

# JAWAPAN DAN ULASAN

## MATEMATIK

### Dwibahasa

#### Bab 1 UBAHAN

#### KERTAS 1

1 B

$$p \propto \sqrt{w}$$

$$p = k\sqrt{w}$$

$$k = \frac{p}{\sqrt{w}}$$

A:

$$k = \frac{4}{\sqrt{9}} = \frac{4}{3}$$

$$k = \frac{3}{\sqrt{16}} = \frac{3}{4}$$

Nilai-nilai  $k$  adalah berbeza.

*The values of  $k$  are different.*

B:

$$k = \frac{3}{\sqrt{9}} = \frac{3}{3} = 1$$

$$k = \frac{4}{\sqrt{16}} = \frac{4}{4} = 1$$

Nilai-nilai  $k$  adalah sama.

*The values of  $k$  are same.*

C:

$$k = \frac{3}{\sqrt{9}} = \frac{3}{3} = 1$$

$$k = \frac{5}{\sqrt{16}} = \frac{5}{4}$$

Nilai-nilai  $k$  adalah berbeza.

*The values of  $k$  are different.*

D:

$$k = \frac{4}{\sqrt{9}} = \frac{4}{3}$$

$$k = \frac{6}{\sqrt{16}} = \frac{3}{2}$$

Nilai-nilai  $k$  adalah berbeza.

*The values of  $k$  are different.*

2 C

$$T \propto \sqrt{L}$$

$$T = k\sqrt{L}$$

$$3 = k\sqrt{36}$$

$$k = \frac{3}{6}$$

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

$$T = \frac{\sqrt{L}}{2}$$

3 D

$$x \propto y^2$$

$$x = ky^2$$

$$\frac{2}{5} = k\left(\frac{1}{2}\right)^2$$

$$\frac{2}{5} = k\left(\frac{1}{4}\right)$$

$$k = \frac{8}{5}$$

$$x = \frac{8}{5}y^2$$

4 A

$$F = kx$$

$$k = \frac{F}{x}$$

$$= \frac{2}{10}$$

$$= \frac{1}{5}$$

$$F = \frac{1}{5}x$$

$$= \frac{1}{5}(15)$$

$$= 3 \text{ N}$$

5 B

$$p \propto \frac{1}{\sqrt{w}}$$

$$p = \frac{k}{\sqrt{w}}$$

$$k = p\sqrt{w}$$

$$= 4\sqrt{9}$$

$$= 4(3)$$

$$= 12$$

$$p = \frac{12}{\sqrt{w}}$$

6 C

$$r \propto \frac{S}{t^3}$$

$$r = \frac{kS}{t^3}$$

$$k = \frac{rt^3}{S}$$
$$= \frac{6(2)^3}{4}$$
$$= 12$$

$$r = \frac{12s}{t^3}$$

$$3 = \frac{12m}{8^3}$$

$$12m = (3)(8)^3$$

$$12m = 1\,536$$

$$m = 128$$

7 B

$$p \propto \frac{1}{\sqrt{q}}$$

$$p = \frac{k}{\sqrt{q}}$$

$$4 = \frac{k}{\sqrt{25}}$$

$$k = 4 \times 5$$

$$= 20$$

$$p = \frac{20}{\sqrt{q}}$$

8 B

$$h \propto \frac{1}{t}$$

$$t = 40$$

$$h = 1\,250$$

$$h = \frac{k}{t}$$

$$1\,250 = \frac{k}{40}$$

$$k = 50\,000$$

$$h = \frac{50\,000}{t}$$

$$h = \frac{50\,000}{100}$$

$$= 500 \text{ cm}$$

9 C

$$R \propto \frac{1}{j^2}$$

$$R = \frac{k}{j^2}$$

$$0.5 = \frac{k}{0.1^2}$$

$$k = \frac{1}{200}$$

$$R = \frac{1}{200j^2}$$

$$2 = \frac{1}{200j^2}$$

$$j^2 = \frac{1}{400}$$

$$j = \sqrt{\frac{1}{400}}$$

$$j = \frac{1}{20}$$

$$j = 0.05$$

10 C

$$j \propto \frac{1}{p}$$

$$j = \frac{k}{p}$$

$$120 = \frac{k}{6.5}$$

$$k = 780$$

$$j = \frac{780}{p}$$

11 A

$$M = \frac{12}{L}$$

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

$$6 = 6$$

$$M = \frac{12}{L}$$

$$4 = \frac{12}{3}$$

$$4 = 4$$

**12 A**

Katakan tinggi =  $t$ ,  
*Let height*

Katakan isi padu =  $v$ ,  
*Let volume*

Katakan jejari =  $j$ ,  
*Let radius*

$$t \propto \frac{v}{j^2}$$

$$t = \frac{kv}{j^2}$$

$$7 = \frac{k(269.5)}{(3.5)^2}$$

$$k = \frac{7}{22}$$

$$t = \frac{7v}{22j^2}$$

$$21 = \frac{7v}{22j^2}$$

$$21 = \frac{7(1\,996.5)}{22j^2}$$

$$j^2 = 30.25$$

$$j = \sqrt{30.25}$$

$$j = 5.5 \text{ cm}$$

**13 A**

$$P \propto \frac{Q^2}{R}$$

$$P = \frac{kQ^2}{R}$$

$$18 = \frac{k(3)^2}{2}$$

$$36 = k(9)$$

$$k = 4$$

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

$$10 = \frac{4(4)^2}{R}$$

$$R = \frac{64}{10}$$

$$R = \frac{32}{5}$$

## Bahagian A

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
1	(a) Ubahan langsung <i>Direct variation</i>	1	5
	(b) (i) $y \propto x$ $y = kx$ $15 = k(6)$ $k = \frac{5}{2}$ $y = \frac{5}{2}x$	1	
	$y = \frac{5}{2}x$	1	
	(ii) $40 = \frac{5}{2}x$ $x = 16$	1 1	
2	(a) $N \propto \frac{D}{P}$ $N = \frac{kD}{P}$ $480 = \frac{k(5\,000)}{80}$ $k = 7.68$ $N = \frac{7.68D}{P}$	1 1	4
	(b) $D = 75\,000, P = 80$ $N = \frac{(7.68)(75\,000)}{80} = 7\,200$	2	

## Bahagian C

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
3	(a) $C \propto L$ $C = kL$ $k = \frac{2}{5}$ atau / or 0.4	1	2
	$\therefore C = \frac{2}{5}L$ atau / or $C = 0.4L$	1	
4	(a) $N \propto TM$ $N = kTM$ $k = \frac{240}{600 + 400}$ $k = \frac{1}{1\,000}$ $\therefore N = \frac{1}{1\,000}TM$	1 1	2

## Bab 2 MATRIKS

1 B

$$P = \begin{bmatrix} 1 & 2 & 3 \\ 2 & -3 & 4 \\ -1 & 0 & 6 \\ 3 & 7 & 2 \\ 6 & 3 & 11 \end{bmatrix} \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix}$$

$$4 \times 3, P_{23} = 6$$

2 D

$$\frac{-13 + x}{3} = -3$$

$$-13 + x = -9$$

$$x = 4$$

$$4y - x = 20$$

$$4y - 4 = 20$$

$$4y = 24$$

$$y = 6$$

3 D

$$\begin{pmatrix} 3 & 2 \\ -5 & 4 \end{pmatrix} \begin{pmatrix} 1 \\ -x \end{pmatrix} = \begin{pmatrix} -x \\ -17 \end{pmatrix}$$

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

$$3 - 2x + x = 0$$

$$-x = -3$$

$$x = 3$$

$$(-5)(1) + (4)(-x) = -17$$

$$-5 - 4x = -17$$

$$x = \frac{-17 + 5}{-4}$$

$$x = 3$$

4 B

$$\begin{pmatrix} 5 & -2 \\ -7 & 3 \end{pmatrix} \begin{pmatrix} 2 \\ 3 \end{pmatrix} = \frac{1}{2x} \begin{pmatrix} 16 \\ -20 \end{pmatrix}$$

$$5(2) + (-2)(3) = \frac{16}{2x}$$

$$10 - 6 = \frac{16}{2x}$$

$$2x = 4$$

$$x = 2$$

5 C

$$\begin{aligned} \begin{bmatrix} -7 & 4 \\ 0 & 8 \end{bmatrix} + 3 \begin{bmatrix} 2 & 6 \\ 1 & -1 \end{bmatrix} &= \begin{bmatrix} -7 & 4 \\ 0 & 8 \end{bmatrix} + \begin{bmatrix} 6 & 18 \\ 3 & -3 \end{bmatrix} \\ &= \begin{bmatrix} -7+6 & 4+18 \\ 0+3 & 8+(-3) \end{bmatrix} \\ &= \begin{bmatrix} -1 & 22 \\ 3 & 5 \end{bmatrix} \end{aligned}$$

6 A

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

$$M^{-1} = \frac{1}{(10)(1) - q(-3)} \begin{pmatrix} p & 3 \\ 2 & 10 \end{pmatrix}$$

$$-bc = -q(-3)$$

$$-6 = 3q$$

$$q = -2$$

$$p = d$$

$$p = 1$$

7 A

$$M + \begin{bmatrix} 4 & 6 \\ -3 & -15 \end{bmatrix} = \begin{bmatrix} 17 & -10 \\ 6 & -5 \end{bmatrix}$$

$$M = \begin{bmatrix} 17 & -10 \\ 6 & -5 \end{bmatrix} - \begin{bmatrix} 4 & 6 \\ -3 & -15 \end{bmatrix}$$

$$M = \begin{bmatrix} 17-4 & -10-6 \\ 6-(-3) & -5-(-15) \end{bmatrix}$$

$$M = \begin{bmatrix} 13 & -16 \\ 9 & 10 \end{bmatrix}$$

8 A

$$P = Q$$

$$\begin{bmatrix} 5 & x+y \\ x & z \end{bmatrix} = \begin{bmatrix} 5 & 8 \\ 6 & x-y \end{bmatrix}$$

$$x = 6$$

$$x + y = 8$$

$$6 + y = 8$$

$$y = 8 - 6$$

$$y = 2$$

$$z = x - y$$

$$z = 6 - 2$$

$$z = 4$$

9 A

$$\begin{bmatrix} x & -1 \\ 4 & 1 \end{bmatrix} - 3 \begin{bmatrix} -\frac{1}{3} & -\frac{1}{6} \\ -2 & -\frac{2}{3} \end{bmatrix} + \begin{bmatrix} -8 & 1 \\ -1 & -5 \end{bmatrix} = \begin{bmatrix} -5 & \frac{1}{2} \\ 3 & y \end{bmatrix}$$

$$\begin{bmatrix} x & -1 \\ 4 & 1 \end{bmatrix} - \begin{bmatrix} -1 & -\frac{1}{2} \\ -6 & -2 \end{bmatrix} + \begin{bmatrix} -8 & 1 \\ -1 & -5 \end{bmatrix} = \begin{bmatrix} -5 & \frac{1}{2} \\ 3 & y \end{bmatrix}$$

$$x - (-1) + (-8) = -5$$

$$x + 1 - 8 = -5$$

$$x - 7 = -5$$

$$x = -5 + 7$$

$$x = 2$$

$$1 - (-2) + (-5) = y$$

$$1 + 2 - 5 = y$$

$$y = -2$$

10 A

$$2 \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix} - \begin{bmatrix} 4 & -7 \\ -1 & 3 \end{bmatrix} + \begin{bmatrix} -1 & 4 \\ 5 & 2 \end{bmatrix}$$

$$= \begin{bmatrix} 4 & 6 \\ 2 & 4 \end{bmatrix} - \begin{bmatrix} 4 & -7 \\ -1 & 3 \end{bmatrix} + \begin{bmatrix} -1 & 4 \\ 5 & 2 \end{bmatrix}$$

$$= \begin{bmatrix} -1 & 17 \\ 8 & 3 \end{bmatrix}$$

## KERTAS 2

### Bahagian A

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
1	<p>Katakan pelitup muka = <math>m</math> Let face mask = <math>m</math></p> <p>Katakan pensanitasi tangan = <math>k</math> Let hand sanitizer = <math>k</math></p> <p><math>3m + 4k = 148.40</math></p> <p><math>2(2m + 6k) = 301.20</math> <math>4m + 12k = 301.20</math></p> <p><math>\begin{bmatrix} 3 &amp; 4 \\ 4 &amp; 12 \end{bmatrix} \begin{bmatrix} m \\ k \end{bmatrix} = \begin{bmatrix} 148.40 \\ 301.20 \end{bmatrix}</math></p> <p><math>\begin{bmatrix} m \\ k \end{bmatrix} = \frac{1}{(3)(12) - (4)(4)} \begin{bmatrix} 12 &amp; -4 \\ -4 &amp; 3 \end{bmatrix} \begin{bmatrix} 148.40 \\ 301.20 \end{bmatrix}</math></p> <p><math>\begin{bmatrix} m \\ k \end{bmatrix} = \frac{1}{20} \begin{bmatrix} (12 \times 148.40) + (-4 \times 301.20) \\ (-4 \times 148.40) + (3 \times 301.20) \end{bmatrix}</math></p> <p><math>\begin{bmatrix} m \\ k \end{bmatrix} = \frac{1}{20} \begin{bmatrix} 576 \\ 310 \end{bmatrix}</math></p> <p><math>\begin{bmatrix} m \\ k \end{bmatrix} = \begin{bmatrix} 28.8 \\ 15.5 \end{bmatrix}</math></p> <p><math>m = \text{RM}28.80</math> <math>k = \text{RM}15.50</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>

**Bahagian B**

No.	Skema Pemarkahan <i>Marking Scheme</i>	Markah <i>Marks</i>	Markah Total <i>Total Marks</i>
2	<p>(a) <math>x + 3 = -1</math> <math>x = -4</math></p> <p><math>5y = -2</math> <math>y = -\frac{2}{5}</math></p>	1  1	
	<p>(b) (i) <math>3x + 2y = 55</math> <math>4x + 3y = 55 + 20</math> <math>4x + 3y = 75</math></p> <p><math>\begin{bmatrix} 3 &amp; 2 \\ 4 &amp; 3 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 55 \\ 75 \end{bmatrix}</math></p> <p><math>\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{(3)(3) - (2)(4)} \begin{bmatrix} 3 &amp; -2 \\ -4 &amp; 3 \end{bmatrix} \begin{bmatrix} 55 \\ 75 \end{bmatrix}</math></p> <p><math>\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} (3 \times 55) + (-2 \times 75) \\ (-4 \times 55) + (3 \times 75) \end{bmatrix}</math></p> <p><math>\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 15 \\ 5 \end{bmatrix}</math></p> <p>Sekotak sushi / <i>A box of sushi</i> = RM15 Seketul ayam goreng / <i>A piece of fried chicken</i> = RM5</p> <p>(ii) <math>15 \times \frac{80}{100} = \text{RM}12</math> <math>5 \times \frac{60}{100} = \text{RM}3</math> <math>[2 \ 8] \begin{bmatrix} 12 \\ 3 \end{bmatrix} = \text{RM}48</math></p> <p>Dia mempunyai wang cukup kerana hanya RM48 diperlukan. <i>She has enough money as only RM48 is needed.</i></p>	1  1  1  1  1  1	
3	<p>(a) <math>p = \text{piza / pizza}</math>, <math>c = \text{kek cawan / cup cake}</math></p> <p><math>3p + 6c = 45</math> ..... ① <math>7p = 45 + c</math> <math>7p - c = 45</math> ..... ②</p> <p><math>\begin{pmatrix} 3 &amp; 6 \\ 7 &amp; -1 \end{pmatrix} \begin{pmatrix} p \\ c \end{pmatrix} = \begin{pmatrix} 45 \\ 45 \end{pmatrix}</math></p> <p><math>\begin{pmatrix} p \\ c \end{pmatrix} = \frac{1}{3(-1) - 6(7)} \begin{pmatrix} -1 &amp; -6 \\ -7 &amp; 3 \end{pmatrix} \begin{pmatrix} 45 \\ 45 \end{pmatrix}</math></p> <p><math>\begin{pmatrix} p \\ c \end{pmatrix} = \frac{1}{-45} \begin{pmatrix} -1(45) + (-6)(45) \\ -7(45) + 3(45) \end{pmatrix}</math></p> <p><math>\begin{pmatrix} p \\ c \end{pmatrix} = \frac{1}{-45} \begin{pmatrix} -315 \\ -180 \end{pmatrix}</math></p> <p><math>\begin{pmatrix} p \\ c \end{pmatrix} = \begin{pmatrix} 7 \\ 4 \end{pmatrix}</math></p> <p><math>p = 7, c = 4</math></p>	1  1  2    2	10

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
	<p>(b) Baucar ketiga / <i>Third voucher</i> = <math>125 - 45 - 45</math> = 35</p> $4p + 2c$ $= (4 \quad 2) \begin{pmatrix} p \\ c \end{pmatrix}$ $= (4 \quad 2) \begin{pmatrix} 7 \\ 4 \end{pmatrix}$ $= 4(7) + 2(4)$ $= 36$ <p>Nilai belian ialah RM36 manakala nilai baucar ialah RM35. <i>The purchase value is RM36 while the voucher value is RM35.</i> ∴ Nilai baucar tidak mencukupi. / <i>Voucher value is insufficient.</i></p>	<p>1</p> <p>1</p> <p>1</p>	<p>9</p>
4	<p>(a) <math>JK = \begin{pmatrix} 2 \\ 5 \end{pmatrix} (4 \quad -3)</math></p> $= \begin{pmatrix} 2 \times 4 & 2 \times (-3) \\ 5 \times 4 & 5 \times (-3) \end{pmatrix}$ $= \begin{pmatrix} 8 & -6 \\ 20 & -15 \end{pmatrix}$ <p>∴ <math>2 \times 2</math></p>	<p>1</p> <p>1</p>	
	<p>(b) (i) Katakan umur Rokiah / <i>Let the age of Rokiah = R</i> Katakan umur Nuha / <i>Let the age of Nuha = N</i></p> $R = 3N$ $R - 3N = 0 \dots \dots \dots \textcircled{1}$ $\frac{R + N}{2} = 36$ $R + N - 72 = 0 \dots \dots \dots \textcircled{2}$ <p>(ii) <math>R - 3N = 0</math> <math>R + N = 72</math></p> $\begin{pmatrix} 1 & -3 \\ 1 & 1 \end{pmatrix} \begin{pmatrix} R \\ N \end{pmatrix} = \begin{pmatrix} 0 \\ 72 \end{pmatrix}$ $\begin{pmatrix} R \\ N \end{pmatrix} = \frac{1}{(1)(1) - (-3)(1)} \begin{pmatrix} 1 & 3 \\ -1 & 1 \end{pmatrix} \begin{pmatrix} 0 \\ 72 \end{pmatrix}$ $= \frac{1}{4} \begin{pmatrix} 216 \\ 72 \end{pmatrix}$ $= \begin{pmatrix} 54 \\ 18 \end{pmatrix}$ <p><math>R = 54</math> <math>N = 18</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>8</p>

**Bahagian C**

No.	Skema Pemarkahan <i>Marking Scheme</i>	Markah <i>Marks</i>	Markah Total <i>Total Marks</i>
5	<p><math>600b + 450p = 3\,975</math> atau / or <math>250b + 470p = 2\,645</math></p> $\begin{bmatrix} 600 & 450 \\ 250 & 470 \end{bmatrix} \begin{bmatrix} b \\ p \end{bmatrix} = \begin{bmatrix} 3\,975 \\ 2\,645 \end{bmatrix}$ $\begin{bmatrix} b \\ p \end{bmatrix} = \frac{1}{(600)(470) - (450)(250)} \begin{bmatrix} 470 & -450 \\ -250 & 600 \end{bmatrix} \begin{bmatrix} 3\,975 \\ 2\,645 \end{bmatrix}$ $\begin{bmatrix} b \\ p \end{bmatrix} = \frac{1}{169\,500} \begin{bmatrix} 678\,000 \\ 593\,250 \end{bmatrix}$ $\begin{bmatrix} b \\ p \end{bmatrix} = \begin{bmatrix} 4 \\ 3.5 \end{bmatrix}$ <p>Harga sekilogram betik / <i>The price of one kilogram of papayas</i>, <math>b = \text{RM}4</math></p> <p>Harga sekilogram pisang / <i>The price of one kilogram of bananas</i>, <math>p = \text{RM}3.50</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>
6	<p><math>90x + 30y = 276</math> atau / or <math>15x + 25y = 89</math></p> $\begin{bmatrix} 90 & 30 \\ 15 & 25 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 276 \\ 89 \end{bmatrix}$ $\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{(90)(25) - (15)(30)} \begin{bmatrix} 25 & -30 \\ -15 & 90 \end{bmatrix} \begin{bmatrix} 276 \\ 89 \end{bmatrix}$ $\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{1\,800} \begin{bmatrix} 4\,230 \\ 3\,870 \end{bmatrix}$ $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2.35 \\ 2.15 \end{bmatrix}$ <p>Harga sebiji ban keju / <i>The price of one piece of cheese bun</i> = RM2.35</p> <p>Harga sebiji ban kaya / <i>The price of one piece of kaya bun</i> = RM2.15</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>

## KERTAS 1

1 D

Premium asas / *Basic premium*

$$= \text{RM}151.20$$

Premium kasar / *Gross premium*

$$= \text{RM}151.20 \times \frac{55}{100}$$

$$= \text{RM}83.16$$

2 A

Premium asas / *Basic premium*

$$= \text{RM}243.90 + \text{RM}20.30 \times \left( \frac{120\,000 - 1\,000}{1\,000} \right)$$

$$= \text{RM}2\,659.60$$

Premium kasar / *Gross premium*

$$= \text{RM}2\,659.60 \times (100\% - 45\%)$$

$$= \text{RM}2\,659.60 \times \left( \frac{55}{100} \right)$$

$$= \text{RM}1\,462.78$$

3 B

A: Kereta Ben dicuri (Polisi Pihak Ketiga, Kebakaran dan Kecurian)

*Ben's car was stolen (Third Party, Fire and Theft Policy)*

C: Kos baik pulih kereta Ben akibat kemalangan (Polisi Komprehensif)

*The repair cost of Ben's car due to accident (Comprehensive Policy)*

D: Kereta Ben terbakar akibat kebocoran tangki minyak (Polisi Komprehensif)

*Ben's car caught on fire caused by fuel tank leakage (Comprehensive Policy)*

4 D

NCD 45%

$$= \frac{45}{100} \times \text{RM}135$$

$$= \text{RM}60.75$$

Amaun insurans / *Amount of insurance*

$$= \text{RM}135 - \text{RM}60.75$$

$$= \text{RM}74.25$$

## KERTAS 2

## Bahagian A

No.	Skema Pemarkahan <i>Marking Scheme</i>	Markah <i>Marks</i>	Markah Total <i>Total Marks</i>
1	Kos perubatan selepas deduktibel / <i>Medical cost after deductible</i> $= 27\,000 - 2\,000$ $= \text{RM}25\,000$ Kos yang ditanggung oleh Athar / <i>Cost borne by Athar</i> $= \left( \frac{10}{100} \times 25\,000 \right) + 2\,000$ $= \text{RM}4\,500$	    2  1	      3

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
2	$(a) \frac{80}{100} \times 300\,000 = 240\,000$ Bayaran pampasan / <i>Amount of compensation</i> $= \frac{\text{Jumlah insurans yang telah dibeli}}{\text{Jumlah insurans yang harus dibeli}} \times \text{Jumlah kerugian} - \text{Deduktibel}$ $= \frac{\text{Amount of insurance purchased}}{\text{Amount of insurance to be purchased}} \times \text{Total loss} - \text{Deductible}$ $= \frac{200\,000}{240\,000} \times 30\,000 - 2\,500$ $= \text{RM}22\,500$	1	4
	(b) Penalti ko-insurans / <i>Co-insurance penalty</i> $= 30\,000 - \left( \frac{200\,000}{240\,000} \times 30\,000 \right)$ $= \text{RM}5\,000$	1	
3	(a) Tidak, kerana nilai deduktibel adalah lebih tinggi daripada kos rawatan. <i>No, because the deductible value is higher than the cost of treatment.</i>	1	4
	(b) $\frac{15}{100} (29\,900 - 1\,500) + 1\,500$ $= \text{RM}5\,760$	2 1	
4	(a) Kos pembedahan selepas deduktibel <i>The surgery cost after the deductible</i> $= \text{RM}38\,000 - \text{RM}3\,000 = \text{RM}35\,000$	1	3
	(b) Kos perubatan yang ditanggung oleh Suzie <i>The medical cost borne by Suzie</i> $= \frac{25}{100} \times \text{RM}35\,000 + \text{RM}3\,000$ $= \text{RM}11\,750$	1 1	

### Bahagian B

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
5	Premium asas / <i>Basic premium</i>		6
	$= \text{RM}339.10 + \text{RM}26 \times \frac{90\,000 - 1\,000}{1\,000}$ $= \text{RM}2\,653.10$	2 1	
	NCD = $\text{RM}2\,653.10 \times 55\%$ $= \text{RM}1\,459.21$	1	
	Premium kasar / <i>The gross premium</i> = $\text{RM}2\,653.10 - \text{RM}1\,459.21$ $= \text{RM}1\,193.89$	1 1	
6	(c) (i) $\text{RM}30\,000 - \text{RM}600$ $= \text{RM}29\,400$ $\text{RM}29\,400 \times \frac{20}{100} + \text{RM}600 = \text{RM}6\,480$	1 1 1	5
	(ii) $\text{RM}0$ Kos rawatan $\text{RM}450$ adalah kurang daripada deduktibel $\text{RM}600$ . <i>The treatment cost of <math>\text{RM}450</math> is less than the deductible of <math>\text{RM}600</math>.</i>	1	

## KERTAS 1

1 D

**A:** Cukai jalan → Dikenakan cukai kepada pengguna jalan raya yang memiliki kenderaan termasuk motosikal dan kereta.

*Road tax → Taxed to road users who own vehicles including motorcycles and cars.*

**B:** Cukai pintu → Dikenakan cukai kepada semua pegangan atau harta tanah.

*Property assessment tax → Taxed to all holdings or real estate.*

**C:** Cukai pendapatan → Dikenakan cukai atas pendapatan.

*Income tax → Taxed on income.*

**D:** Cukai jualan dan perkhidmatan → Dikenakan cukai terhadap pengguna yang menggunakan perkhidmatan bercukai tertentu seperti perkhidmatan hotel, insurans dan takaful, penyedia makanan dan minuman, telekomunikasi, kad kredit dan sebagainya.

*Sale and service tax → Taxed on consumers who use certain taxable services such as hotel services, insurance and takaful, food and beverage providers, telecommunications, credit cards and etc.*

2 D

Jumlah cukai pintu = kadar cukai pintu × nilai tahunan

$$\begin{aligned} \text{Total amount of the property assessment tax} &= \text{property assessment tax rate} \times \text{annual value} \\ &= 1.5 \times 6\% \times \text{RM}5\,820 \\ &= \text{RM}523.80 \end{aligned}$$

3 D

Cukai jalan: kereta / *Road tax: car*

Cukai pendapatan: pendapatan tahunan / *Income tax: annual income*

Cukai pintu: banglo / *Property assessment tax: a bungalow*

4 C

$$\begin{aligned} \text{Cukai pintu / Property assessment tax} &= \frac{1}{2} \times \text{RM}5\,880 \times \frac{5}{100} \\ &= \text{RM}147 \end{aligned}$$

5 B

$$\text{RM}184.50 \times 2 = \text{RM}7\,380 \times \frac{R}{100}$$

$$\frac{R}{100} = 0.05$$

$$R = 5$$

Kadar cukai pintu,  $R = 5\%$

*Property assessment tax*

## Bahagian A

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
1	(a) Gaji / Salary = RM56 000 Derma / Donation = RM200 Pendapatan bercukai / Chargeable income = 56 000 – 200 – 9 000 – 1 800 – 3 000 = RM42 000	1 1	2
2	(a) Salah, kerana Puan Ilham tidak perlu menolak rebat cukai. <i>Wrong, because Puan Ilham does not need to subtract tax rebate.</i>	1	5
	(b) Pendapatan bercukai / Chargeable income = RM69 200 – RM18 500 – RM470 = RM50 230 Cukai pendapatan / Income tax = RM1 800 – (RM50 230 – RM50 000) $\times$ $\left(\frac{13}{100}\right)$ – 1 260 = RM569.90	1 2 1	

## Bahagian B

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
3	(a) Pendapatan bercukai Encik Farqan / <i>Encik Farqan's chargeable income</i> = RM77 600 – RM12 600 – RM9 000 – RM3 360 – RM2 500 = RM50 140	1 1	8
	(b) Cukai pendapatan / <i>Income tax</i> = RM1 800 + $\left[ (RM50 140 - RM50 000) \times \frac{13}{100} \right]$ – RM840 = RM1 800 + RM18.20 – RM840 = RM978.20	2 1	
	(c) (i) Potongan cukai bulanan (PCB) pada tahun tersebut <i>Monthly tax deduction (PCB) in that year</i> = RM120 $\times$ 12 = RM1 440 Tidak perlu, RM1 440 melebihi RM978.20. <i>No need, RM1 440 exceeds RM978.20.</i> (ii) LHDN perlu memulangkan lebih kepada Encik Farqan. <i>IRB should refund the excess deduction to Encik Farqan.</i>	1 1 1	

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
4	(a) Jumlah pelepasan cukai yang boleh dituntut <i>Total tax relief that can be claimed</i> = 9 000 + 3 105 + 1 545 + 3 000 = 16 650	1 1	
	(b) (i) (a) Cukai pendapatan Encik Ali <i>Encik Ali's tax assessment</i> = 3 700 + $\frac{19}{100} \times (73\,000 - 70\,000)$ = RM4 270 (b) Cukai pendapatan isteri Encik Ali <i>Encik Ali's wife tax assessment</i> = 1 500 + $\frac{11}{100} \times (73\,000 - 5\,000 - 50\,000)$ = RM3 480  (ii) Jumlah cukai pendapatan Encik Ali dan isteri <i>Total income tax of Encik Ali and his wife</i> = 9 400 + $\frac{25}{100} \times (150\,000 - 100\,000)$ = RM21 900  (iii) Taksiran cukai individu. / <i>Individual tax assessment.</i> Cukai pendapatan yang dibayar adalah lebih rendah. <i>The income tax paid is lower.</i>	1 1  1 1  1 1	
			10

## Bab 5

# KEKONGRUENAN, PEMBESARAN DAN GABUNGAN TRANSFORMASI

### KERTAS 1

1 D

Faktor skala / *Scale factor*

$$= \frac{\text{Imej} / \text{Image}}{\text{Objek} / \text{Object}}$$

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

$$= 3$$

2 A

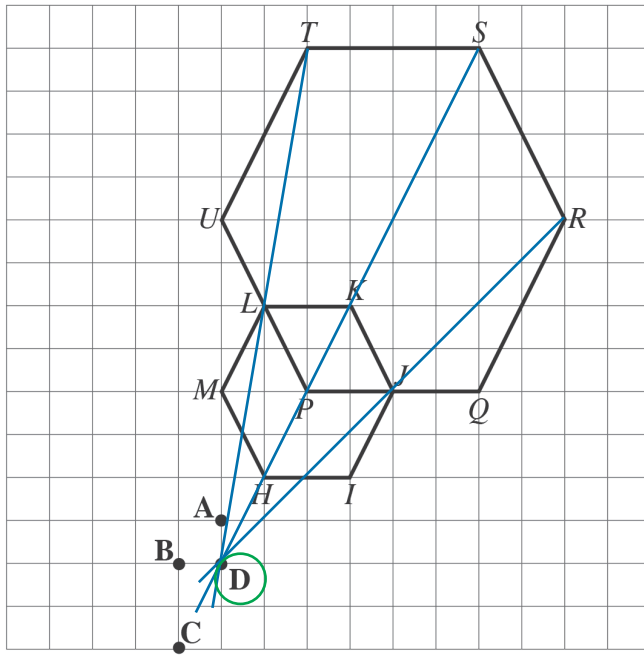
$$k = \frac{\text{panjang sisi imej} / \text{a side of an image}}{\text{panjang sisi objek} / \text{a side of an object}}$$

$$k = \frac{3}{6}$$

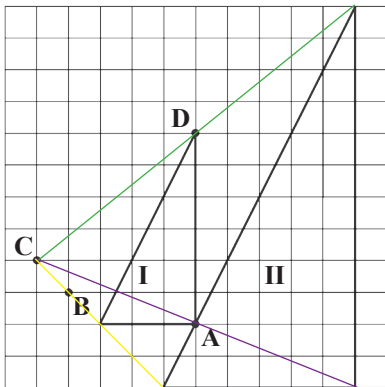
$$k = \frac{1}{2}$$

Arah bertentangan / *Opposite direction*,  $\therefore k = -\frac{1}{2}$

3 D



4 C



Lukis garisan panjang yang menyambungkan bucu setiap objek dengan pasangan imej.  
 Draw long lines connecting the corners of each object with the image pair.

5 C

$$VPQ = VQR = VUR = 18$$

$$US = \frac{1}{2}UR$$

$$\therefore k = \frac{1}{2}$$

$$k^2 = \frac{\text{luas imej} / \text{area of image}}{\text{luas objek} / \text{area of object}}$$

$$\left(\frac{1}{2}\right)^2 = \frac{UST}{18}$$

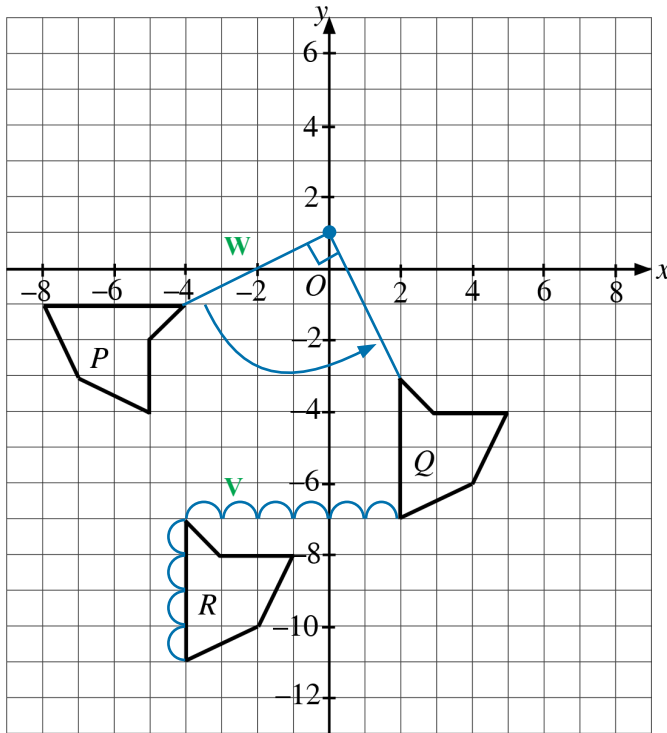
$$UST = 4.5$$

Jumlah luas / Total area

$$= 3(18) + 4.5$$

$$= 58.5 \text{ cm}^2$$

6 C



7 A

**B:** Ditolak kerana translasi untuk paksi-x sepatutnya bergerak 10 langkah ke kanan.

*Rejected because the translation for the x-axis should move 10 steps to the right.*

**C:** Ditolak kerana U bergerak dahulu sebelum V dan pergerakan pada paksi-x adalah salah.

*Rejected because U moved first before V and movement at x-axis are wrong.*

**D:** Ditolak kerana U bergerak dahulu sebelum V.

*Rejected because U moved first before V.*

8 D

**A:** Bukan teselasi kerana terdapat bintang yang tidak berulang.

*Not a tessellation because there are non-repeating spots.*

**B:** Bukan teselasi kerana terdapat bintang yang tidak berulang.

*Not a tessellation because there are non-repeating spots.*

**C:** Bukan teselasi kerana terdapat bintang yang tidak berulang.

*Not a tessellation because there are non-repeating spots.*

**D:** Merupakan teselasi yang terdiri daripada bintang yang berulang.

*It is a tessellation consisting of repeating spots.*

9 D

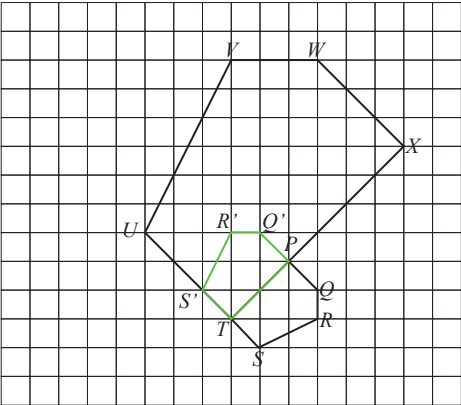
$P \rightarrow S$ : Pantulan / Reflection

$S \rightarrow R$ : Translasi / Translation

## Bahagian A

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
1	(a) Ya / Yes $AB = BC$	1	4
	(b) Pembesaran pada pusat (3, 2) dengan faktor skala $-\frac{1}{2}$ . <i>Enlargement at center (3, 2) with a scale factor of <math>-\frac{1}{2}</math>.</i>	3	
2	(a) (i) $M' = (3, 0)$  (ii) Putaran lawan arah jam pada pusat (-4, 2). <i>Anticlockwise rotation at centre (-4, 2).</i>  atau / or  Putaran ikut arah jam pada pusat (1, -7). <i>Clockwise rotation at centre (1, -7).</i>	1   2	5
	(b) Translasi / Translation $\begin{pmatrix} 11 \\ 11 \end{pmatrix}$ atau / or  Pantulan pada garis $y = -x$ . <i>Reflection on line <math>y = -x</math>.</i>	2	
3	$\frac{1}{2} \times \text{tapak} \times \text{tinggi} = \text{luas segi tiga}$ $\frac{1}{2} \times \text{base} \times \text{height} = \text{area of triangle}$ $\frac{1}{2}(x)(2+x) = 7.5$ $x^2 + 2x - 15 = 0$ $(x-3)(x+5) = 0$ $x = 3, x = -5$ $x > 0, x = 3$  $y = 2(2+x)$ $= 2(2+3)$ $= 10 \text{ cm}$	1 1 1 1  1	5

**Bahagian B**

No.	Skema Pemarkahan <i>Marking Scheme</i>	Markah <i>Marks</i>	Markah Total <i>Total Marks</i>
4	(a) <i>DEF dan DGF, DAB dan DCB, EFJ dan GFJ.</i> <i>DEF and DGF, DAB and DCB, EFJ and GFJ.</i> (Terima mana-mana jawapan yang munasabah) ( <i>Accept any reasonable answer</i> )	2	
	(c) (i) <b>Q:</b> Pantulan pada garis $x = 3$ . <i>Reflection on line <math>x = 3</math>.</i>  (ii) $k = \frac{6}{3}$ $= 2$  <b>P:</b> Pembesaran pada titik $J$ dengan faktor skala, $k = 2$ . <i>Enlargement at point <math>J</math> with the scale factor, <math>k = 2</math>.</i>	2      3	      7
5	(a) (i) Pembesaran pada pusat $(2, -4)$ dengan faktor skala $-\frac{1}{2}$ . <i>Enlargement at the centre of <math>(2, -4)</math> with the scale factor of <math>-\frac{1}{2}</math>.</i>  (ii) Putaran $180^\circ$ pada asalan. <i>Rotation of <math>180^\circ</math> at the origin.</i>	3   3	
	(b) Luas imej = $k^2 \times$ Luas objek <i>Area of image = <math>k^2 \times</math> Area of object</i>  $MNQSTU = \left(-\frac{1}{2}\right)^2 \times 125 \text{ cm}^2$ $= 31.25 \text{ cm}^2$	2   1	9
6	(b) (i)   (ii) Pembesaran dengan faktor skala 3 pada pusat $T$ . <i>Enlargement with scale factor 3 at centre <math>T</math>.</i>  (iii) (a) $1 : 9$ (b) Luas pentagon $PQRST$ <i>The area of pentagon <math>PQRST</math></i> $= \frac{240 \text{ cm}^2}{(1 + 9)}$ $= 24 \text{ cm}^2$	1   3  1  1  1	         7

KERTAS 1

1 C

$$\sin x = -\frac{\sqrt{3}}{2}$$

$$x = -60^\circ$$

$$x = 180^\circ - 60^\circ$$

$$x = 120^\circ$$

$$\tan 60^\circ = \frac{m}{n}$$

$$m = n \tan 60^\circ$$

2 D

Koordinat  $P$  / Coordinates  $P$  (0.57, 0.82)

$$\cos \theta = 0.57$$

$$\sin \theta = 0.82$$

$\theta$  di sukuan kedua /  $\theta$  in second quadrant

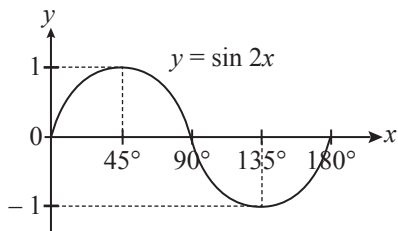
$$\theta = 180^\circ - 55^\circ$$

$$= 125^\circ$$

$$\begin{aligned} \cos / \cos (125^\circ) &= -\cos / \cos (55^\circ) \\ &= -0.57 \end{aligned}$$

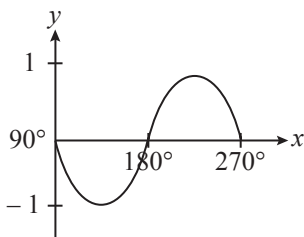
3 C

Graf / Graph  $\sin 2x$ :



Maka, graf  $y = \sin 2x$  bagi  $90^\circ \leq x \leq 270^\circ$  adalah

Hence, the graph represents  $y = \sin 2x$  for  $90^\circ \leq x \leq 270^\circ$  is



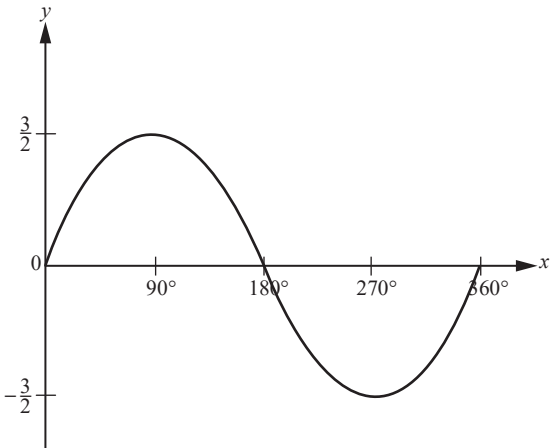
- 4 A  
 $\sin 212^\circ = -0.5299192642$   
 A:  $\sin 328^\circ = -0.5299192642$   
 B:  $\sin 302^\circ = -0.8480480962$   
 C:  $\sin 244^\circ = -0.8987940463$   
 D:  $\sin 238^\circ = -0.8480480962$

- 5 A  
 A:  $y = \cos / \cos \frac{3}{2}x, c = 1$   
 B:  $y = -\cos / \cos \frac{3}{2}x, c = -1$   
 C:  $y = \sin \frac{3}{2}x, c = 1$   
 D:  $y = -\sin \frac{3}{2}x, c = -1$

- 6 D  
 A: Kedudukan  $Q$  bukan berada pada  $-0.5$  pada paksi- $y$ .  
*The position of  $Q$  is not at  $-0.5$  on  $y$ -axis.*  
 B: Kedudukan  $Q$  bukan berada pada  $-0.5$  pada paksi- $y$ .  
*The position of  $Q$  is not at  $-0.5$  on  $y$ -axis.*  
 C:  $y = \sin -0.5 \neq 225^\circ$

## KERTAS 2

### Bahagian A

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
1	(a) 	2	5
	(b) (i) $PR = \sqrt{30^2 + 15^2}$ $= 33.54 \text{ cm}$	1 1	
	(ii) $\cos / \cos y^\circ = \frac{30}{33.54}$ (Sukuan / <i>Quadrant II</i> ) $\cos / \cos y^\circ = -0.89$	1	

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
2	(a) $y = -a \cos / \cos bx + 10$ $a = \frac{18 - 2}{2}$ $= 8$ $b = \frac{360^\circ}{60}$ $= 6$	1  1	
	(b) $y = -8 \cos / \cos 6x + 10$ $y = -8 \cos / \cos 6(73) + 10$ $y = -8 \cos / \cos (438) + 10$ $y = 8.34 \text{ m}$	1  1	
			4

### Bahagian C

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
3	$l = \frac{u^2}{g} (2 \sin \theta \cos \theta) / \frac{u^2}{g} (2 \sin \theta / \cos \theta)$		
	$l = \frac{20^2}{10} (2 \sin 30^\circ \cos 30^\circ) / \frac{20^2}{10} (2 \sin 30^\circ / \cos 30^\circ)$	1	
	$l = 40 \left( 2 \times \frac{1}{2} \times \frac{\sqrt{3}}{2} \right)$		
	$l = 20\sqrt{3} \text{ m}$	1	
	$l = \frac{20^2}{10} (2 \sin 45^\circ \cos 45^\circ) / \frac{20^2}{10} (2 \sin 45^\circ / \cos 45^\circ)$		
	$l = 40 \left( 2 \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \right)$		
$l = 40 \text{ m}$	1		
$\therefore$ Sudut pelancaran terbaik ialah $45^\circ$ .	1		
<i>The best launching angle is <math>45^\circ</math>.</i>			
			4

## KERTAS 1

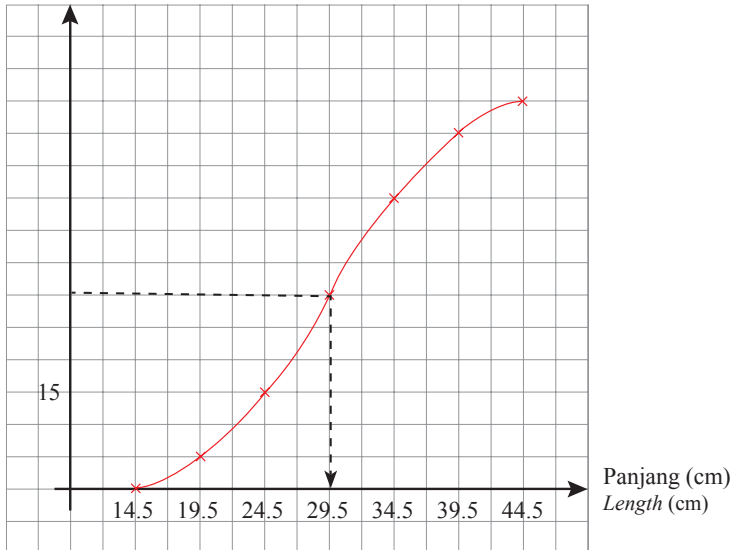
1 C

$$\frac{25}{100} \times x = 15$$

$$x = 60$$

$$\frac{1}{2} \times 60 = 30$$

Kekerapan longgokan  
Cumulative frequency



Median panjang = 29.5

Median of length

2 B

Persentil ke-40 / 40<sup>th</sup> percentile

$$= \frac{40}{100} \times 60$$

$$= 24$$

Dari graf, markah ialah 61.5.

From the graph, the marks is 61.5.

3 A

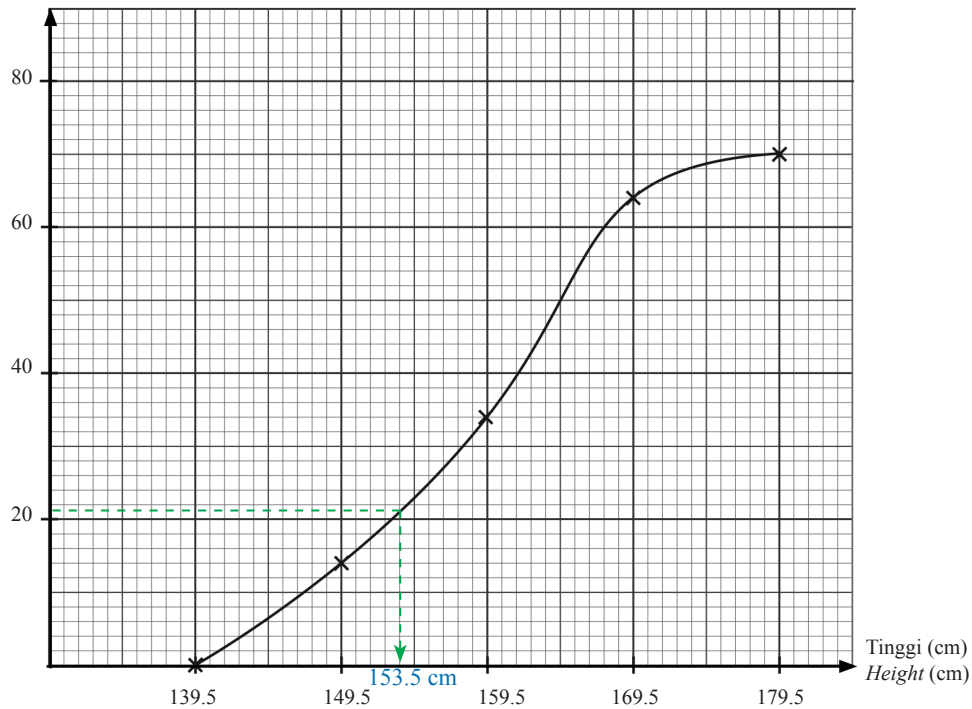
Persentil ke-30 / 30<sup>th</sup> percentile

$$= \frac{30}{100} \times 70$$

$$= 21$$

Kekerapan longgokan  
*Cumulative frequency*

Tinggi Murid  
*Student's Height*



Dari graf, tinggi ialah 153.5 cm.  
*From the graph, the height is 153.5 cm.*

4 D

$$\begin{aligned}\sigma^2 &= \frac{\sum fx^2}{\sum f} - \bar{x}^2 \\ &= \frac{107.98}{100} - \left(\frac{100.4}{100}\right)^2\end{aligned}$$

5 D

Varians / Variance

$$\begin{aligned}&= \frac{245\,508}{9} - \left(\frac{1\,484}{9}\right)^2 \\ &= 90.32\end{aligned}$$

6 C

A: Laju perlu bermula dari 79.5 km j<sup>-1</sup> hingga 139.5 km j<sup>-1</sup>.

*The speed should start from 79.5 km h<sup>-1</sup> to 139.5 km h<sup>-1</sup>.*

B: Laju perlu bermula dari 79.5 km j<sup>-1</sup> hingga 139.5 km j<sup>-1</sup>.

*The speed should start from 79.5 km h<sup>-1</sup> to 139.5 km h<sup>-1</sup>.*

D: Nilai median adalah salah.

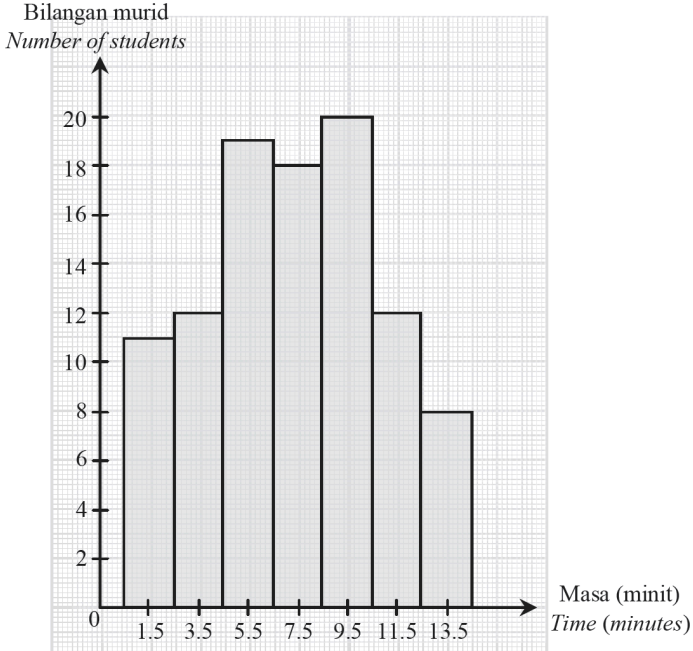
*The median value is incorrect.*

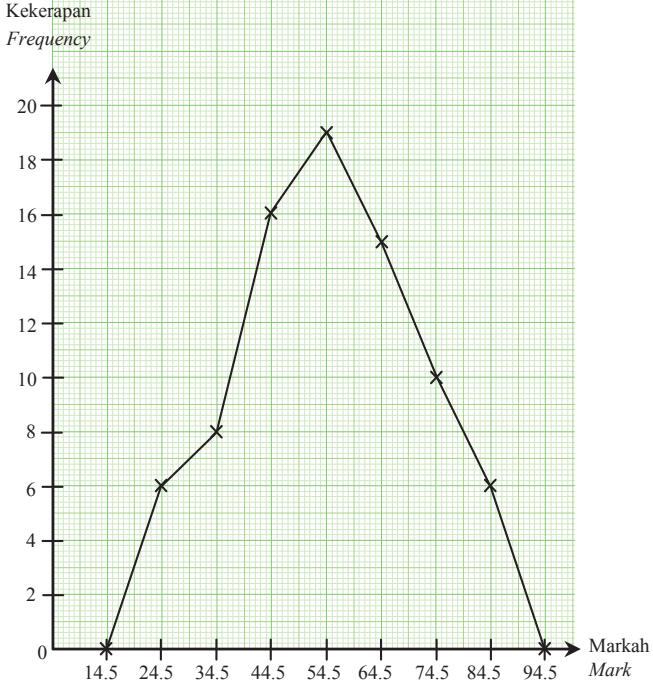
## Bahagian A

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
1	$(42 \times 3) + (47 \times 6) + (52 \times m) + (57 \times 16) +$ $(62 \times 10) + (67 \times 4)$ $\frac{\quad}{3 + 6 + m + 16 + 10 + 4} = 55.6$ $\frac{2\,208 + 52m}{39 + m} = 55.6$ $2\,208 + 52m = 2\,168.4 + 55.6m$ $2\,208 - 2\,168.4 = 55.6m - 52m$ $39.6 = 3.6m$ $m = 11$	2	6
	$(3 \times 42^2) + (6 \times 47^2) + (11 \times 52^2) +$ $(16 \times 57^2) + (10 \times 62^2) + (4 \times 67^2)$ $\sigma^2 = \frac{\quad}{3 + 6 + 11 + 16 + 10 + 4} - 55.6^2$ $= \frac{156\,670}{50} - 55.6^2$ $= 42.04$	1	
1	$(3 \times 42^2) + (6 \times 47^2) + (11 \times 52^2) +$ $(16 \times 57^2) + (10 \times 62^2) + (4 \times 67^2)$ $\sigma^2 = \frac{\quad}{3 + 6 + 11 + 16 + 10 + 4} - 55.6^2$ $= \frac{156\,670}{50} - 55.6^2$ $= 42.04$	2	
		1	

## Bahagian B

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks							
2	(a) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Titik tengah Midpoint</th> </tr> </thead> <tbody> <tr><td>3.5</td></tr> <tr><td>5.5</td></tr> <tr><td>7.5</td></tr> <tr><td>9.5</td></tr> <tr><td>11.5</td></tr> <tr><td>13.5</td></tr> </tbody> </table>	Titik tengah Midpoint	3.5	5.5	7.5	9.5	11.5	13.5	1	
Titik tengah Midpoint										
3.5										
5.5										
7.5										
9.5										
11.5										
13.5										

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks																
	<p>(b) (i) Min / Mean</p> $= \frac{(11 \times 1.5) + (12 \times 3.5) + (19 \times 5.5) + (18 \times 7.5) + (20 \times 9.5) + (12 \times 11.5) + (8 \times 13.5)}{100}$ $= 7.34$ <p>(ii) <math>\sigma = \sqrt{\frac{\sum fx^2}{\sum f} - \bar{x}^2}</math></p> $= \sqrt{\frac{(11 \times 1.5^2) + (12 \times 3.5^2) + (19 \times 5.5^2) + (18 \times 7.5^2) + (20 \times 9.5^2) + (12 \times 11.5^2) + (8 \times 13.5^2)}{100} - 7.34^2}$ $= 3.49$	<p>1</p> <p>1</p> <p>2</p> <p>1</p>																	
	<p>(c)</p>  <table border="1" data-bbox="235 676 921 1323"> <caption>Data for Histogram</caption> <thead> <tr> <th>Time (minutes)</th> <th>Number of students</th> </tr> </thead> <tbody> <tr><td>1.5</td><td>11</td></tr> <tr><td>3.5</td><td>12</td></tr> <tr><td>5.5</td><td>19</td></tr> <tr><td>7.5</td><td>18</td></tr> <tr><td>9.5</td><td>20</td></tr> <tr><td>11.5</td><td>12</td></tr> <tr><td>13.5</td><td>8</td></tr> </tbody> </table>	Time (minutes)	Number of students	1.5	11	3.5	12	5.5	19	7.5	18	9.5	20	11.5	12	13.5	8	<p>4</p>	<p>10</p>
Time (minutes)	Number of students																		
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13.5	8																		

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks										
3	<p>(a) (i)</p> <table border="1" data-bbox="319 184 544 713"> <thead> <tr> <th>Kekerapan Frequency</th> </tr> </thead> <tbody> <tr><td>0</td></tr> <tr><td>6</td></tr> <tr><td>8</td></tr> <tr><td>16</td></tr> <tr><td>19</td></tr> <tr><td>15</td></tr> <tr><td>10</td></tr> <tr><td>6</td></tr> <tr><td>0</td></tr> </tbody> </table> <p>(ii)</p> 	Kekerapan Frequency	0	6	8	16	19	15	10	6	0	2	4
Kekerapan Frequency													
0													
6													
8													
16													
19													
15													
10													
6													
0													

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks																														
	<p>(b) (i)</p> $x = \sqrt{\frac{6(24.5)^2 + 8(34.5)^2 + 16(44.5)^2 + 19(54.5)^2 + 15(64.5)^2 + 10(74.5)^2 + 6(84.5)^2}{80}} - 54.75^2$ $= 16.65$ <p>(ii) Prestasi murid pada tahun 2021 lebih konsisten. <i>The students performance in 2021 is more consistent.</i></p>	<p>2</p> <p>1</p> <p>1</p>	<b>10</b>																														
4	<p>(a) (i) Saiz selang kelas / <i>Class interval</i>: 10 Julat / <i>Range</i>: <math>\left[\left(\frac{130 + 139}{2}\right) - \left(\frac{70 + 79}{2}\right)\right] = 60</math></p> <p>(ii) <math>x = 68 - 2 - 4 - 3 - 8 - 14 - 20</math> <math>= 17</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>																															
	<p>(b)</p> <p>Bilangan pelanggan <i>Number of customer</i></p> <table border="1"> <caption>Data points for the line graph</caption> <thead> <tr> <th>Jumlah perbelanjaan (RM)</th> <th>Bilangan pelanggan (Black line)</th> <th>Bilangan pelanggan (Green line)</th> </tr> </thead> <tbody> <tr><td>64.5</td><td>0</td><td>0</td></tr> <tr><td>74.5</td><td>3</td><td>2</td></tr> <tr><td>84.5</td><td>5</td><td>4</td></tr> <tr><td>94.5</td><td>10</td><td>3</td></tr> <tr><td>104.5</td><td>20</td><td>8</td></tr> <tr><td>114.5</td><td>12</td><td>14</td></tr> <tr><td>124.5</td><td>7</td><td>20</td></tr> <tr><td>134.5</td><td>6</td><td>17</td></tr> <tr><td>144.5</td><td>0</td><td>0</td></tr> </tbody> </table> <p>Jumlah perbelanjaan (RM) <i>Total expenditure (RM)</i></p>	Jumlah perbelanjaan (RM)	Bilangan pelanggan (Black line)	Bilangan pelanggan (Green line)	64.5	0	0	74.5	3	2	84.5	5	4	94.5	10	3	104.5	20	8	114.5	12	14	124.5	7	20	134.5	6	17	144.5	0	0		
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No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
	– 7 titik diplot dengan betul. <i>7 points are plotted correctly.</i>	2	
	– 9 titik yang betul dilalui oleh poligon kekerapan. <i>The correct 9 points are passed through by the frequency polygon.</i>	1	
(c) (i)	– Bentuk loceng <i>Bell-shaped</i>	1	
	– Pencong ke kiri <i>Left-skewed</i>	1	
	(ii) Hari kedua. Pelanggan membelanjakan lebih banyak wang. <i>Second day. Customers spent more money.</i>	1	
			<b>10</b>

### Bahagian C

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
5	$\bar{x} = \frac{5(17) + 3(22) + 6(27) + 2(32)}{5 + 3 + 6 + 2}$ $= 23.56$	1	
	$\sigma = \sqrt{\frac{5(17)^2 + 3(22)^2 + 6(27)^2 + 2(32)^2}{5 + 3 + 6 + 2} - 23.56^2}$	1	
	$= 5.23$	1	
			<b>3</b>

KERTAS 2

Bahagian B

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
1	(a) (i) 1 (ii) $3 - 1 = 2$	1 1	
	(b) (i) $b = \frac{360}{4}$ $= 90$ $y = a \sin bx + c$ $y = (1) \sin (90)x + 2$ $y = \sin 90x + 2$  (ii) $y = \sin 90\left(\frac{150}{60}\right) + 2$ $y = 1.29$	1  1  1	
	(c) (i)		

$x$	0	0.5	1	1.5	2	2.5	3	3.5	4
$y$	2	3	2	1	2	3	2	1	2

$$b = \frac{360}{2} = 180$$

$$y = \sin 180x + 2$$
  

Kedalaman (m)  
Depth (m)

Masa (jam)  
Time (hour)

Graf dilengkapkan dengan 2 titik minimum, 2 titik maksimum dan lengkung sinus yang betul.  
The graph is completed with 2 minimum points, 2 maximum points and 2 sine curves correctly.

(ii) Rajah 8 menunjukkan bilangan melepaskan air dalam masa 4 jam ialah satu kali manakala rajah di (c)(i) menunjukkan bilangan melepaskan air dalam masa 4 jam ialah dua kali.  
Diagram 8 shows the number of water releases in 4 hours is one time whereas diagram in (c)(i) shows the number of water releases in 4 hours is two times.

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