1. Initial Situation

- Weekly allowance (income): M = $20
- Price of nail polish: P_N = $4
- Price of Candy bar :- P_C = $1

Budget Constraint :

$$4N + 1C = 20$$

Intercepts :-

- if C = 0, N = 20/4 = 5 → Point (N, C) = (5, 0)
- if N = 0, C = 20/1 = 20 → Point (0, 20)

2. Opportunity cost of Nail Polish.

The slope of the budget line is:

$$\text{Slope} : -\frac{P_N}{P_C} = -\frac{4}{1} = -4$$

In terms of opportunity cost :-
To buy 1 more nail polish ($4), you must give up $\frac{4}{1}$ = 4 Candy bars

PAGE NO.:
DATE / /

3] if Prices double

- New $P_N = \$8$, $P_C = \$2$, Income $M = \$20$

Budget: $8N + 2C = 20$
Divide by 2: $4N + C = 10$
Slope = $\frac{-8}{2} = -4$, same as before.

Opportunity cost of nail polish: $\frac{8}{2} = 4$
Candy bars - unchanged.

So, doubling both prices and income leaves the real constraint unchanged; here, income didn't change, so the budget set shrinks, but the (relative price) stays the same.

4. Increase in price of candy bars to \$2

New: $P_N = 4$, $P_C = 2$, $M = 20$

Budget:

$$4N + 2C = 20$$

Divide by 2: $2N + C = 10$

Intercepts:-

- $N = 0 \rightarrow C = 10$ (was 20 before)
- $C = 0 \rightarrow N = 5$ (unchanged from before)

Slope :- $-\frac{P_N}{P_C} = -\frac{4}{2} = -2$

- Opportunity cost of 1 nail polish = $\frac{4}{2}$ = 2 candy bars (decreased from 4 because candy bars are more expensive now)
- Opportunity cost of 1 candy bar = $\frac{2}{4} = 0.5$ bottles of nail polish.

5. Graph description.

- Original budget line : from (5, 0) to (0, 20)
- New budget life (after $P_C = 2$): from (0, 5) to (0, 10)

The line pivots inwards along the price of candy increased, reducing the maximum candy possible, but the maximum nail polish is still 5.

Budget line shift due to price increase in Bars

PAGE NO.
DATE / /

—— Original budget line (0,20) - (5,0)
----- New budget line (0,10) - (5,0)