

## DERIVATION OF PED FORMULA

$$PED = \frac{\% \Delta Q_d}{\% \Delta P}$$

where  $\Delta Q_d = Q_2 - Q_1$

$$\Delta P = P_2 - P_1$$

and  $\% \Delta Q_d = \frac{Q_2 - Q_1}{Q_1} \times 100$

$$\% \Delta P = \frac{P_2 - P_1}{P_1} \times 100$$

hence  $PED = \frac{[(Q_2 - Q_1) / Q_1] \times 100}{[(P_2 - P_1) / P_1] \times 100}$

$$= \frac{\Delta Q / Q_1}{\Delta P / P_1}$$

as  $Q_2 - Q_1 = \Delta Q$     &     $P_2 - P_1 = \Delta P$

$$PED = \frac{\Delta Q / Q_1}{\Delta P / P_1}$$

$$= \frac{\Delta Q}{Q_1} \div \frac{\Delta P}{P_1}$$

$$= \frac{\Delta Q}{Q_1} \times \frac{P_1}{\Delta P}$$

$$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$$