Speed, Density, Pressure

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \qquad \text{Density} = \frac{\text{Mass}}{\text{Vol}} \qquad \text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed} \times \text{Time} = \text{Distance}$$

$$\frac{\text{Distance}}{\text{Speed}} = \text{Time}$$

Problem

John travels from A to B a distance of 80 km at a speed of 20 km/h. He then travels from B to C a distance of 60 km in 3 hrs. He then travels from C to D in 5 hrs at 15 km/hr.

What was his average speed from A to D

$$\text{Average Speed} = \frac{\text{TOTAL Distance}}{\text{Total Time}}$$

	Speed	Time	Distance
A to B	20 km/h	4 hrs	80 km
B to C		3 hrs	60 km
C to D	15 km/hr	5 hrs	75 km

TOTALS	12 hrs	215 km

Average Speed $= \frac{215}{12} = 17.9$ km/hr

$$\text{Density} = \frac{\text{Mass}}{\text{Vol}} \qquad \text{Mass} = \text{Density} \times \text{Vol}$$

$$\text{Vol} = \frac{\text{Mass}}{\text{Density}}$$

Typical Question

A has a density of 4 g/cm^3

B has a density of 7 g/cm^3

If 100 cm^3 of A is mixed with 50g of B to make compound C, what is the density of compound C.

$$\text{Average Density} = \frac{\text{Total Mass}}{\text{Total Volume}}$$

	Density	Mass	Vol
A	4 g/cm^3	400 g	100 cm^3
B	7 g/cm^3	50 g	$\frac{50}{7}$ cm^3
TOTALS		450 g	107.14

density of C $= \frac{450}{107.14}$

$= 4.2\ g/cm^3$