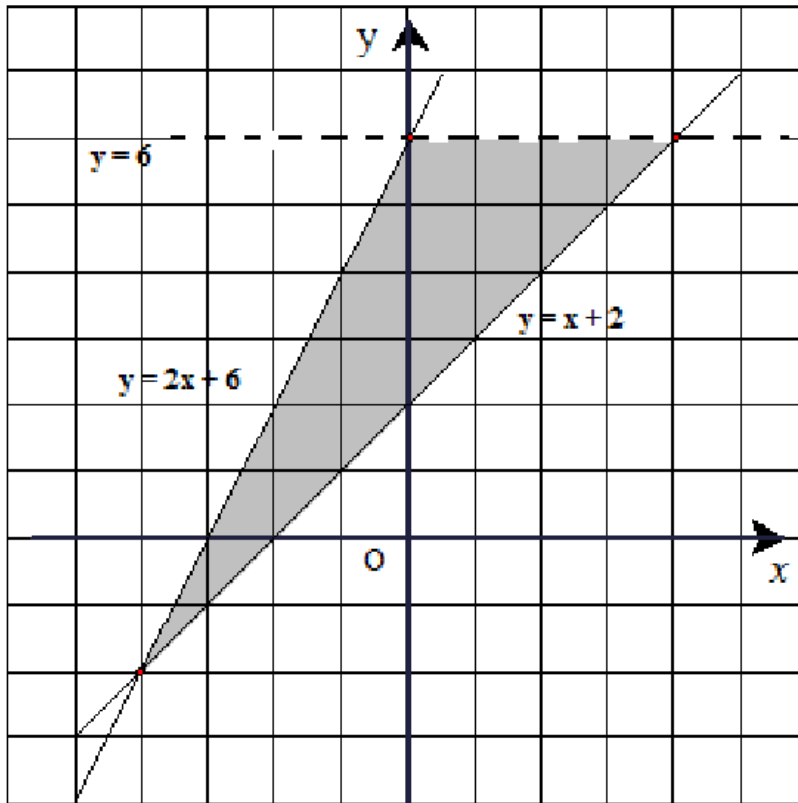
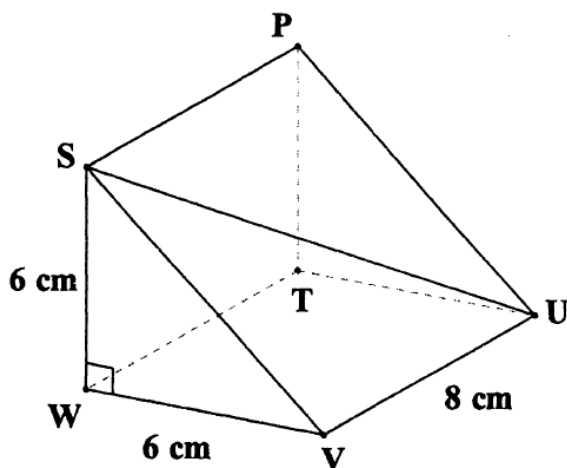


1.  $y \leq 2x + 6$ ,  $y \geq x + 2$  ad  $y < 6$



Make sure  $y = 6$  is dotted line. / Pastikan  $y = 6$  adalah garis titik-titik.

2. \_



- (a)  $\angle SUW$

(b) First find the length  $WU$ . / Mula, cari panjang  $WU$ .

$$\begin{aligned} WU &= \sqrt{8^2 + 6^2} \\ &= \sqrt{100} \\ &= 10 \text{ cm} \end{aligned}$$

$$\begin{aligned} \tan \angle SUW &= \frac{SW}{WU} \\ &= \frac{6}{10} \end{aligned}$$

$$\begin{aligned} \angle SUW &= \tan^{-1} \frac{6}{10} \\ &= 30.963 @ 30^\circ 58' \end{aligned}$$

3. Solve. / Selesaikan.

$$x(3x - 1) = 4(2 + x)$$

$$3x^2 - x = 8 + 4x$$

$$3x^2 - x - 4x - 8 = 0$$

$$3x^2 - 5x - 8 = 0$$

$$(3x - 8)(x + 1) = 0$$

$$x = -1, \frac{8}{3}$$

4. Simultaneous linear equations. / Persamaan linear serentak.

$$\frac{1}{2}v + 2w = 1 \dots \dots (1)$$

$$\frac{1}{2}v = 1 - 2w$$

$$2v - 3w = -7 \dots \dots (2)$$

$$v = 2(1 - 2w)$$

$$v = 2 - 4w \dots \dots (3)$$

Substitute (3) into (2). / Masukkan (3) kedalam (2).

$$2(2 - 4w) - 3w = -7$$

$$11w = 11$$

$$4 - 8w - 3w = -7$$

$$w = \frac{11}{11}$$

$$4 - 11w = -7$$

$$w = 1$$

$$4 + 7 = 11w$$

Substitute  $w = 1$  into (3). / Masukkan  $w = 1$  kedalam (3).

$$\begin{aligned} v &= 2 - 4w \\ &= 2 - 4(1) \\ v &= -2 \end{aligned}$$

5. Trapezium  $ABFE$ .

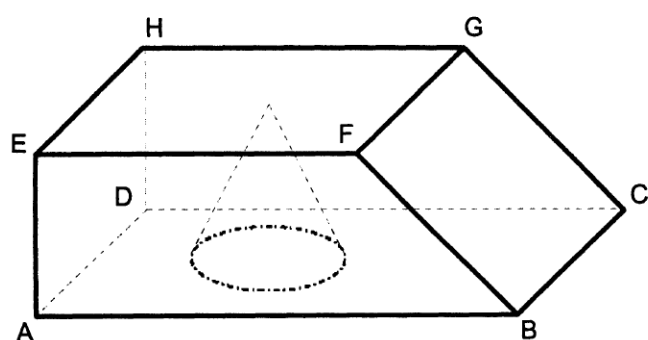
$$AB = DC = 14 \text{ cm}$$

$$AE = DH = 7 \text{ cm}$$

$$EF = HG = 12 \text{ cm}$$

$$AD = BC = 8 \text{ cm}$$

$$\text{Cone } r = 3, h = 6$$



Volume of the trapezium prism

$$\begin{aligned} &\frac{1}{2} \times (EF + AB) \times EA \times AD \\ &= \frac{1}{2} \times (12 + 14) \times 7 \times 8 \\ &= 728 \text{ cm}^3 \end{aligned}$$

Volume of the cone.

$$\begin{aligned} &\frac{1}{3} \times \text{base area} \times \text{height} \\ &= \frac{1}{3} \times \left(\frac{22}{7}\right) (3)^2 \times 6 \\ &= 56\frac{4}{7} \text{ cm}^3 \end{aligned}$$

Volume of remaining solid.

$$728 - 56\frac{4}{7} = 671\frac{3}{7} \text{ cm}^3$$

6. \_

(a)  $-5 > -6$  (TRUE) and  $3^3 = 27$  (TRUE)So, **TRUE**.(b) Implication 1: *If  $p^3 = -8$ , then  $p = -2$* *Implikasi 1 Jika  $p^3 = -8$ , maka  $p = -2$* Implication 2 : *If  $p = -2$ , then  $p^3 = -8$* *Implikasi 2: Jika  $p = -2$ , maka  $p^3 = -8$ .*(c)  $3n^2 + 1, n = 1, 2, 3, 4, \dots$ 7.  $QR \parallel OP$ 

$$m_{QR} = m_{OP}$$

$$m_{OP} = \frac{12}{4}$$

$$= 3$$

(a)  $y = mx + c$ 

$$-6 = 3(3) + c$$

$$= 9 + c$$

$$c = -6 - 9$$

$$= -15$$

Equation QR  $y = 3x - 15$ (b) At  $x$  - intercept,  $y = 0$ .

$$y = 3x - 15$$

$$0 = 3x - 15$$

$$15 = 3x$$

$$x = \frac{15}{3}$$

$$x = 5$$

8.  $J = \{A, F, P\}$ ,  $K = \{7, 6, 9, 4\}$

(a) Sample space. / Ruang sample

$$\{(A, 7), (A, 6), (A, 9), (A, 4), (F, 7), (F, 6), (F, 9), (F, 4), (P, 7), (P, 6), (P, 9), (P, 4)\}$$

(b) \_

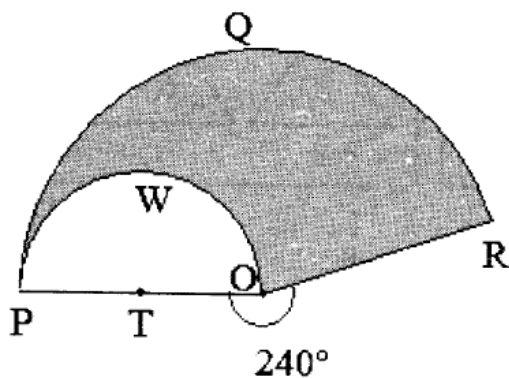
(i)  $\{(P, 7), (P, 9)\}$

$$\frac{2}{12} = \frac{1}{6}$$

(ii)  $\{(F, 7), (F, 6), (F, 9), (F, 4), (A, 7), (P, 7)\}$

$$\frac{6}{12} = \frac{1}{2}$$

9. \_



(a) Perimeter shaded region. / Ukur lilit kawasan berlorek.

Curve OWP + curve PQR + RO

$$= \frac{180^\circ}{360^\circ} \times 2 \times \left(\frac{22}{7}\right) \times 7 + \frac{360^\circ - 240^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 14 + 14$$

$$= 22 + 29\frac{1}{3} + 14$$

$$= 65\frac{1}{3} \text{ cm}$$

(b) Area of shaded region. / Luas kawasan yang berlorek.

sector OPQR – sector OTPW

$$= \frac{120^\circ}{360^\circ} \times \frac{22}{7} \times 14^2 - \frac{1}{2} \times \frac{22}{7} \times 7^2$$

$$= 205\frac{1}{3} - 77$$

$$= 128\frac{1}{3} \text{ cm}^2$$

10. \_

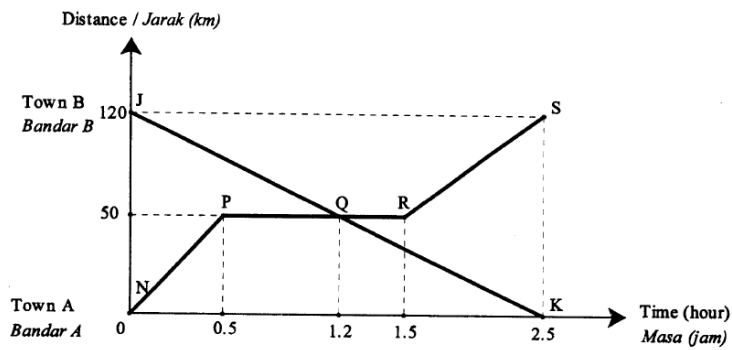


Diagram 10  
Rajah 10

(a) Length of time car is stationary. / *Tempoh masa kereta itu berhenti.*

$$1.5 - 0.5 = \mathbf{1.0 \text{ hour}}$$

(b)

(i) The vehicles meet after 1.2 hours. / *Kenderaan itu bertemu selepas 1.2 jam.*

$$1.2 \text{ hours} = 1 \text{ hour } 12 \text{ minutes}$$

$$6.30 \text{ p.m.} + 1 \text{ hour } 12 \text{ minutes} = \mathbf{7.42 \text{ p.m.}}$$

(ii) The distance from town B. / *Jarak antara bandar B.*

$$120 - 50 = \mathbf{70 \text{ km}}$$

(c) Average speed. / *Purata halaju.*

$$\frac{120}{2.5} = \mathbf{48 \text{ kmh}^{-1}}$$

11.  $P \begin{pmatrix} 2 & k \\ -2 & 3 \end{pmatrix}$  &  $Q \begin{pmatrix} 2 & 1 \\ 3 & -2 \end{pmatrix}$

(a) \_

(i) The matrix has no inverse if  $ad - bc = 0$ . / *Matrik tersebut tidak mempunyai songsang sekiranya  $ad - bc = 0$*

$$(2)(3) - (k)(-2) = 0$$

$$6 + 2k = 0$$

$$2k = -6$$

$$k = \frac{-6}{2}$$

$$= \mathbf{-3}$$

(ii) Inverse of Q. / Songsang bagi Q.

$$\frac{1}{ad - bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$$

$$Q^{-1} = \frac{1}{(2)(-2) - (1)(3)} \begin{pmatrix} -2 & -1 \\ -3 & 2 \end{pmatrix}$$

$$= -\frac{1}{7} \begin{pmatrix} -2 & -1 \\ -3 & 2 \end{pmatrix}$$

(b)  $2x + y = 4$

$$3x - 2y = 13$$

$$\begin{pmatrix} 2 & 1 \\ 3 & -2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 4 \\ 13 \end{pmatrix}$$

$$\begin{pmatrix} x \\ y \end{pmatrix} = -\frac{1}{7} \begin{pmatrix} -2 & -1 \\ -3 & 2 \end{pmatrix} \begin{pmatrix} 4 \\ 13 \end{pmatrix}$$

$$= -\frac{1}{7} \begin{pmatrix} (-2)(4) + (-1)(13) \\ (-3)(4) + 2(13) \end{pmatrix}$$

$$= -\frac{1}{7} \begin{pmatrix} -21 \\ 14 \end{pmatrix}$$

$$= \begin{pmatrix} 3 \\ -2 \end{pmatrix}$$

$$x = 3, y = -2$$

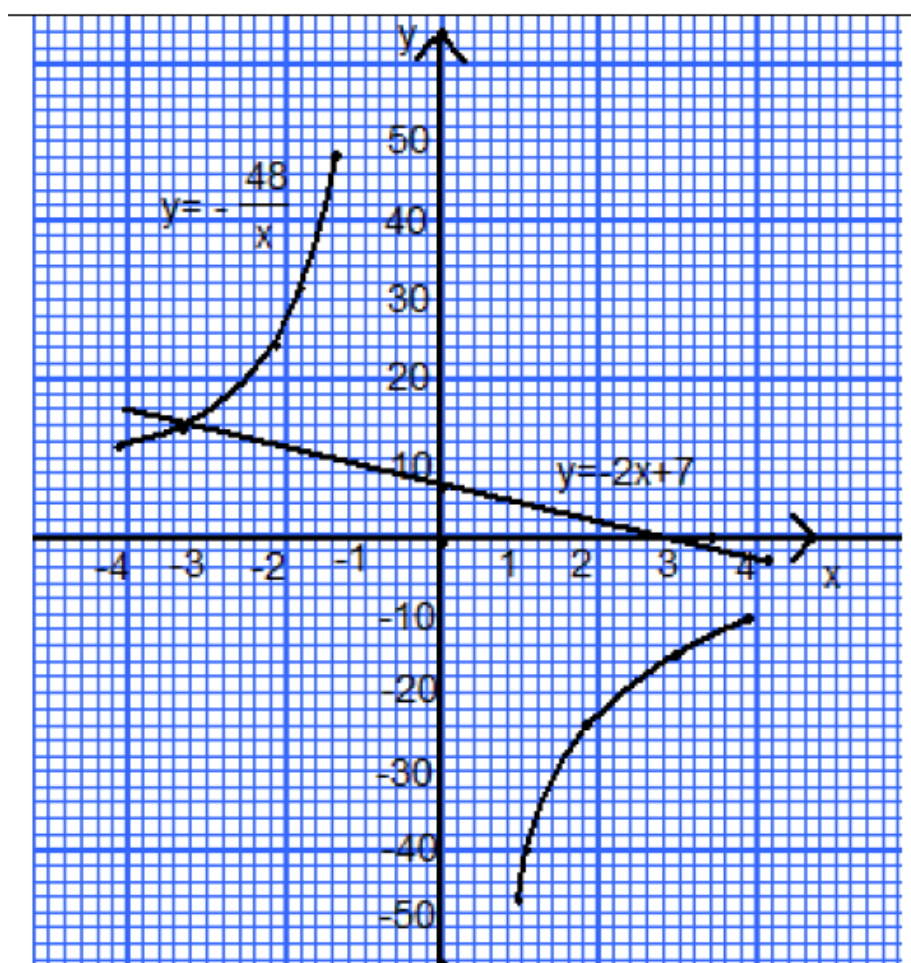
12. \_

(a) Complete the table below. / Selesaikan jadual dibawah.

$$y = -\frac{48}{x}$$

x	-4	-3.2	-2	-1	1	1.2	2	3.2	4
y	12	15	24	48	-48	<b>-40</b>	-24	-15	<b>-12</b>

(b) \_



(c) \_

(i)  $x = 1.5, y = -40$

(ii)  $y = 22, x = -2.4$

(d) Refer Graph / Rujuk graf.

**13. Transformation. / Penjelmaan.**

(a) Transformation V is a translation of  $\begin{pmatrix} 2 \\ 4 \end{pmatrix}$ .

*Penjelmaan V ialah translasi  $\begin{pmatrix} 2 \\ 4 \end{pmatrix}$ .*

Transformation W is a rotation of  $180^\circ$  about centre  $(-4, 0)$ .

*Penjelmaan W ialah putaran  $180^\circ$  pada pusat  $(-4, 0)$ .*



(i)  $V^2 = (0, 10)$

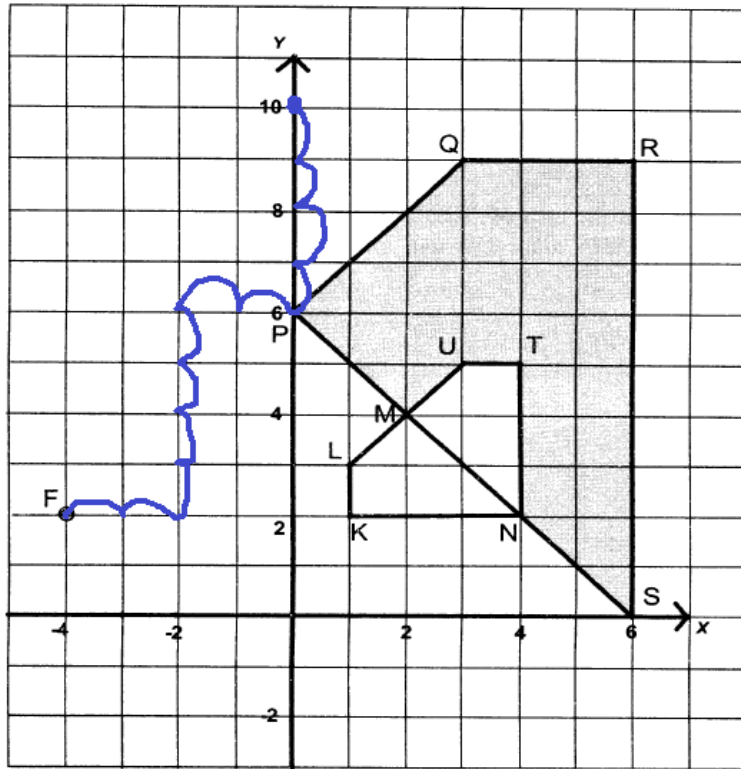


Diagram 13

*Daerah 13*

(ii)  $VW = (-2, 2)$

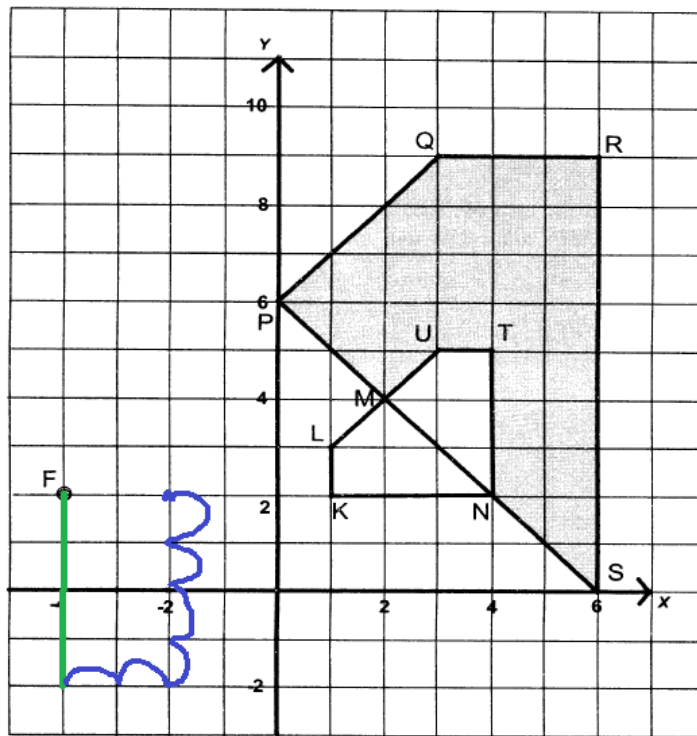


Diagram 13

*Rajah 13*

(b)  $PQRS$  is the image of  $KLMN$  under a combined transformation  $XY$ .

$PQRS$  ialah imej bagi  $KLMN$  di bawah gabungan penjelmaan  $XY$ .

(i) Transformation  $Y$  is a reflection about line  $PS$ .

Penjelmaan  $Y$  ialah pantulan pada garisan  $PS$ .

(ii) –

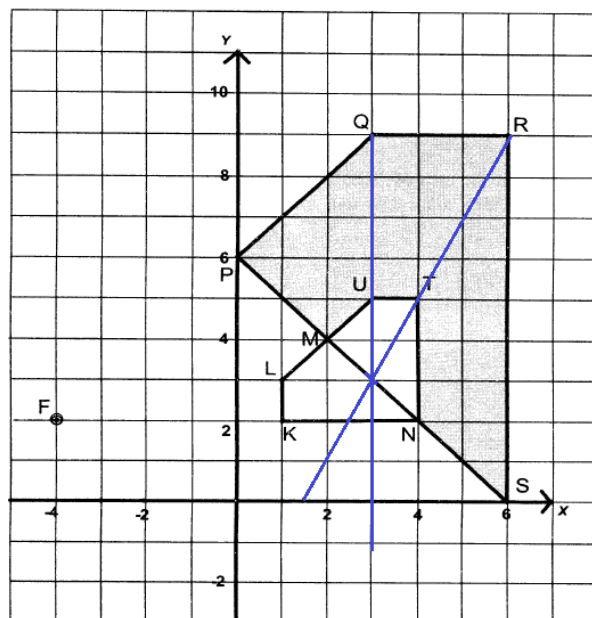


Diagram 13  
Rajah 13

Transformation  $X$  is an enlargement with scale factor 3 about point  $(3, 3)$ .

Penjelmaan  $X$  ialah pembesaran dengan skala faktor 3 pada titik  $(3, 3)$ .

$$(c) \text{Area } PQRS = \text{Area } KLMN \times k^2$$

$$\text{Area } PQRS = 25.4 \times 3^2$$

$$= 228.6$$

Area of shaded region. / Luas kawasan yang berlorek.

$$228.6 - 25.4 = \mathbf{203.2 \text{ unit}^2}$$

14. \_

15	22	11	19	22	16	40
43	27	24	27	17	13	31
40	37	12	17	36	20	16
39	29	28	12	29	34	38
24	43	18	20	16	14	25

Diagram 14  
Rajah 14

(a) \_

Age (Year) / <i>Umur</i> ( <i>Tahun</i> )	Midpoint / <i>Titik Tengah</i>	Frequency / <i>Kekerapan</i>
11 – 15	13	6
16 – 20	18	9
21 – 25	23	5
26 – 30	28	5
31 – 35	33	2
36 – 40	38	6
41 – 45	43	2

(b) Modal class = 16 – 20

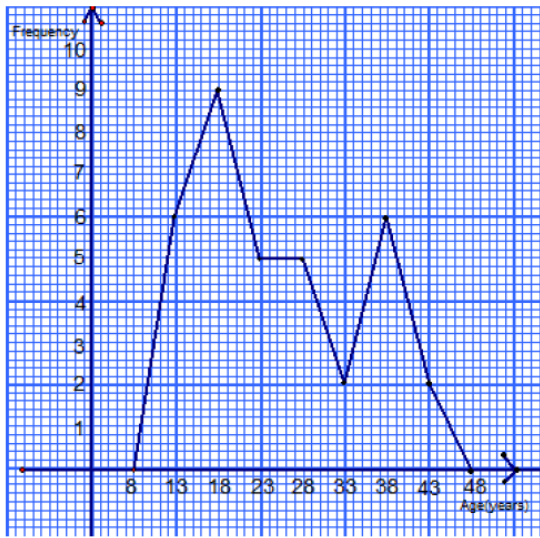
(c) Mean / *Min*

$$\frac{13(6) + 18(9) + 23(5) + 28(5) + 33(2) + 38(6) + 43(2)}{6 + 9 + 5 + 5 + 2 + 6 + 2}$$

$$= \frac{875}{35}$$

$$= 25$$

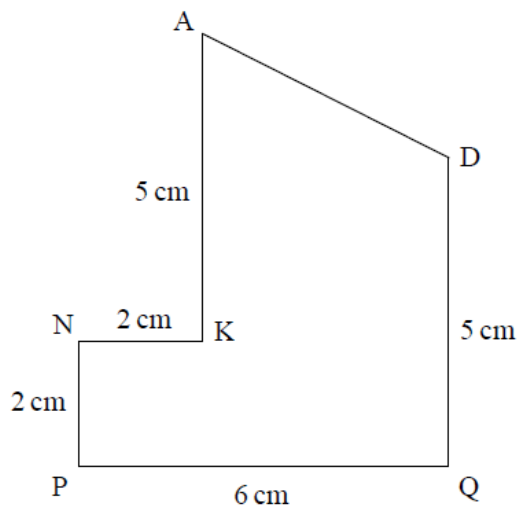
(d) \_



(e)  $9 + 6 = 15$  visitors / *Pelawat*

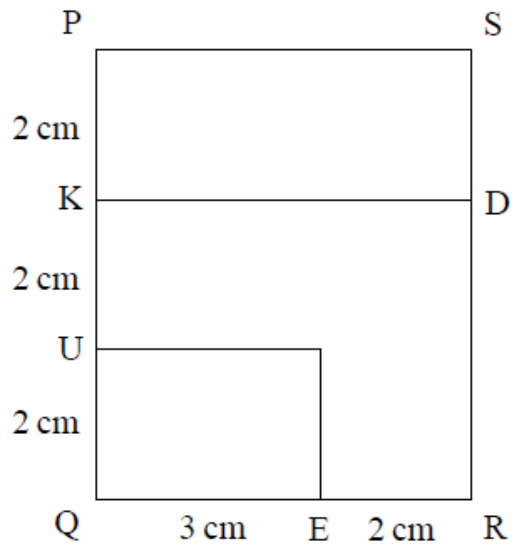
15. \_

(a) \_

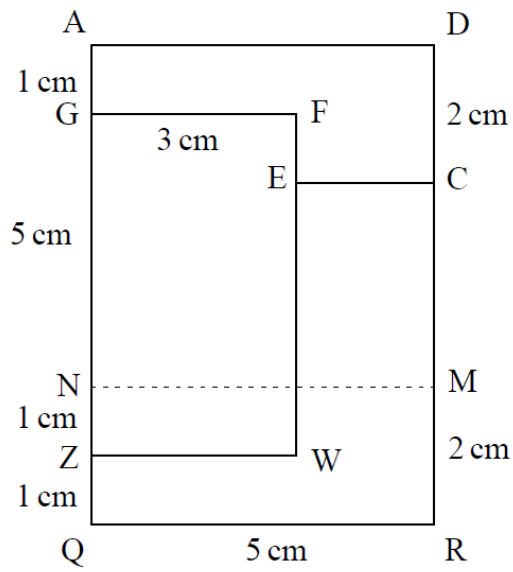


(b) \_

(i) \_



(ii) \_



16.  $P (45^{\circ}S, 100^{\circ}E), Q (45^{\circ}S, 30^{\circ}E), PR$  is the diameter of the earth. /  $PR$  adalah diameter bumi.

(a) Latitude  $R = 45^{\circ}N$

$$\text{Longitude } R = 100^{\circ}E - 180^{\circ} = -80^{\circ}E = 80^{\circ}W$$

**$R (45^{\circ}N, 80^{\circ}W)$**

(b) 5100 nautical miles.

$$\frac{5100}{60'} = 85^{\circ}$$

$$45^{\circ}S - 85^{\circ} = -40^{\circ}S = 40^{\circ}N$$

**$S (40^{\circ}N, 100^{\circ}E)$**

(c) Difference longitude angle between  $P$  and  $Q$ .

*Perbezaan sudut longitude di antara  $P$  dan  $Q$ .*

$$100^{\circ} - 30^{\circ} = 70^{\circ}$$

$$\text{Distance} = 70^{\circ} \times 60' \times \cos 45^{\circ} = \mathbf{2969.85 \text{ nm}}$$

(d)  $R (45^{\circ}N, 80^{\circ}W) S (40^{\circ}N, 100^{\circ}E)$

*Difference angle / Perbezaan sudut.*

$$180^{\circ} - 45^{\circ} - 40^{\circ} = 95^{\circ}$$

$$\text{Distance Jarak} = 95^{\circ} \times 60' = 5700 \text{ nm}$$

$$670 = \frac{5700}{\text{time}}$$

$$\text{time} = \frac{5700}{670}$$

$$= \mathbf{8.5 \text{ hours}}$$