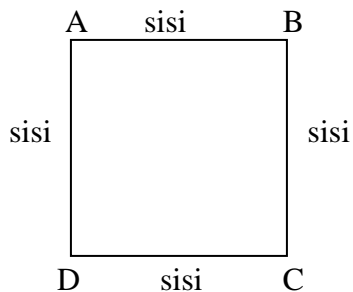


Keliling dan Luas Bangun Datar

1. Bujur Sangkar (Persegi sama sisi)



Panjang:
 $AB = BC = CD = DA$

RUMUS :

Luas = sisi x sisi
 Keliling = $4 \times$ sisi (sisi + sisi + sisi + sisi)

Contoh Soal :

1. Berapa luas dan keliling bujur sangkar yang mempunyai panjang sisi 5 cm ?

jawab : - Luas = sisi x sisi
 $= 5 \text{ cm} \times 5 \text{ cm} = 25 \text{ cm}^2$ (satuan luas adalah persegi)

- Keliling = $4 \times$ sisi
 $= 4 \times 5 \text{ cm} = 20 \text{ cm}$

2. Jika luas suatu bujur sangkar adalah 36 cm^2 , berapa panjang sisi dan keliling bujur sangkar tersebut ?

Jawab: - misal sisi adalah s \rightarrow Luas = sisi x sisi = $s \times s = s^2$

$$36 \text{ cm}^2 = s^2$$

$$s^2 = 36 \text{ cm}^2$$

$$s = \sqrt{36 \text{ cm}^2}$$

$$s = 6 \text{ cm} \rightarrow \text{Panjang sisi}$$

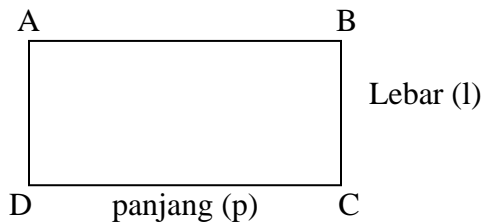
- Keliling = $4 \times$ sisi
 $= 4 \times 6 \text{ cm} = 24 \text{ cm}$

3. Jika keliling bujur sangkar adalah 48 cm, berapa panjang sisi dan Luas bujur sangkar tsb ?

Jawab : - Keliling = $4 \times$ sisi
 $48 \text{ cm} = 4 \times$ sisi
 $\text{sisi} = \frac{48}{4} \text{ cm} = 12 \text{ cm}$

- Luas = sisi x sisi
 $= 12 \text{ cm} \times 12 \text{ cm}$
 $= 144 \text{ cm}^2$

2. Persegi Panjang



Panjang :
 $AB = CD$
 Lebar :
 $AD = BC$

RUMUS :

Luas = panjang x lebar atau $Luas = p \times l$
 Keliling = panjang + lebar + panjang + lebar =
 $= 2 \text{ panjang} + 2 \text{ lebar} = 2 (\text{panjang} + \text{lebar}) = 2 (p + l)$

Contoh Soal :

1. Suatu persegi panjang mempunyai panjang = 8 cm dan lebar = 5 cm, Berapa Luas dan keliling persegi panjang itu ?

Jawab : - Luas = $p \times l$
 $= 8 \text{ cm} \times 5 \text{ cm} = 40 \text{ cm}^2$

- Keliling = $2 (p+l)$
 $= 2 (8\text{cm} + 5 \text{ cm})$
 $= 2 \times 13 \text{ cm} = 26 \text{ cm}$

2. Suatu persegi panjang mempunyai luas = 70 cm^2 dan panjang 10 cm, Berapa lebar dan keliling persegi panjang tersebut ?

Jawab: - Luas = $p \times l$
 $l = \frac{\text{Luas}}{p} = \frac{70\text{cm}^2}{10\text{cm}} = 7 \text{ cm}$

- Keliling = $2 (10\text{cm} + 7\text{cm})$
 $= 2 \times 17 \text{ cm} = 34 \text{ cm}$

3. Suatu persegi panjang mempunyai keliling = 44 cm dan lebar = 10 cm, Berapa luas persegi panjang tersebut ?

Jawab : Luas = $p \times l$
 Lebar = 10 cm ; panjang = belum diketahui

Diketahui keliling = 44 cm

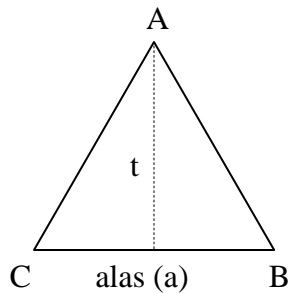
$$\text{Keliling} = 2(p+l) \rightarrow \frac{\text{keliling}}{2} = (p+l)$$

$$\begin{aligned} (p+l) &= \frac{\text{keliling}}{2} \\ &= \frac{44\text{cm}}{2} = 22 \text{ cm} \end{aligned}$$

$$\begin{aligned} p + 10 \text{ cm} &= 22 \text{ cm} \\ p &= 22 \text{ cm} - 10 \text{ cm} \\ &= 12 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Sehingga Luas} &= p \times l \\ &= 12 \text{ cm} \times 10 \text{ cm} \\ &= 120 \text{ cm}^2 \end{aligned}$$

3. Segi Tiga



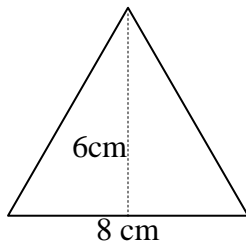
$$\text{Luas} = \frac{1}{2} \times \text{alas} \times \text{tinggi} = \frac{1}{2} a \times t$$

Keliling = sisi AB + sisi BC + sisi AC (Luas segitiga jarang ditanyakan)

Contoh Soal :

1. Suatu segitiga sama sisi mempunyai panjang alas = 8 cm dan tinggi 6 cm, Beapa Luas segitiga tersebut ?

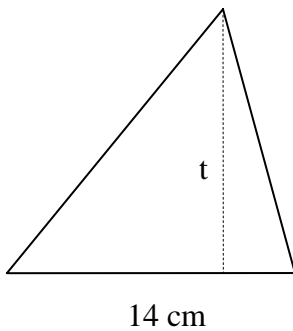
Jawab:



$$\begin{aligned} \text{Luas} &= \frac{1}{2} \times a \times t \\ &= \frac{1}{2} \times 8 \text{ cm} \times 6 \text{ cm} \\ &= \frac{1}{2} \times 24 \text{ cm}^2 = 12 \text{ cm}^2 \end{aligned}$$

2. Suatu segitiga mempunyai luas 56 cm^2 dengan alas = 14 cm, Berapa tinggi segitiga tsb ?

Jawab :



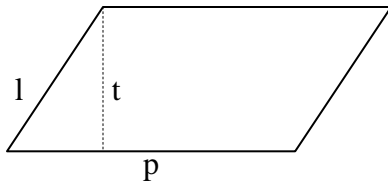
$$\text{Luas} = \frac{1}{2} \times a \times t$$

$$56 \text{ cm}^2 = \frac{1}{2} \times 14 \text{ cm} \times t$$

$$\frac{2 \times 56 \text{ cm}^2}{14 \text{ cm}} = t$$

$$t = \frac{112 \text{ cm}}{14} = 8 \text{ cm}$$

4. Jajaran Genjang



$$\begin{aligned} \text{Luas} &= \text{alas} \times \text{tinggi} \quad (\text{alas} = p) \\ \text{Keliling} &= 2(p+l) \end{aligned}$$

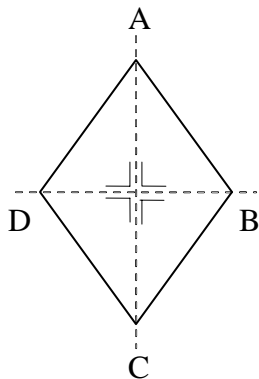
Contoh Soal :

Suatu jajaran genjang mempunyai panjang= 7 cm dan lebar= 3 cm
Berapa keliling dan luas jajaran genjang tsb?

$$\begin{aligned} \text{Jawab :} \quad - \text{ keliling} &= 2(p+l) \\ &= 2 \times (7 \text{ cm} + 3 \text{ cm}) = 20 \text{ cm} \end{aligned}$$

$$\begin{aligned} - \text{ Luas} &= \text{alas} \times \text{tinggi} \\ &= 7 \text{ cm} \times 3 \text{ cm} = 21 \text{ cm}^2 \end{aligned}$$

5. Belah Ketupat



$$AB = BC = CD = DA$$

$$\begin{aligned} \text{Luas} &= \frac{1}{2} \times \text{diagonal 1} \times \text{diagonal 2} \\ &= \frac{1}{2} \times AC \times BD \end{aligned}$$

$$\begin{aligned} \text{Keliling} &= AB + BC + CD + DA \\ &= 4 \times \text{sisi} \end{aligned}$$

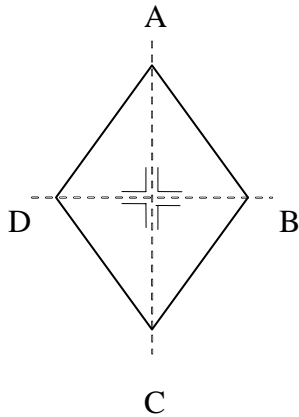
Contoh Soal :

1. Panjang sisi belah ketupat = 5 cm, berapakah kelilingnya ?

$$\begin{aligned} \text{Jawab :} \quad \text{Keliling} &= 4 \times \text{sisi} \\ &= 4 \times 5 \text{ cm} \\ &= 20 \text{ cm} \end{aligned}$$

2. Suatu bangun belah ketupat mempunyai panjang diagonal AC = 7cm, dan Panjang diagonal BD = 6 cm, berapa luas belah ketupat tersebut ?

Jawab :



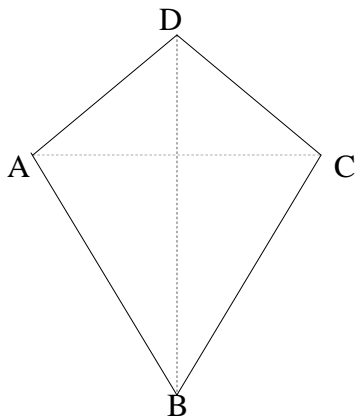
Panjang AC = 7 cm

Panjang BD = 6 cm

$$\text{Luas} = \frac{1}{2} \times \text{AC} \times \text{BD}$$

$$= \frac{1}{2} \times 7 \text{ cm} \times 6 \text{ cm} = 21 \text{ cm}^2$$

6. Layang-layang



Panjang AD = DC

AB = BC

Sudut $\angle A = \angle C$

$$\text{Luas} = \frac{1}{2} \times \text{diagonal 1} \times \text{diagonal 2}$$

$$= \frac{1}{2} \times \text{AC} \times \text{BD}$$

$$\text{Keliling} = \text{AB} + \text{BC} + \text{CD} + \text{DA}$$

Contoh Soal :

1. Panjang suatu diagonal layang-layang adalah 15 cm dengan luas 45 cm^2
Berapakah panjang diagonal layang-layang yang satunya ?

Jawab :

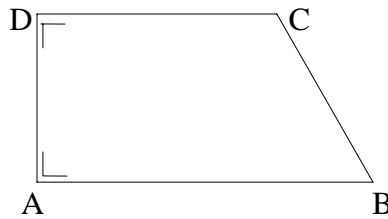
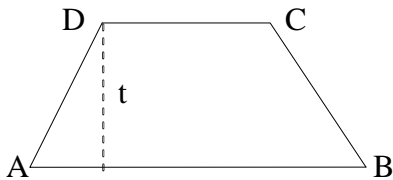
$$L = \frac{1}{2} \times \text{diagonal 1} \times \text{diagonal 2}$$

$$45 \text{ cm}^2 = \frac{1}{2} \times 15 \text{ cm} \times \text{diagonal 2}$$

$$\text{diagonal 2} = \frac{2 \times 45 \text{ cm}^2}{15 \text{ cm}}$$

$$= 6 \text{ cm}$$

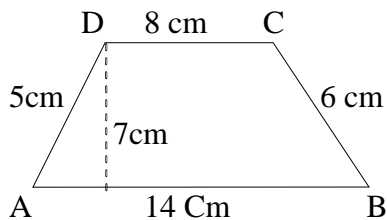
7. Trapesium



$$\text{Luas} = \frac{(AB + CD) \times t}{2}$$

$$\text{Keliling} = AB + BC + CD + AD$$

Contoh Soal :

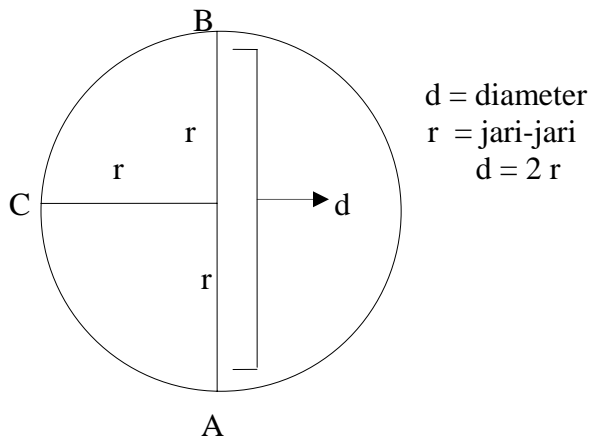


Berapa Luas dan keliling trapesium di atas ?

$$\begin{aligned} \text{Jawab : - Luas} &= \frac{(AB + CD) \times t}{2} \\ &= \frac{(14\text{cm} + 8\text{cm}) \times 7\text{cm}}{2} \\ &= 77 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{- Keliling} &= AB + BC + CD + AD \\ &= (14 + 6 + 8 + 5) \text{ cm} \\ &= 33 \text{ cm} \end{aligned}$$

8. LINGKARAN



$$\text{Luas} = \pi r^2 \quad \left(\pi = \frac{22}{7} = 3,14 \right)$$

$$\text{Keliling} = 2 \pi r$$

Contoh soal :

1. Suatu lingkaran mempunyai diameter 12 cm, berapakah luas dan keliling lingkaran tersebut ?

Jawab :

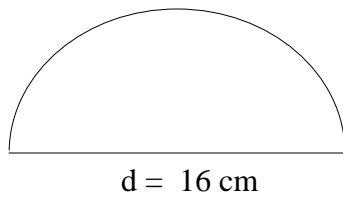
$$d = 12 \text{ cm} ; d = 2r \rightarrow r = \frac{d}{2}$$

$$r = \frac{12\text{cm}}{2} = 6 \text{ cm}$$

$$\begin{aligned}\text{Luas} &= \pi r^2 \\ &= 3,14 \times 6^2 \text{ cm}^2 \\ &= 113,04 \text{ cm}^2\end{aligned}$$

$$\begin{aligned}\text{Keliling} &= 2 \pi r \\ &= 2 \times 3,14 \times 6 \text{ cm} \\ &= 37,68 \text{ cm}\end{aligned}$$

2 . Bearapa luas setengah lingkaran seperti pada gambar :



Jawab :

$$\begin{aligned}\text{Luas lingkaran penuh} &= \pi r^2 \\ \text{Luas } \frac{1}{2} \text{ lingkaran} &= \frac{1}{2} \pi r^2\end{aligned}$$

$$r = \frac{d}{2} = \frac{16\text{cm}}{2} = 8 \text{ cm}$$

$$\begin{aligned}\text{Luas } \frac{1}{2} \text{ lingkaran} &= \frac{1}{2} \times 3,14 \times 8^2 \text{ cm}^2 \\ &= 100,48 \text{ cm}^2\end{aligned}$$