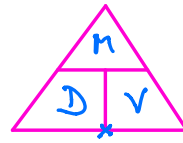


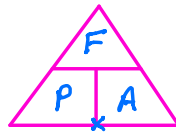
## Compound Measures



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



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



$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

### Example

50g of A which has density  $8 \text{ g/cm}^3$  are mixed with 80g of B which has volume  $10 \text{ cm}^3$ . Find density of the resulting compound.

	Mass	Vol	Density
A	50g	$6.25 \text{ cm}^3$	$8 \text{ g/cm}^3$
B	80g	$10 \text{ cm}^3$	
Compound	130g	$16.25 \text{ cm}^3$	$8 \text{ g/cm}^3$

Ex2

50g of X which has density  $4.3 \text{ g/cm}^3$   
60g of Y which has volume  $13.6 \text{ cm}^3$   
 $20 \text{ cm}^3$  of Z which has density  $5.9 \text{ g/cm}^3$

Find Mass, Volume and Density of mixed compound

	Mass	Vol	Density
X	50g	11.63	4.3 g/cm <sup>3</sup>
Y	60g	13.6 cm <sup>3</sup>	
Z	118g	20 cm <sup>3</sup>	5.9 g/cm <sup>3</sup>
Compound	228g	45.23 cm <sup>3</sup>	5.04 g/cm <sup>3</sup>

$$\frac{228}{45.23} = 5.04 \text{ g/cm}^3$$

Ex 3 John drives 120 miles from Gloucester to Sheffield in 2 hrs 20 min. He then drives 50 miles to York at 30 mph. Finally he drives for 1 hr 30 min at 56 mph to Newcastle.  
Find his overall distance driven, time taken and average speed.

	speed	time	distance
G - S		2 $\frac{1}{3}$ hrs	120
S - Y	30 mph	1 $\frac{2}{3}$ hrs	50
Y - N	56 mph	1 $\frac{1}{2}$ hrs	84
Totals		5.5 hrs	254 miles

$$\text{Avg Speed} = \frac{254}{5.5} = 46.2 \text{ mph}$$

Ex4

John drove 150 miles at 62 miles per hr  
He drove the rest of his journey at  
30 mph. His average speed was 40 mph  
How long in miles was the second stage of  
his journey?

	speed	time	dist
stage 1	62 mph	2.419	150 m
stage 2	30 mph	y	x
overall	40 mph		

$$30 = \frac{x}{y} \Rightarrow y = \frac{x}{30}$$

$$40 = \frac{150 + x}{2.419 + y}$$

$$40 = \frac{150 + x}{2.419 + \frac{x}{30}}$$

$$40\left(2.419 + \frac{x}{30}\right) = 150 + x$$

$$96.76 + \frac{4x}{3} = 150 + x$$

$$\frac{4}{3}x - x = 150 - 96.76$$

$$\frac{1}{3}x = 53.24$$

$$x = 159.72 \text{ miles}$$

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