and prices of commodities. Budget Line is also known as Price Line.

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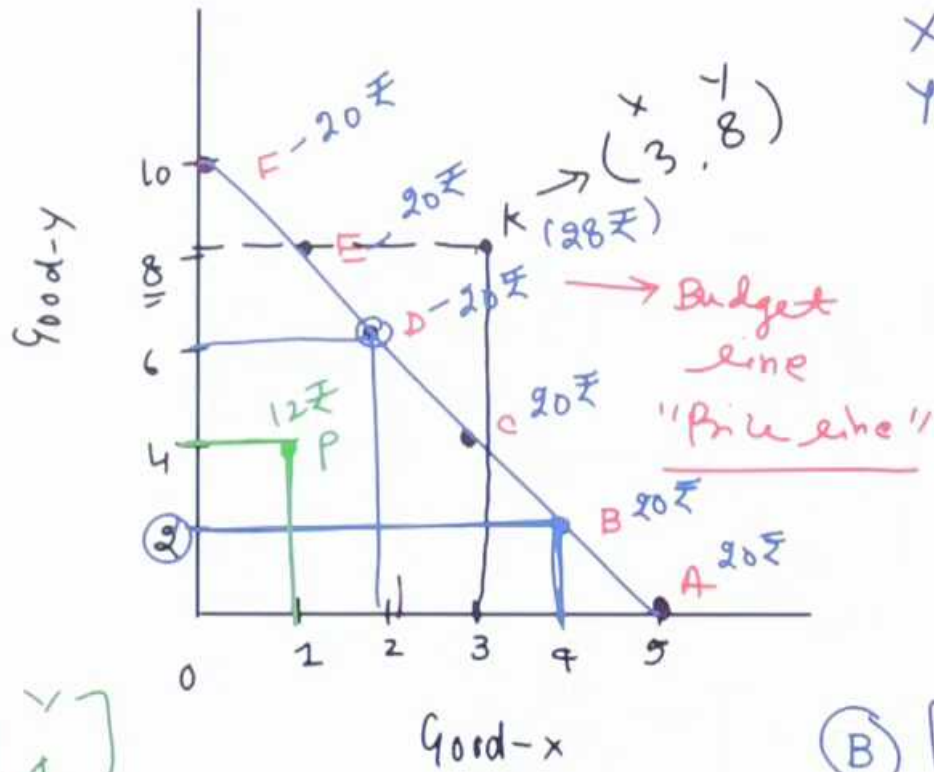
The slope of the budget constraint equals the relative price of the two goods—the price of one good compared to the price of the other.

Slope of Budget Line = Price of Good X/Price of Good Y

d	Good Y
	0
	2
	4
	6
	8
	10



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$Y = 8 \times 2 = 16₹$

$28₹$

$D \begin{bmatrix} x & y \\ 2 & 6 \end{bmatrix}$

$X = 2 \times 4 = 8$

$Y = 6 \times 2 = 12$

$20₹$

$P \begin{bmatrix} x & y \\ 1 & 4 \end{bmatrix}$

$X = 1 \times 4 = 4₹$

$B \begin{bmatrix} x & y \\ 4 & 2 \end{bmatrix}$

$X = 4 \text{ unit} \times 4 =$

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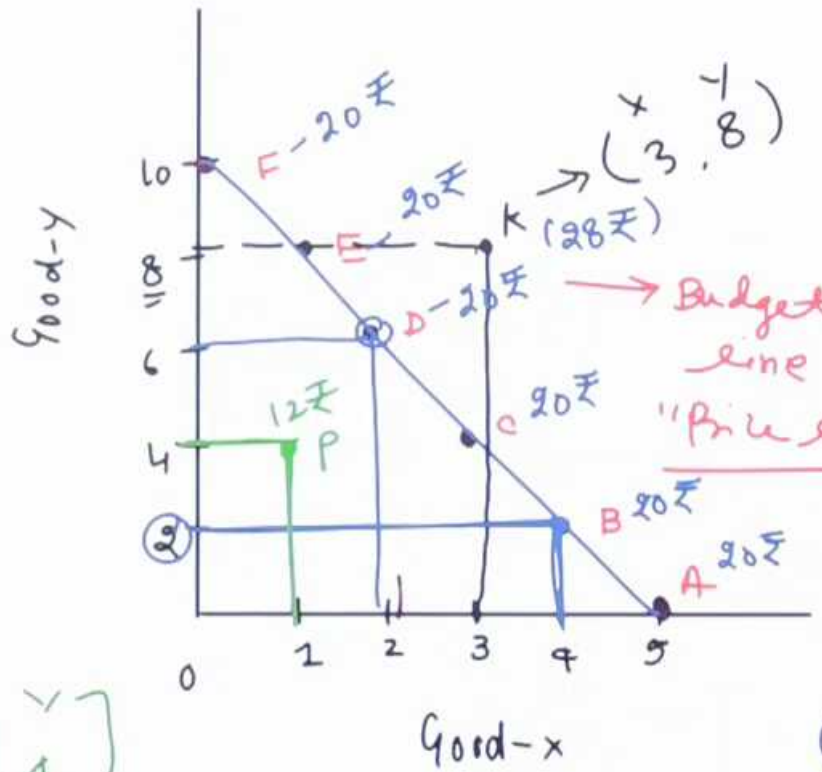
	Good Y
	0
	2
	4
	6
	8
	10



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$X = 2 \times 4 = 8$

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$P \begin{bmatrix} X & Y \\ 1 & 4 \end{bmatrix}$

$X = 1 \times 4 = 4₹$

(B) $\begin{bmatrix} X & Y \\ 2 & \end{bmatrix}$

	Good X	Good Y
	5	0
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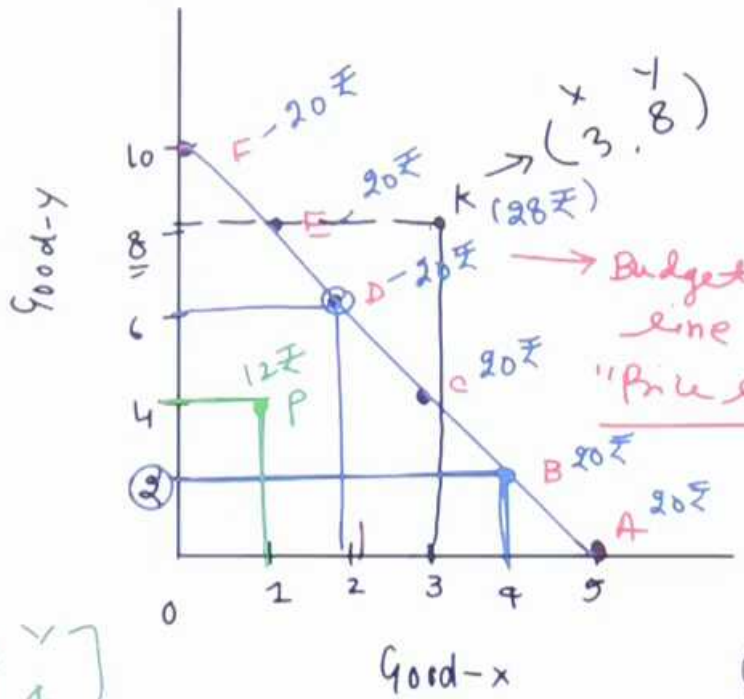
	3	4
	2	6
	1	8
	0	10



X = 3 × 4 = 12₹
Y = 8 × 2 = 16₹
28₹

D [X Y; 2 6]

X = 2 × 4 = 8
Y = 6 × 2 = 12

P [X Y; 1 4]

X = 1 × 4 = 4₹
Y = 4 × 2 = 8₹

B [X Y; 4 2]

X = 4 unit × 4 = 16

Income = 20₹

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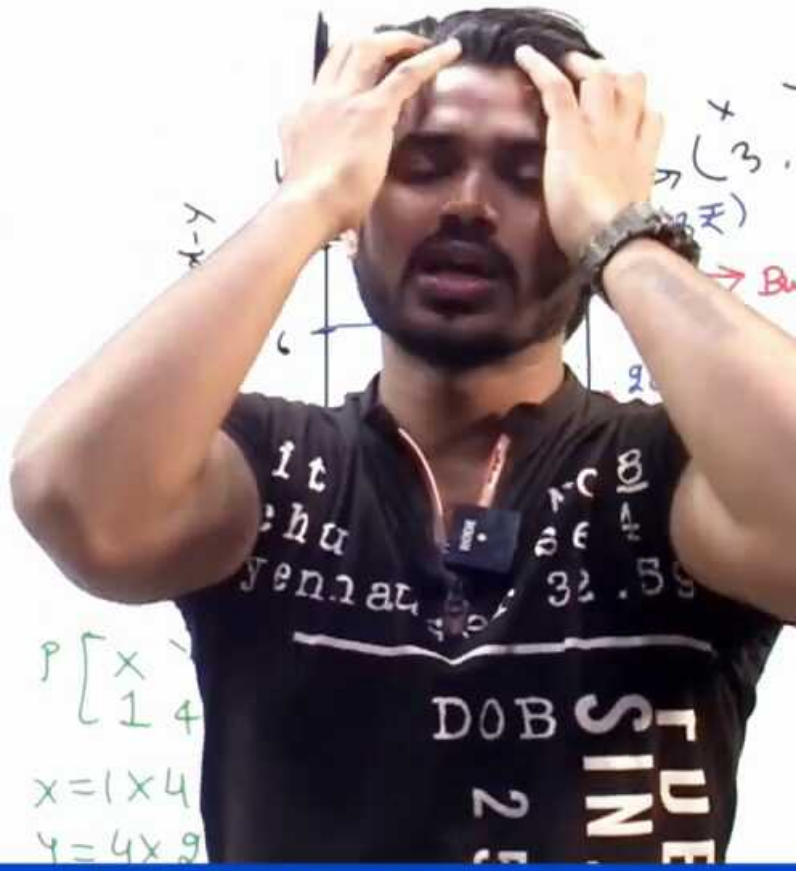

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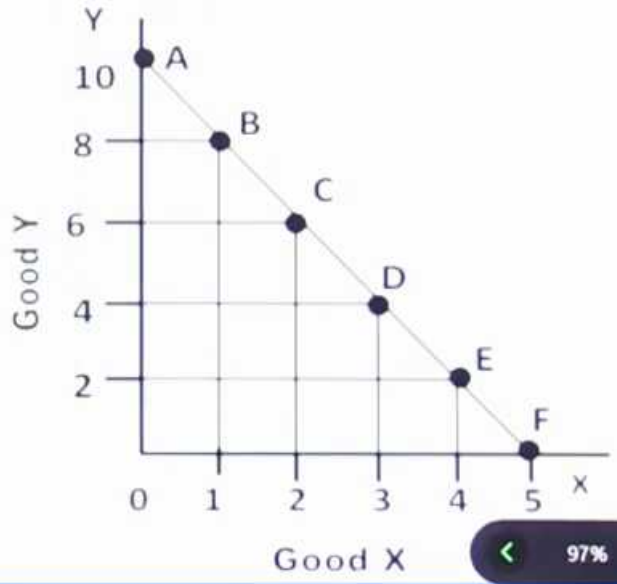

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20₹

4 2

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Slope of Budget Line = Price of Good X/Price of Good Y

$$\text{Slope of B.L} = \frac{P_x}{P_y}$$

Shift in Budget Line

Shift in Budget Line is due to mainly two reasons : Due to change in Price and Due to change in Income.

There may be three cases :

a) Change in Income
b) Change in Price of one Good
c) Change in Price of Both goods

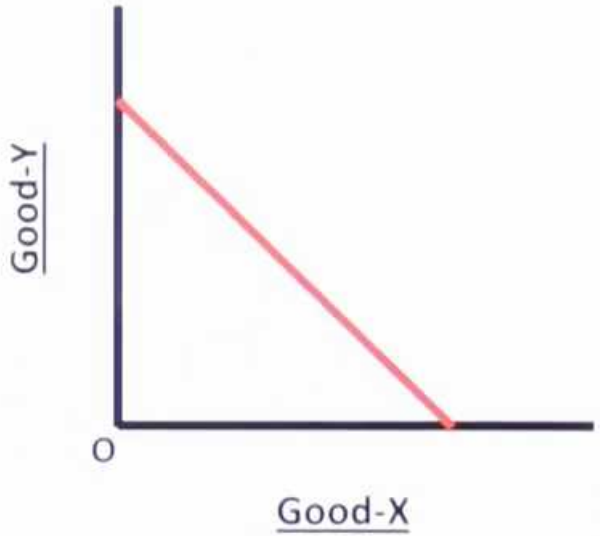
Change in Income

Increase in Income

In this case budget line shift will shift Rightward

Decrease in Income

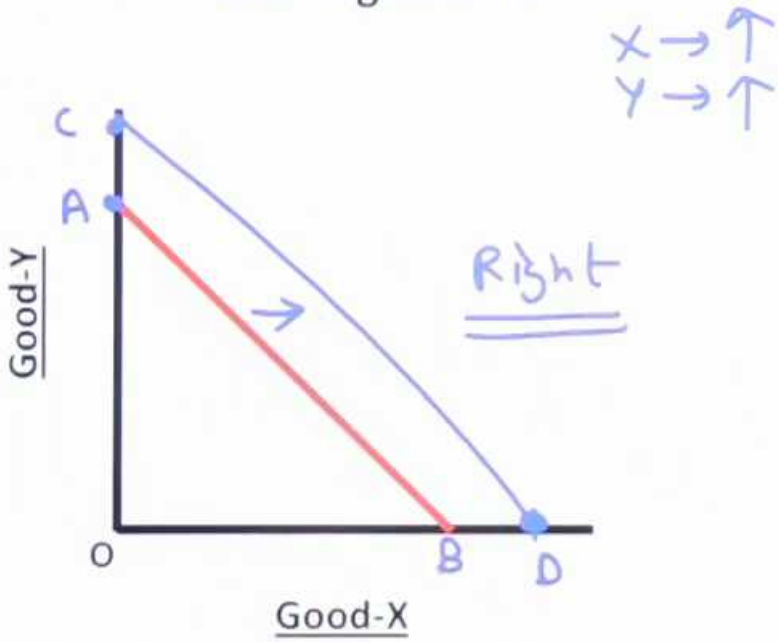
In this case budget line shift will shift Leftward



Change in Income

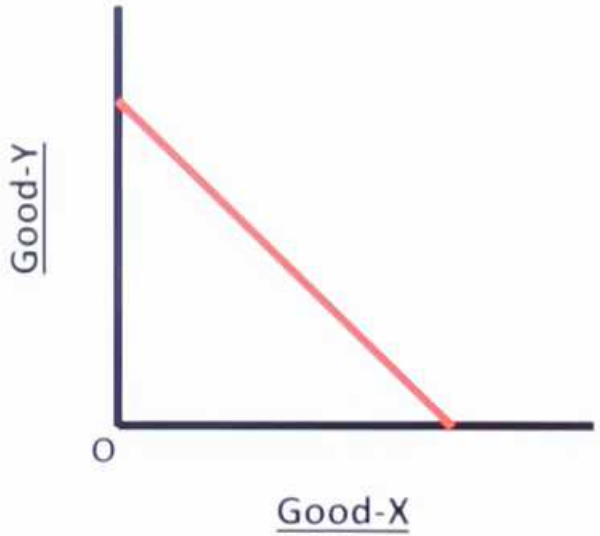
Increase in Income

In this case budget line shift will shift Rightward



Decrease in Income

In this case budget line shift will shift Leftward



Change in Income

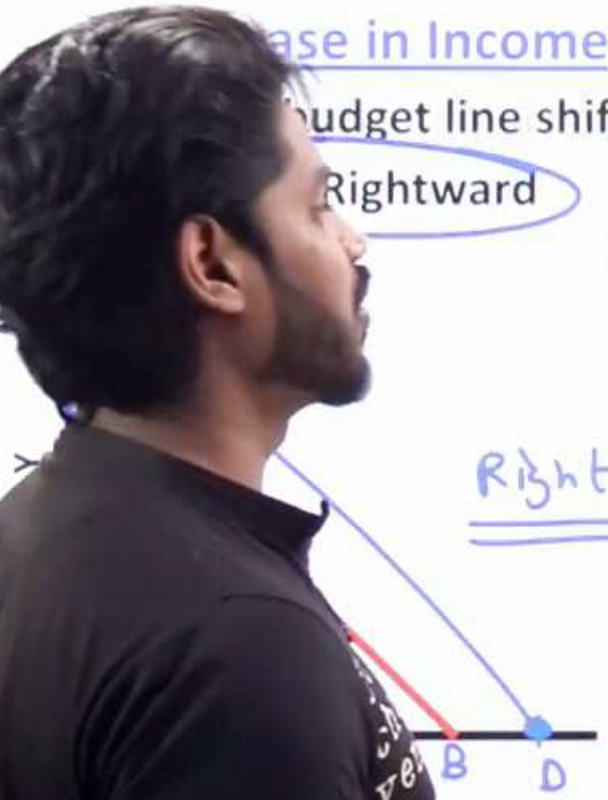
ase in Income

udget line shift will

Rightward

x → ↑
y → ↑

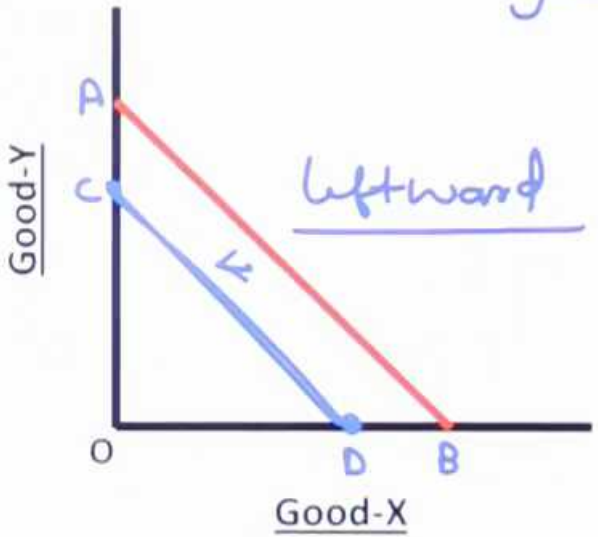
Right



Decrease in Income

In this case budget line shift will shift Leftward

x → ↓
y → ↓



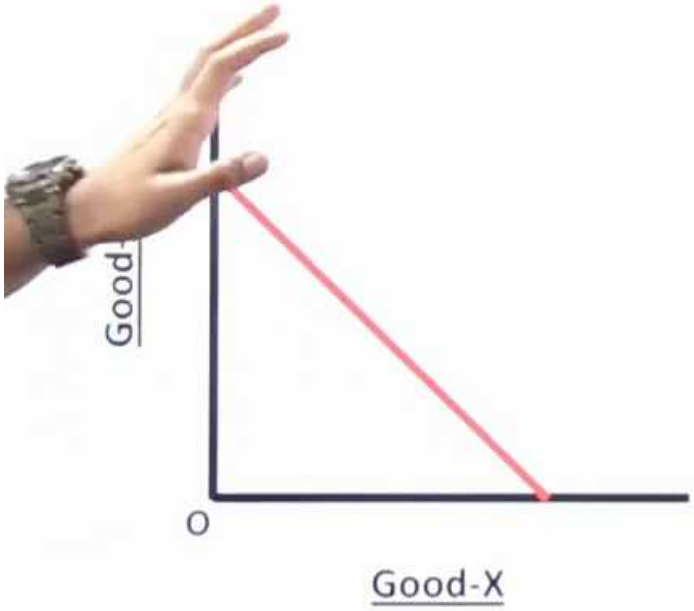
Leftward

Change in Price of One Good

Price of only Good-X changes

Price Rises : Budget line will rotate left

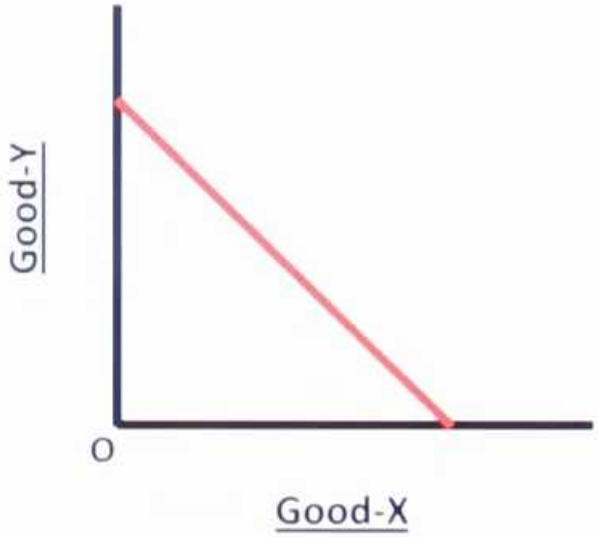
Price falls : Budget line will rotate right



Price of only Good-Y changes

Price Rises : Budget line will rotate downward

Price falls : Budget line will rotate upward



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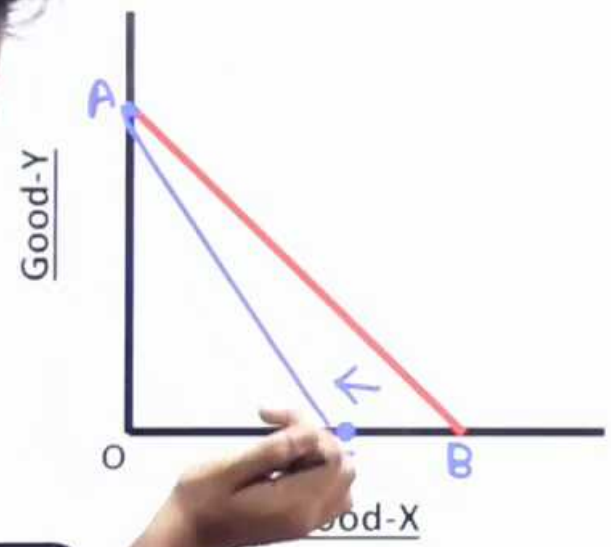

Price of only Good-Y changes

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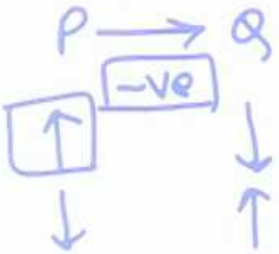
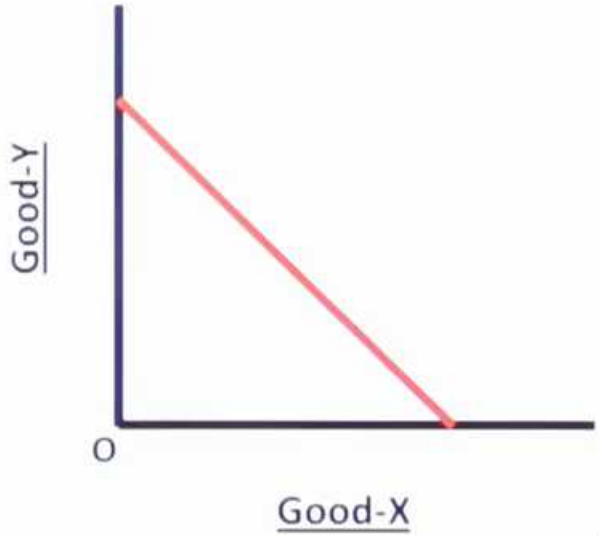
Price falls : Budget line will rotate upward





Change in Price of One Good

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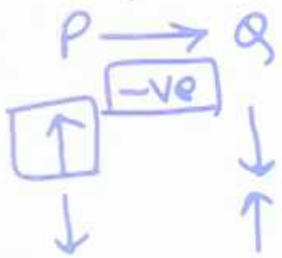

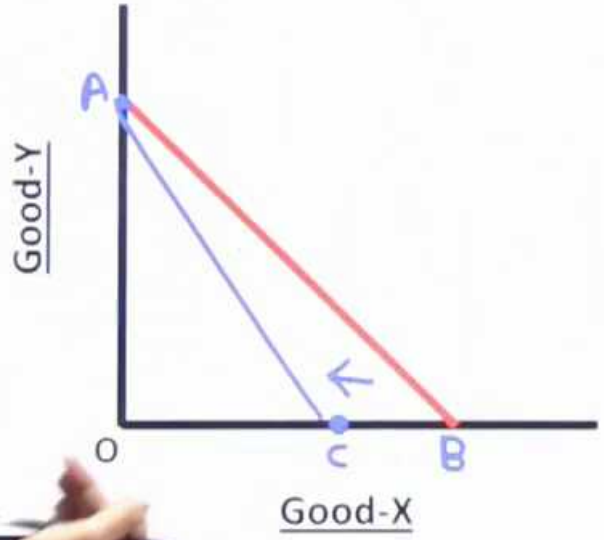

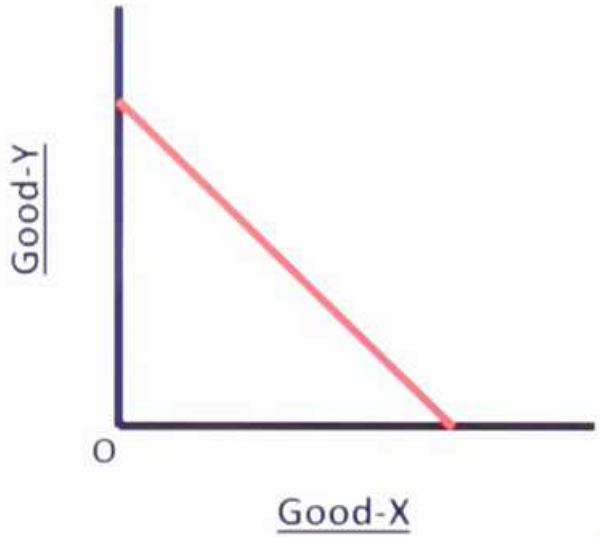

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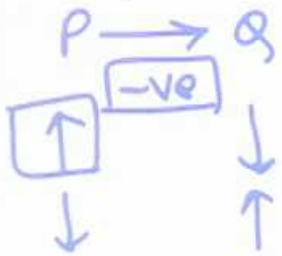

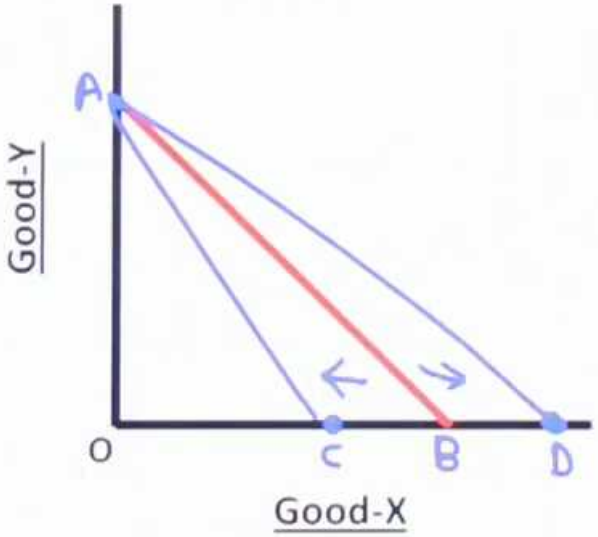

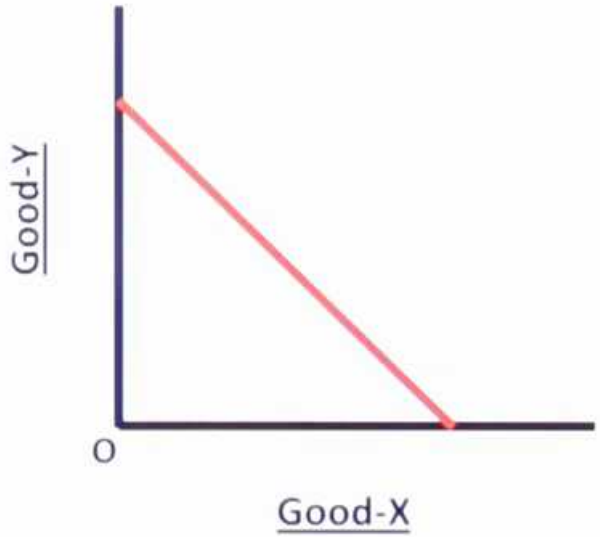

Change in Price of One Good

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Price Rises : Budget line will rotate left

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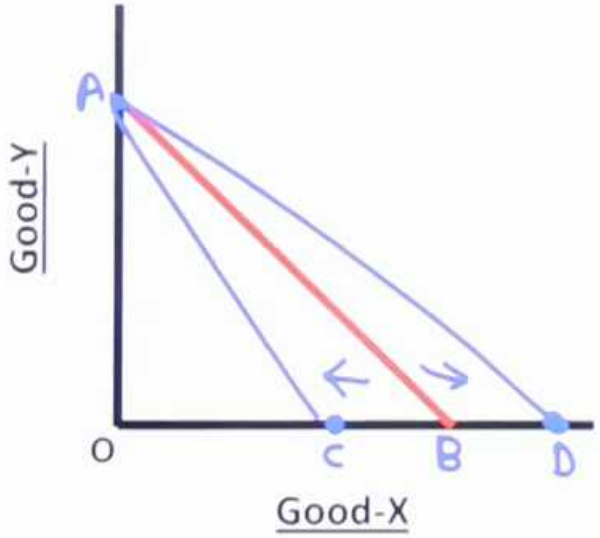
Price falls : Budget line will rotate upward

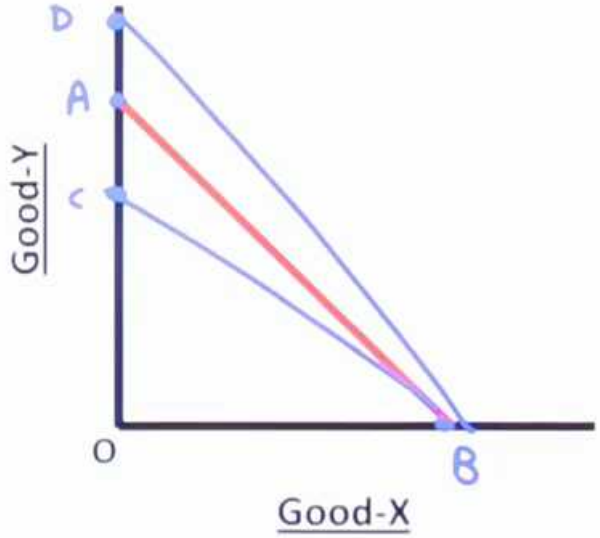
P → Q

−ve

↑ ↓

↓ ↑

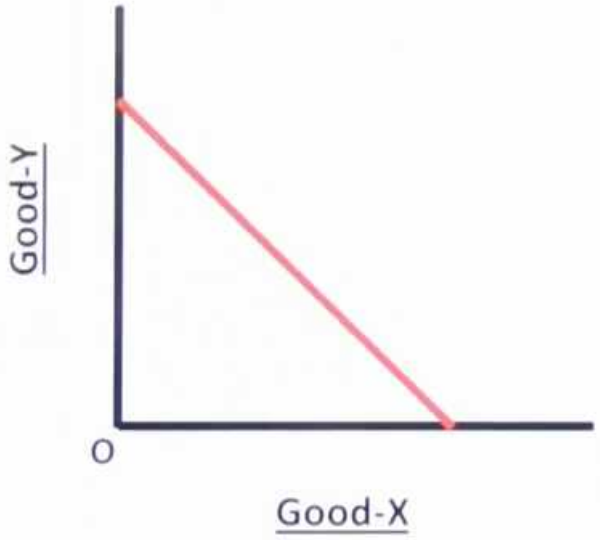




Change in Price of Both the Goods

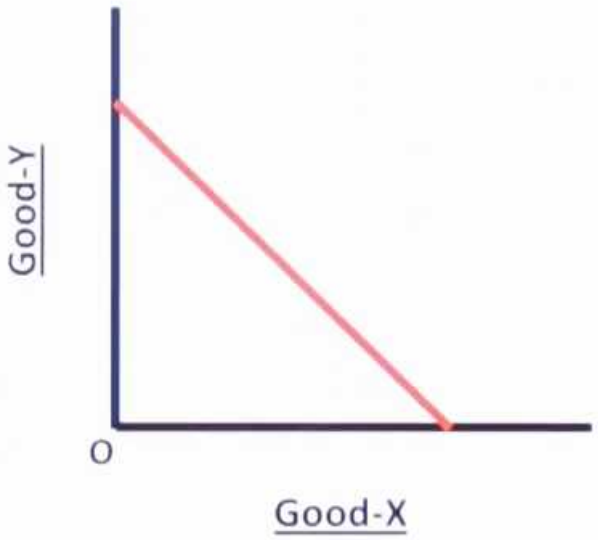
Price of Both goods rises

In this case budget line shift will shift leftward



Price of Both goods falls

In this case budget line shift will shift Rightward



Change in Price of Both the Goods

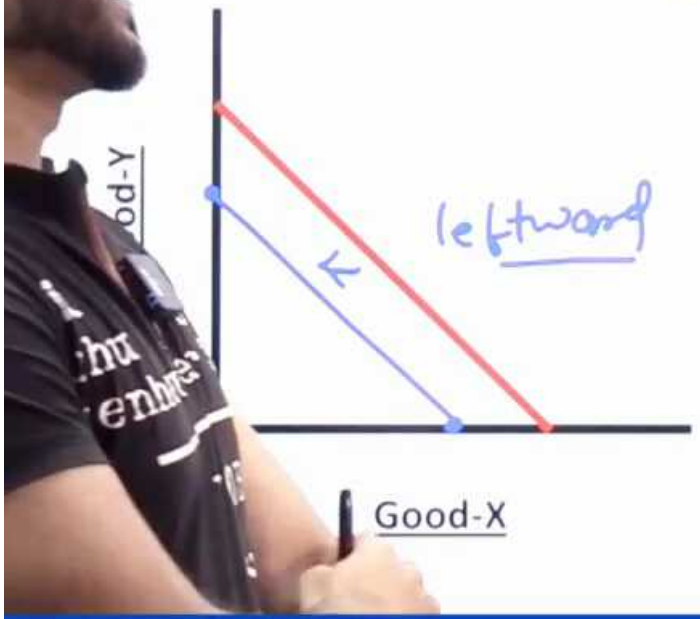
Price of Both goods rises

In this case budget line shift will

shift leftward

$P_x \uparrow$

$P_y \uparrow$



Price of Both goods falls

In this case budget line shift will

shift Rightward

$P_x \downarrow \rightarrow \times \uparrow$

$P_y \downarrow \rightarrow \times \uparrow$