

# Percentage

Successive discounts:

$$\% \text{ change} = \frac{\text{Change}}{\text{init}} \times 100$$

→ Assume 100,

$$100 \xrightarrow[-20]{20\%} 80 \xrightarrow[-8]{10\%} 72$$

$$\begin{aligned} \% \text{ change} &= \frac{100 - 72}{100} \times 100 \\ &= 28\% \end{aligned}$$

Multiplying factor:

→ A no.  $x$  is increased by  $\frac{5}{8}$ ,

$$\Rightarrow \text{number after increase} = x + \frac{5}{8} \text{ of } x$$

$$\text{if } x = 1, \Rightarrow \text{or } = 1 + \frac{5}{8} = \frac{13}{8}$$

→ Successive discount using multiplying factor.

→ Assume 1,

$$1 \xrightarrow[\frac{8}{10} \text{ ml}]{20\%} \xrightarrow[\frac{9}{10} \text{ ml}]{10\%}$$

Thus

$$1 \times \frac{8}{10} \times \frac{9}{10} = \frac{72}{100}$$

$$\rightarrow \text{for } 100 \times \frac{72}{100} = 72 \checkmark$$

Inverse relation:

if,  $A \propto \frac{1}{B}$ ,

then

if  $A$  increases by  $\frac{n}{d}$ ,

then  $B$  will decrease by

$$\frac{n}{d+n}$$

$$\Rightarrow \uparrow \frac{n}{d}, \quad \frac{n}{d+n} \downarrow$$

Use,

$$Exp = \text{cost} \times \text{consumption}$$

Assume, Petrol cost to be 100,  
consumption to be 10 l

$$\Rightarrow Exp = 10 \times 100 \\ = 1000 \text{ Rs.}$$

if cost of petrol increases by 20%,  
consumption decreases by what percent  
such that, exp remain same.

petrol increases by 20% or  $\frac{1}{5}$   
this, consumption decreases by  $\frac{1}{5+1} = \frac{1}{6}$

proof: Petrol  $\rightarrow 120$ ,  $8.33$   
 $120 \times 8.33 = \underline{\underline{1000}}$