

# RANGKUMAN MATEMATIKA

## TEMA 3



**NAMA** : \_\_\_\_\_

**KELAS/NO ABSEN** : \_\_\_\_\_ / \_\_\_\_\_

## A. Hubungan Jarak, Waktu, dan Kecepatan

$$S = v \times t$$
$$t = \frac{S}{v}$$
$$v = \frac{S}{t}$$

S = jarak yang ditempuh (km; m)  
v = kecepatan rata-rata ( $\frac{\text{km}}{\text{jam}}$ ;  $\frac{\text{m}}{\text{menit}}$ ;  $\frac{\text{cm}}{\text{detik}}$ )  
t = waktu (jam; menit; detik)

### Mengubah satuan kecepatan

Contoh:

1.  $72 \frac{\text{km}}{\text{jam}} = \dots \frac{\text{m}}{\text{detik}}$

penyelesaian:  $72 \frac{\text{km}}{\text{jam}} = 72 \times \frac{1 \text{ km}}{1 \text{ jam}}$

$$= 72 \times \frac{1.000 \text{ m}}{3.600 \text{ detik}}$$
$$= \frac{72.000 \text{ m}}{3.600 \text{ detik}}$$
$$= 20 \frac{\text{m}}{\text{detik}}$$

2.  $15 \frac{\text{m}}{\text{detik}} = \dots \frac{\text{km}}{\text{jam}}$

penyelesaian:  $15 \frac{\text{m}}{\text{detik}} = 15 \times \frac{1 \text{ m}}{1 \text{ detik}}$

$$= 15 \times \frac{\frac{1}{1.000} \text{ km}}{\frac{1}{3.600} \text{ jam}}$$
$$= 15 \times \frac{3.600 \text{ km}}{1.000 \text{ jam}}$$
$$= \frac{54.000 \text{ km}}{1.000 \text{ jam}}$$
$$= 54 \frac{\text{km}}{\text{jam}}$$

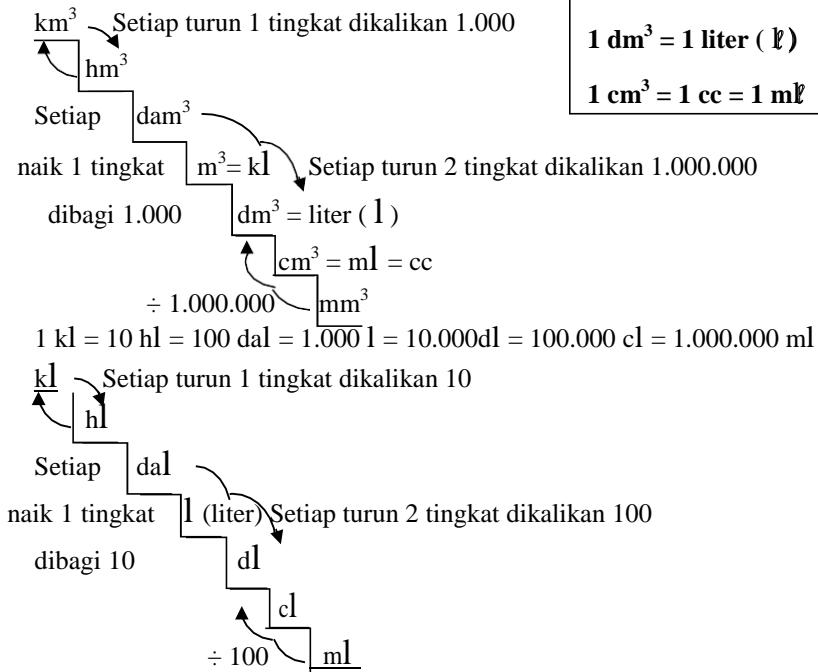
3.  $0,2 \frac{\text{km}}{\text{menit}} = \dots \frac{\text{km}}{\text{jam}}$

penyelesaian:  $0,2 \frac{\text{km}}{\text{menit}} = 0,2 \times \frac{1 \text{ km}}{1 \text{ menit}}$

$$= \frac{2}{10} \times \frac{1 \text{ km}}{\frac{1}{60} \text{ jam}}$$
$$= \frac{2}{10} \times \frac{60 \text{ km}}{1 \text{ jam}}$$
$$= \frac{120 \text{ km}}{10 \text{ jam}}$$
$$= 12 \frac{\text{km}}{\text{jam}}$$

## B. Hubungan Antarsatuan Volume

$\text{km}^3$  dibaca “ kilometer kubik”.



$$1 \text{ m}^3 = 1 \text{ k}\ell \text{ (1 meter kubik = 1 kiloliter)}$$

$$1 \text{ dm}^3 = 1 \text{ liter (l)}$$

$$1 \text{ cm}^3 = 1 \text{ cc} = 1 \text{ ml}$$

Contoh:

1.  $2 \text{ km}^3 = 2.000.000 \text{ dam}^3$

2.  $7 \text{ m}^3 = 7.000 \text{ dm}^3$

3.  $0,4 \text{ l} = 4 \text{ dl}$

4.  $6.000 \text{ mm}^3 = 6 \text{ cm}^3$

5.  $20 \text{ m}^3 + 700 \text{ dm}^3 = \dots \text{ l}$

penyelesaian:

$$\begin{aligned} 20 \text{ m}^3 + 700 \text{ dm}^3 &= 20.000 \text{ dm}^3 + 700 \text{ dm}^3 \\ &= 20.000 \text{ l} + 700 \text{ l} \\ &= 20.700 \text{ l} \end{aligned}$$

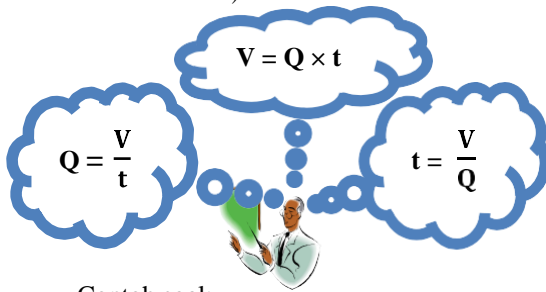
6.  $10.000 \text{ ml} + 30 \text{ m}^3 = \dots \text{ cl}$

penyelesaian:

$$\begin{aligned} 10.000 \text{ ml} + 30 \text{ m}^3 &= 1.000 \text{ cl} + 30.000 \text{ dm}^3 \\ &= 1.000 \text{ cl} + 30.000 \text{ l} \\ &= 1.000 \text{ cl} + 3.000.000 \text{ cl} \\ &= 3.001.000 \text{ cl} \end{aligned}$$

### C. Debit

Debit adalah *banyaknya (volume) zat cair yang mengalir tiap satu satuan waktu (dalam waktu tertentu).*



$$Q = \text{Debit} \left( \frac{\text{m}^3}{\text{detik}}, \frac{\text{liter}}{\text{menit}}, \frac{\text{liter}}{\text{jam}} \right)$$

$$V = \text{Volume} \left( \text{m}^3; \text{liter}; \text{cm}^3 \right)$$

$$t = \text{waktu} \left( \text{jam}; \text{menit}; \text{detik} \right)$$

Contoh soal:

1. Dalam waktu 30 menit, volume air yang mengalir 90.000 cm<sup>3</sup>. Debit air adalah ...  $\frac{\text{cm}^3}{\text{menit}}$ .  
penyelesaian:

Diketahui :  $t = 30$  menit.

$$V = 90.000 \text{ cm}^3$$

Ditanya :  $Q = \dots \frac{\text{cm}^3}{\text{menit}}$

Dijawab :  $Q = \frac{V}{t}$

$$= \frac{90.000 \text{ cm}^3}{30 \text{ menit}}$$

$$= 3.000 \frac{\text{cm}^3}{\text{menit}}$$

Jadi, debit air adalah 3.000  $\frac{\text{cm}^3}{\text{menit}}$

2. Karena bocor 72.000 liter air terbuang dari bak penampungan. Setelah dihitung, debit air tersebut 360  $\frac{\text{liter}}{\text{jam}}$ . Jadi, bak itu bocor selama ... jam.

penyelesaian:

Diketahui :  $V = 72.000$  liter.

$$Q = 360 \frac{\text{liter}}{\text{jam}}$$

Ditanya :  $t = \dots$  jam.

Dijawab :  $t = \frac{V}{Q}$

$$= \frac{72.000 \text{ liter}}{360 \frac{\text{liter}}{\text{jam}}}$$

$$= 200 \text{ jam.}$$

Jadi, bak itu bocor selama 200 jam.

3. Sebuah saluran air mempunyai debit 100  $\frac{\text{liter}}{\text{detik}}$ . Berapa m<sup>3</sup> air yang mengalir dalam saluran tersebut selama 1 jam?

Diketahui :  $Q = 100 \frac{\text{liter}}{\text{detik}}$

$$t = 1 \text{ jam} = 3.600 \text{ detik.}$$

Ditanya :  $V = \dots \text{ m}^3$ .

Dijawab :  $V = Q \times t$

$$= 100 \frac{\text{liter}}{\text{detik}} \times 3.600 \text{ detik}$$

$$= 360.000 \text{ liter.}$$

$$= 360.000 \text{ dm}^3.$$

$$= 360 \text{ m}^3.$$

Jadi, air yang mengalir dalam saluran tersebut selama 1 jam =  $360 \text{ m}^3$ .

### Mengubah satuan debit

Contoh:

1.  $4 \frac{\text{m}^3}{\text{detik}} = \dots \frac{\text{liter}}{\text{detik}}$ .

penyelesaian:

$$\begin{aligned} 4 \frac{\text{m}^3}{\text{detik}} &= 4 \times \frac{1 \text{ m}^3}{1 \text{ detik}} \\ &= 4 \times \frac{1.000 \text{ dm}^3}{1 \text{ detik}} \\ &= 4.000 \frac{\text{liter}}{\text{detik}} \end{aligned}$$

2.  $1,5 \frac{\text{liter}}{\text{menit}} = \dots \frac{\text{cm}^3}{\text{detik}}$ .

penyelesaian:

$$\begin{aligned} 1,5 \frac{\text{liter}}{\text{menit}} &= 1,5 \times \frac{1 \text{ liter}}{1 \text{ menit}} \\ &= 1,5 \times \frac{1 \text{ dm}^3}{1 \text{ menit}} \\ &= \frac{15}{10} \times \frac{1.000 \text{ cm}^3}{60 \text{ detik}} \\ &= 25 \frac{\text{cm}^3}{\text{detik}} \end{aligned}$$

3.  $2 \frac{\text{cm}^3}{\text{detik}} = \dots \frac{\text{liter}}{\text{jam}}$ .

penyelesaian:

$$\begin{aligned} 2 \frac{\text{cm}^3}{\text{detik}} &= 2 \times \frac{1 \text{ cm}^3}{1 \text{ detik}} \\ &= 2 \times \frac{\frac{1}{1.000} \text{ dm}^3}{\frac{1}{3.600} \text{ jam}} \\ &= \left( 2 \times \frac{1}{1.000} \div \frac{1}{3.600} \right) \frac{\text{dm}^3}{\text{jam}} \\ &= \left( \frac{2}{1.000} \div \frac{1}{3.600} \right) \frac{\text{dm}^3}{\text{jam}} \\ &= \left( \frac{2}{1.000} \times \frac{3.600}{1} \right) \frac{\text{dm}^3}{\text{jam}} \\ &= \left( \frac{2}{1.000} \times \frac{3.600}{1} \right) \frac{\text{liter}}{\text{jam}} \\ &= \frac{7.200 \text{ liter}}{1.000 \text{ jam}} \\ &= 7,2 \frac{\text{liter}}{\text{jam}}. \end{aligned}$$