

Excel Matematik SPM
Revisi Pantas (Tingkatan 1 – 3)
Jawapan Lengkap

Unit 1 Persamaan Linear

1 $z + 3 = \frac{2(1-3z)}{3}$

$$3(z+3) = 2(1-3z)$$

$$3z + 9 = 2 - 6z$$

$$9z = -7$$

$$z = -\frac{7}{9}$$

2 $\frac{7}{3} - 3n = -2(3-n)$

$$7 - 9n = -6(3-n)$$

$$7 - 9n = -18 + 6n$$

$$15n = 25$$

$$n = \frac{5}{3}$$

3 $14 - 3(2-d) = 7d + 6$

$$14 - 6 + 3d = 7d + 6$$

$$4d = 2$$

$$d = \frac{1}{2}$$

4 $\frac{2g-3}{4} = 3-g$

$$2g - 3 = 12 - 4g$$

$$6g = 15$$

$$g = \frac{5}{2}$$

5 $\frac{1}{3}j + 2 = 5$

$$\frac{1}{3}j = 3$$

$$j = 9$$

6 $c + \frac{3}{2}d = 2 \dots (1)$

$$(1) \times 4 : 4c + 6d = 8 \dots (2)$$

$$4c - d = 22 \dots (3)$$

$$(2) - (3) : 7d = -14$$

$$d = -2$$

Daripada (3) :

$$4c - d = 22$$

$$4c - (-2) = 22$$

$$4c = 20$$

$$c = 5$$

7 $\frac{1}{2}v - 3w = 10$

$$v - 6w = 20 \dots (1)$$

$$5v + 6w = -8 \dots (2)$$

$$(1) + (2) : 6v = 12$$

$$v = 2$$

Daripada (2) :

$$5(2) + 6w = -8$$

$$6w = -18$$

$$w = -3$$

8 $r + 2s = 10 \dots (1)$

$$\frac{3}{2}r - s = 7 \dots (2)$$

$$(2) \times 2 : 3r - 2s = 14 \dots (3)$$

$$(1) + (3) : 4r = 24$$

$$r = 6$$

Daripada (1) :

$$6 + 2s = 10$$

$$2s = 4$$

$$s = 2$$

9 Katakan harga 1 kg tomato dan 1 kg lobak merah masing-masing ialah RM x dan RM y .

$$3x + 2y = 18 \dots (1)$$

$$5x + 4y = 32 \dots (2)$$

$$(1) \times 2 : 6x + 4y = 36 \dots (3)$$

$$(3) - (2) : x = 4$$

Daripada (2) :

$$5(4) + 4y = 32$$

$$4y = 12$$

$$y = 3$$

Maka, harga 1 kg tomato dan 1 kg lobak merah masing-masing ialah RM4 dan RM3.

Unit 2 Ketaksamaan Linear

$$1 \quad \frac{5+t}{3} \leq 2t+5 < 6+t$$

$$\frac{5+t}{3} \leq 2t+5$$

$$5+t \leq 6t+15$$

$$-5t \leq 10$$

$$t \geq \frac{10}{-5}$$

$$t \geq -2$$

$$2t+5 < 6+t$$

$$t < 1$$

Maka, integer t yang memuaskan ketaksamaan ialah $-2, -1, 0$.

$$2 \quad 5(r-1) < 11+r$$

$$5r-5 < 11+r$$

$$4r < 16$$

$$r < 4$$

$$\frac{r+3}{2} \geq -3$$

$$r+3 \geq -6$$

$$r \geq -9$$

Julat nilai r ialah $-9 \leq r \leq 3$.

$$3 \quad -2 < \frac{2u-1}{3} \leq 3$$

$$-2 < \frac{2u-1}{3}$$

$$-6 < 2u-1$$

$$-5 < 2u$$

$$u > -\frac{5}{2}$$

$$u > -2\frac{1}{2}$$

$$\frac{2u-1}{3} \leq 3$$

$$2u-1 \leq 9$$

$$2u \leq 10$$

$$u \leq 5$$

Maka, integer u yang memuaskan ketaksamaan ialah $-2, -1, 0, 1, 2, 3, 4, 5$.

Unit 3 Pecahan Algebra

$$1 \quad \frac{5v+b}{8b} - \frac{v-4b}{2b}$$

$$= \frac{5v+b-4(v-4b)}{8b}$$

$$= \frac{v+17b}{8b}$$

$$2 \quad \frac{m}{2q} - \frac{1-m}{q}$$

$$= \frac{m-2(1-m)}{2q}$$

$$= \frac{m-2+2m}{2q}$$

$$= \frac{3m-2}{2q}$$

$$3 \quad \frac{x-2}{x^2} - \frac{x+3}{x}$$

$$= \frac{x-2-x(x+3)}{x^2}$$

$$= \frac{x-2-x^2-3x}{x^2}$$

$$= \frac{-2-2x-x^2}{x^2}$$

$$4 \quad \frac{d-2}{d} - \frac{2(d-3)}{d^2}$$

$$= \frac{d(d-2)-2(d-3)}{d^2}$$

$$= \frac{d^2-2d-2d+6}{d^2}$$

$$= \frac{d^2-4d+6}{d^2}$$

$$5 \quad \frac{m+5}{mn} - \frac{m}{n(m+5)}$$

$$= \frac{(m+5)^2 - m^2}{nm(m+5)}$$

$$= \frac{m^2+10m+25-m^2}{nm(m+5)}$$

$$= \frac{10m+25}{m(m+5)}$$

Unit 4 Rumus Algebra

$$1 \quad w = \frac{v}{3+v}$$

$$w(3+v) = v$$

$$3w + wv = v$$

$$3w = v(1-w)$$

$$v = \frac{3w}{1-w}$$

$$2 \quad P = \frac{1}{2} \sqrt{\frac{R}{Q}}$$

$$P^2 = \frac{R}{4Q}$$

$$R = 4P^2Q$$

$$3 \quad \frac{2m}{n} + 1 = m$$

$$2m + n = mn$$

$$n = mn - 2m$$

$$n = m(n-2)$$

$$m = \frac{n}{n-2}$$

$$4 \quad y = \frac{x-2}{x+1}$$

$$y(x+1) = x-2$$

$$xy + y = x - 2$$

$$xy - x = -y - 2$$

$$x(y-1) = -y-2$$

$$x = \frac{-y-2}{y-1}$$

$$x = \frac{-(y+2)}{-(1-y)}$$

$$x = \frac{y+2}{1-y}$$

$$5 \quad \frac{1}{w} + \frac{1}{u} = \frac{1}{4}$$

$$\frac{1}{u} = \frac{1}{4} - \frac{1}{w}$$

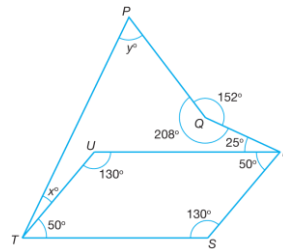
$$\frac{1}{u} = \frac{w-4}{4w}$$

$$\frac{u}{1} = \frac{4w}{w-4}$$

$$u = \frac{4w}{w-4}$$

Unit 5 Poligon

1



Hasil tambah sudut pedalaman pentagon

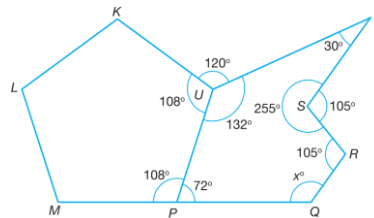
$$= (5-2) \times 180^\circ$$

$$= 540^\circ$$

$$(x+50) + 130 + 75 + 208 + y = 540$$

$$x + y = 77$$

2



Hasil tambah sudut pedalaman heksagon

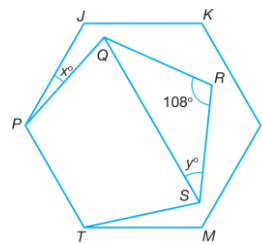
$$= (6-2) \times 180^\circ$$

$$= 720^\circ$$

$$72 + x + 105 + 255 + 30 + 132 = 720$$

$$x = 126$$

3

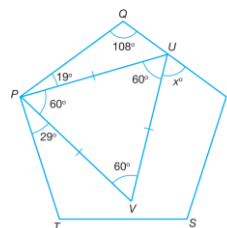


$$y = \frac{180-108}{2} = 36$$

$$x = 120 - 108 = 12$$

$$x + y = 36 + 12 = 48$$

4



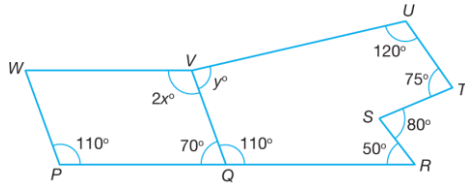
$$\angle PUQ = 180^\circ - 19^\circ - 108^\circ = 53^\circ$$

QUR ialah garis lurus.

$$x + 60 + 53 = 180$$

$$x = 67$$

5



$$2x = 110$$

$$x = 55$$

Hasil tambah sudut pedalaman heksagon

$$= (6 - 2) \times 180^\circ = 720^\circ$$

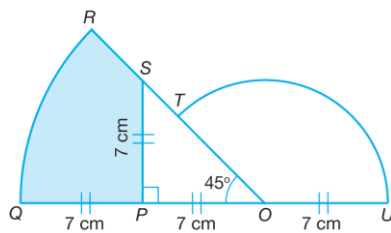
$$110 + 50 + (360 - 80) + 75 + 120 + y = 720$$

$$y = 85$$

$$x + y = 55 + 85 = 140$$

Unit 6 Bulatan

1



(a) Luas rantau berlorek
= Luas sektor OQR - Luas $\triangle OPS$

$$= \frac{45}{360} \times \frac{22}{7} \times 14^2 - \frac{1}{2} \times 7 \times 7$$

$$= 77 - \frac{49}{2}$$

$$= 52 \frac{1}{2} \text{ cm}^2$$

(b) Perimeter seluruh rajah

$$= 7 + 7 + 7 + \text{Panjang lengkok } QR + RT$$

$$+ \text{Panjang lengkok } TU$$

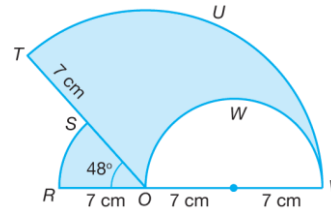
$$= 21 + \frac{45}{360} \times 2 \times \frac{22}{7} \times 14 + 7 +$$

$$\frac{135}{360} \times 2 \times \frac{22}{7} \times 7$$

$$= 21 + 11 + 7 + 16 \frac{1}{2}$$

$$= 55 \frac{1}{2} \text{ cm}$$

2



(a) Perimeter seluruh rajah
= $7 + 7 + 7 + 7 + \text{Panjang lengkok } RS$
+ Panjang lengkok TUV

$$= 28 + \frac{48}{360} \times 2 \times \frac{22}{7} \times 7 +$$

$$\frac{132}{360} \times 2 \times \frac{22}{7} \times 14$$

$$= 28 + 5 \frac{13}{15} + 32 \frac{4}{15}$$

$$= 66 \frac{2}{15} \text{ cm}$$

(b) Luas rantau berlorek

$$= \text{Luas rantau } ORS + \text{Luas rantau } OTUV - \text{Luas rantau } OWC$$

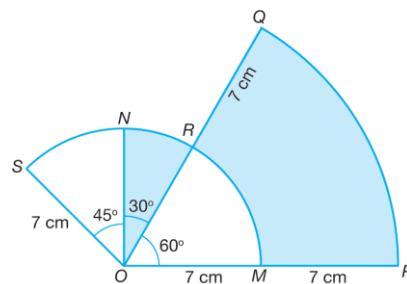
$$= \frac{48}{360} \times \frac{22}{7} \times 7^2 + \frac{132}{360} \times \frac{22}{7} \times 14^2 -$$

$$\frac{1}{2} \times \frac{22}{7} \times 7^2$$

$$= 20 \frac{8}{15} + 225 \frac{13}{15} - 77$$

$$= 169 \frac{2}{5} \text{ cm}^2$$

3



(a) Perimeter seluruh rajah
+ $7 + 7 + 7 + 7 + \text{Panjang lengkok } SNR$
+ Panjang lengkok QP

$$= 7 + 7 + 7 + 7 + \frac{75}{360} \times 2 \times \frac{22}{7} \times 7 +$$

$$\frac{60}{360} \times 2 \times \frac{22}{7} \times 14$$

$$= 28 + 9 \frac{1}{6} + 14 \frac{2}{3}$$

$$= 51 \frac{5}{6} \text{ cm}$$

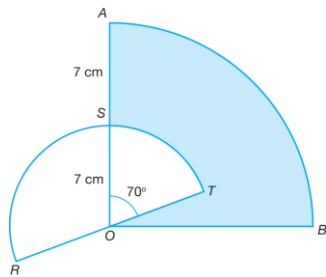
(b) Luas rantau berlorek
 = Luas sektor NOR + Luas sektor OQP
 - Luas sektor ORM

$$= \frac{30}{360} \times \frac{22}{7} \times 7^2 + \frac{60}{360} \times \frac{22}{7} \times 14^2$$

$$- \frac{60}{360} \times \frac{22}{7} \times 7^2$$

$$= 89 \frac{5}{6} \text{ cm}^2$$

4



(a) Luas rantau berlorek
 = Luas sukuan bulatan OAB - Luas sektor OST

$$= \frac{90}{360} \times \frac{22}{7} \times 14^2 - \frac{70}{360} \times \frac{22}{7} \times 7^2$$

$$= 124 \frac{1}{18} \text{ cm}^2$$

(b) Perimeter seluruh rajah
 = $7 + 7 + 14 +$ Panjang lengkok RS +
 Panjang lengkok AB

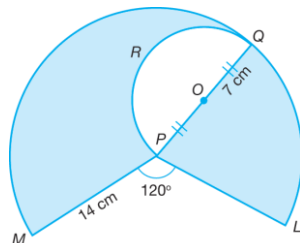
$$= 28 + \frac{110}{360} \times 2 \times \frac{22}{7} \times 7 +$$

$$\frac{1}{4} \times 2 \times \frac{22}{7} \times 14$$

$$= 28 + 13 \frac{4}{9} + 22$$

$$= 63 \frac{4}{9} \text{ cm}$$

5



(a) Perimeter seluruh rajah
 = Panjang lengkok MQL + $14 + 14$

$$= \frac{240}{360} \times 2 \times \frac{22}{7} \times 14 + 28$$

$$= 58 \frac{2}{3} + 28$$

$$= 86 \frac{2}{3} \text{ cm}$$

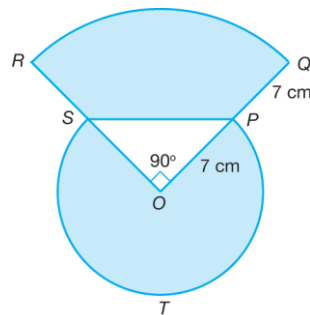
(b) Luas rantau berlorek
 = Luas sektor SQL - Luas semibulatan PRQ

$$= \frac{240}{360} \times \frac{22}{7} \times 14^2 - \frac{1}{2} \times \frac{22}{7} \times 7^2$$

$$= 410 \frac{2}{3} - 77$$

$$= 333 \frac{2}{3} \text{ cm}^2$$

6



(a) Perimeter seluruh rajah
 = $7 + 7 +$ Panjang lengkok RQ +
 Panjang lengkok STR

$$= 14 + \frac{90}{360} \times 2 \times \frac{22}{7} \times 14 +$$

$$\frac{270}{360} \times 2 \times \frac{22}{7} \times 7$$

$$= 14 + 22 + 33$$

$$= 69 \text{ cm}$$

(b) Luas rantau berlorek
 = Luas sektor ORQ - Luas ΔOSP +
 Luas sektor STP

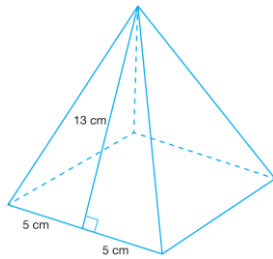
$$= \frac{90}{360} \times \frac{22}{7} \times 14^2 - \frac{1}{2} \times 7 \times 7 +$$

$$\frac{270}{360} \times \frac{22}{7} \times 7^2$$

$$= 245 \text{ cm}^2$$

Unit 7 Bentuk Geometri Tiga Dimensi

1

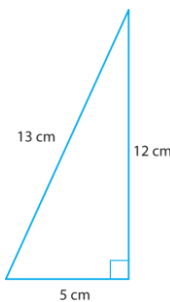


(a) Luas bagi permukaan piramid

$$= 4 \left(\frac{1}{2} \times 10 \times 13 \right) + 10 \times 10$$

$$= 360 \text{ cm}^2$$

(b)



(b) Tinggi piramid = 12 cm

(c) Isi padu piramid

$$= \frac{1}{3} \times 10^2 \times 12$$

$$= 400 \text{ cm}^3$$

2 Isi padu prisma + Isi padu separuh silinder =

$$379 \frac{5}{7} \text{ cm}^3$$

$$\frac{1}{2}(6)(8)t + \frac{1}{2}(\pi j^2 t) = \frac{2\ 658}{7}$$

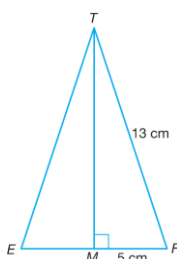
$$24t + \frac{1}{2} \times \frac{22}{7} \times (5)^2 t = \frac{2\ 658}{7}$$

$$24t + \frac{275}{7} t = \frac{2\ 658}{7}$$

$$\frac{443}{7} t = \frac{2\ 658}{7}$$

$$t = 6$$

3 (a)



6

$$TM = \sqrt{13^2 - 5^2} = \sqrt{144} = 12 \text{ cm}$$

(b) Isi padu prisma + Isi padu separuh kon

$$= \left(\frac{1}{2} \times 5 \times 12 \right) \times 9 + \frac{1}{2} \times \frac{1}{3} \times \frac{22}{7} \times (5)^2 (12)$$

$$= 270 + 157 \frac{1}{7}$$

$$= 427 \frac{1}{7} \text{ cm}^3$$

4 Isi padu prisma – Isi padu separuh silinder

$$= \frac{1}{2}(4+9)(6) \times 10 - \frac{1}{2} \times \frac{22}{7} \times 2^2 \times 10$$

$$= 390 - 62 \frac{6}{7}$$

$$= 327 \frac{1}{7} \text{ cm}^3$$

Unit 8 Transformasi Isometri

1 Transformasi yang memetakan titik $P(2, 3)$

ke titik $Q(6, 6)$ ialah translasi $\begin{pmatrix} 4 \\ 3 \end{pmatrix}$. Imej bagi

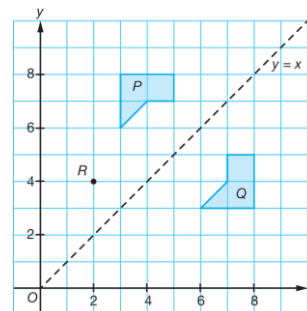
titik $D(4, 1)$ ialah $D'(8, 4)$.

2 Titik R ialah imej bagi titik Q di bawah

translasi $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$. Jika titik $N(-2, 3)$ ialah imej

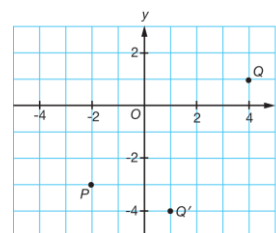
bagi titik M di bawah translasi yang sama, maka koordinat titik M ialah $(-5, -1)$.

3

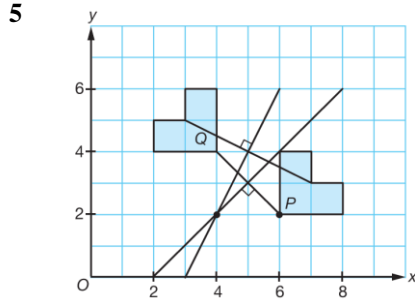


Paksi pantulan ialah garis lurus $y = x$.
Koordinat imej bagi titik R ialah $(4, 2)$.

4



Titik $Q'(1, -4)$ ialah imej bagi titik $Q(4, 1)$ di bawah putaran 90° ikut arah jam pada asalan. Maka, koordinat imej bagi titik $P(-2, -3)$ di bawah putaran yang sama ialah $(-3, 2)$.



Pusat putaran ialah titik persilangan bagi dua pembahagi dua sama serenjang, iaitu $(4, 2)$.

Unit 9 Sukatan Kecenderungan Memusat

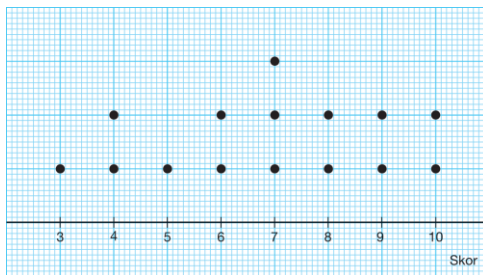
1 (a)

Batang	Daun
3	7
4	4 6 7
5	0 5 8 9
6	0 1 2 7 7 7
7	0 2 3 4 4 6 7 9
8	2 6 8

(b) $\text{Min} = \frac{1\ 631}{25} = 65.24$

Mod = 67
Median = 67

2 (a)



(b) $\text{Min} = \frac{103}{15} = 6.867$

Mod = 7
Median = 7

3

Jarak (km)	Kekerapan (f)	fx
1	9	9
2	11	22
3	8	24
4	7	28
5	5	25
Jumlah	40	108

(a) $\text{Jarak min} = \frac{\sum fx}{\sum f} = \frac{108}{40} = 2.7 \text{ km}$

(b) Sudut sektor bagi mod

$$= \frac{11}{40} \times 360^\circ$$

$$= 99^\circ$$

Unit 10: Indeks

1 $(p^2n^{-3})^3 \times pn^8$

$$= p^6n^{-9} \times pn^8$$

$$= \frac{p^7}{n}$$

2 $(x^{12}y^{-8})^{\frac{1}{4}} \times \frac{z^4}{y^4z^{-1}}$

$$= x^3y^{-2} \times \frac{z^5}{y^4}$$

$$= \frac{x^3z^5}{y^6}$$

3 $\frac{(8m^3y^{-4})^2}{(4m^{-2}y^3)^3}$

$$= \frac{64m^6y^{-8}}{64m^{-6}y^9}$$

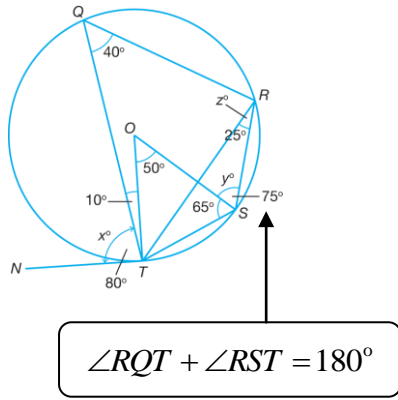
$$= \frac{m^{12}}{y^{17}}$$

4 $(5g^4w^{-2})^2 \div (gw^{-3})^5$

$$= \frac{25g^8w^{-4}}{g^5w^{-15}}$$

$$= 25g^3w^{11}$$

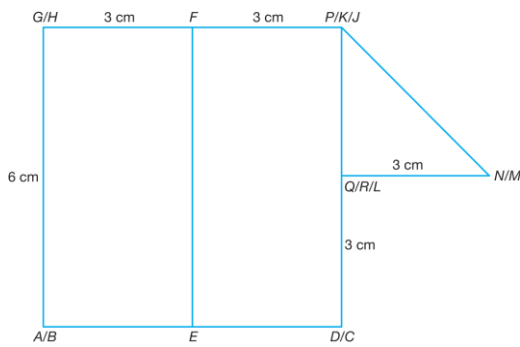
3



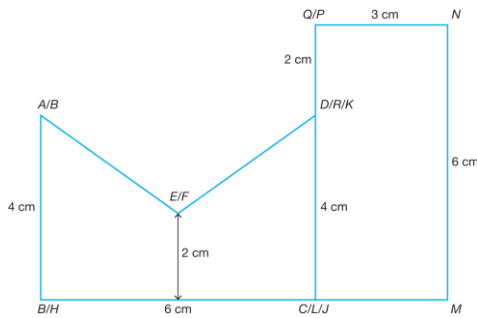
- (a) $x = 80^\circ$
- (b) $y = 75^\circ$
- (c) $z = 25^\circ$

Unit 14 Pelan dan Dongakan

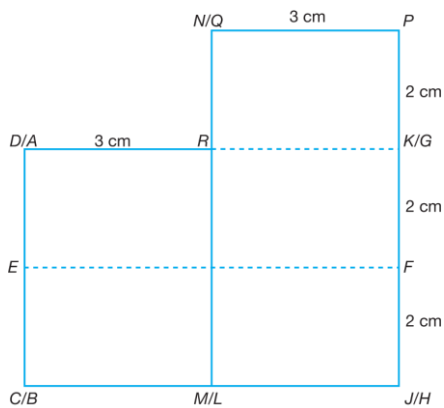
1 (a)



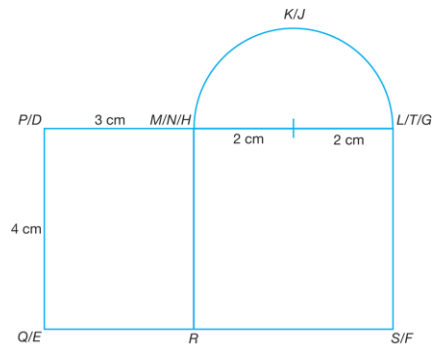
(b)



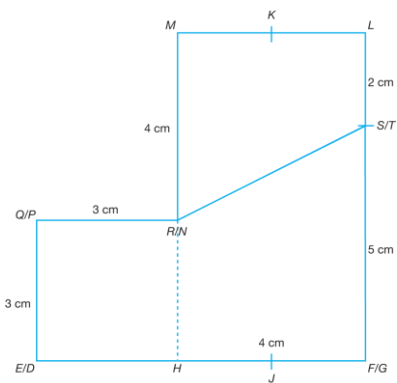
(c)



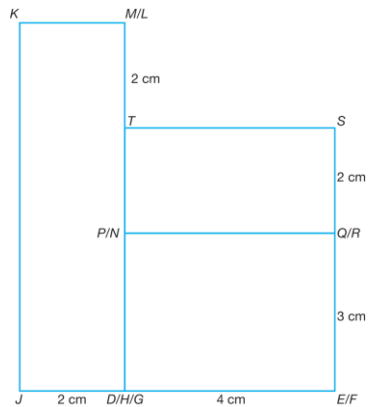
2 (a)



(b)

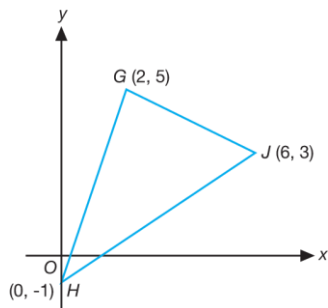


(c)



Unit 15 Garis Lurus

1



(a) Kecerunan $GJ = \frac{3-5}{6-2} = \frac{-2}{4} = -\frac{1}{2}$

Persamaan GJ ialah $y = -\frac{1}{2}x + c$

Pada titik $G(2, 5)$,

$$5 = -\frac{1}{2}(2) + c$$

$$c = 6$$

Maka, persamaan GJ ialah

$$y = -\frac{1}{2}x + 6$$

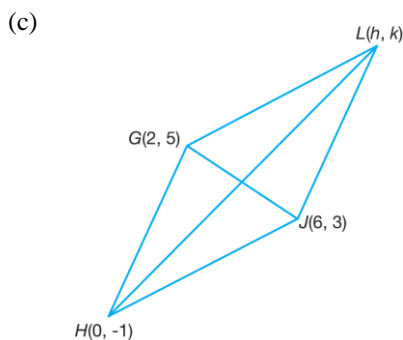
(b) Pada paksi- x , $y = 0$

$$0 = -\frac{1}{2}x + 6$$

$$\frac{1}{2}x = 6$$

$$x = 12$$

Pintasan- $x = 12$



Titik tengah $HL =$ Titik tengah GJ

$$\left(\frac{h}{2}, \frac{k-1}{2}\right) = \left(\frac{2+6}{2}, \frac{5+3}{2}\right)$$

$$\left(\frac{h}{2}, \frac{k-1}{2}\right) = (4, 4)$$

Menyamakan koordinat- x ,

$$\frac{h}{2} = 4$$

$$h = 8$$

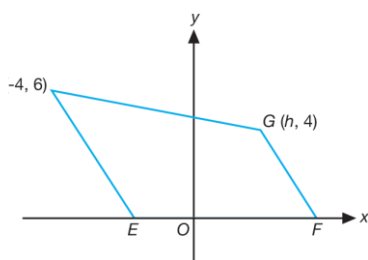
Menyamakan koordinat- y ,

$$\frac{k-1}{2} = 4$$

$$k = 9$$

Maka, koordinat titik L ialah $(8, 9)$.

2



(a) Persamaan garis lurus DG ialah $x + 3y = 15$.

Bagi titik $G(h, 4)$,

$$h + 3(4) = 15$$

$$h = 3$$

(b) Katakan F ialah titik $(p, 0)$.

$$m_{GF} = -2$$

$$\frac{4-0}{3-p} = -2$$

$$4 = -6 + 2p$$

$$p = 5$$

Maka, koordinat titik F ialah $(5, 0)$.

(c) Kecerunan $DE =$ Kecerunan $GF = -2$

Persamaan DE ialah

$$y = -2x + c$$

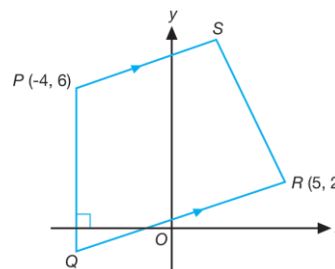
Bagi titik $D(-4, 6)$,

$$6 = -2(-4) + c$$

$$c = -2$$

Maka, persamaan DE ialah $y = -2x - 2$.

3



(a) $m_{QR} = \frac{1}{2}$

$$\frac{2-q}{5-(-4)} = \frac{1}{2}$$

$$4 - 2q = 9$$

$$-2q = 5$$

$$q = -\frac{5}{2}$$

Maka, koordinat titik Q ialah $\left(-4, -\frac{5}{2}\right)$.

(b) Persamaan garis lurus PS ialah

$$y = \frac{1}{2}x + c$$

Bagi titik $P(-4, 6)$,

$$6 = \frac{1}{2}(-4) + c$$

$$c = 8$$

Maka, persamaan garis lurus PS ialah

$$y = \frac{1}{2}x + 8$$

$$2y - x = 16$$

(c) Persamaan $RS: 3y + 7x = 41 \dots (1)$

Persamaan $PS: 2y - x = 16 \dots (2)$

$(2) \times 7: 14y - 7x = 112 \dots (3)$

$(1) + (3): 17y = 153$

$$y = 9$$

Daripada $(1): 3(9) + 7x = 41$

$$x = 2$$

Maka, koordinat bagi titik S ialah $(2, 9)$.