PEPERIKSAAN PKBS 2
MATEMATIK
TINGKATAN 5
TAHUN 2016

SKEMA PERMARKAHAN

MATEMATIK KERTAS 1 (1449/ 1)

1 A	2 A	3 B	4 B
5 A	6 D	7 C	8 C
9 C	10 D	11 B	12 B
13 C	14 D	15 B	16 C
17 A	18 A	19 A	20 B
21 B	22 C	23 C	24 C
25 B	26 D	27 A	28 B
29 D	30 B	31 A	32 A
33 D	34 B	35 C	36 A
37 C	38 D	39 D	40 C

PERATURAN PEMARKAHAN

$$\textbf{Markah} = \frac{Kertas\,1 + Kertas\,2}{140}$$

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MATEMATIK
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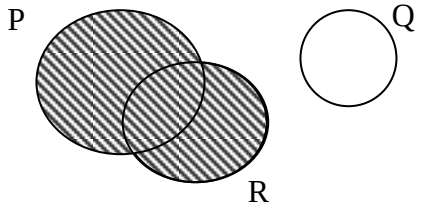
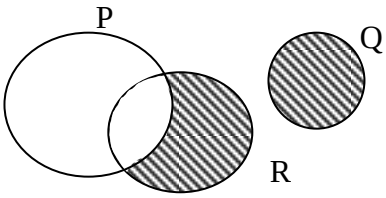
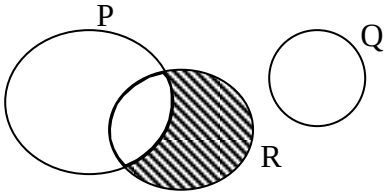
MATEMATIK KERTAS 2 (1449/ 2)

Bahagian A

No.	Marking Scheme	Marks	
1.	(a)  (b)   Note: give P1	P1 P2	**3**
2	$\angle$ BAC or $\angle$ CAB Tan $\angle$BAC = $\frac{30}{8}$ or $\angle$BAC = Tan $^{-1}$ ($\frac{30}{8}$) 75.07° or 75°.4’ Note: Accept 75.1°	P1 K1 N1	**3**

3.	$3k^2 - 5k - 2 = 0$ $(3k + 1)(k - 2) = 0$ *atau* *setara* $k = 2, -\frac{1}{3}$ Nota: 1) Terima tanpa "= 0" untuk K1K1. 2) Abaikan susunan untuk K1 pertama.	K1 K1 N1N1	**4**

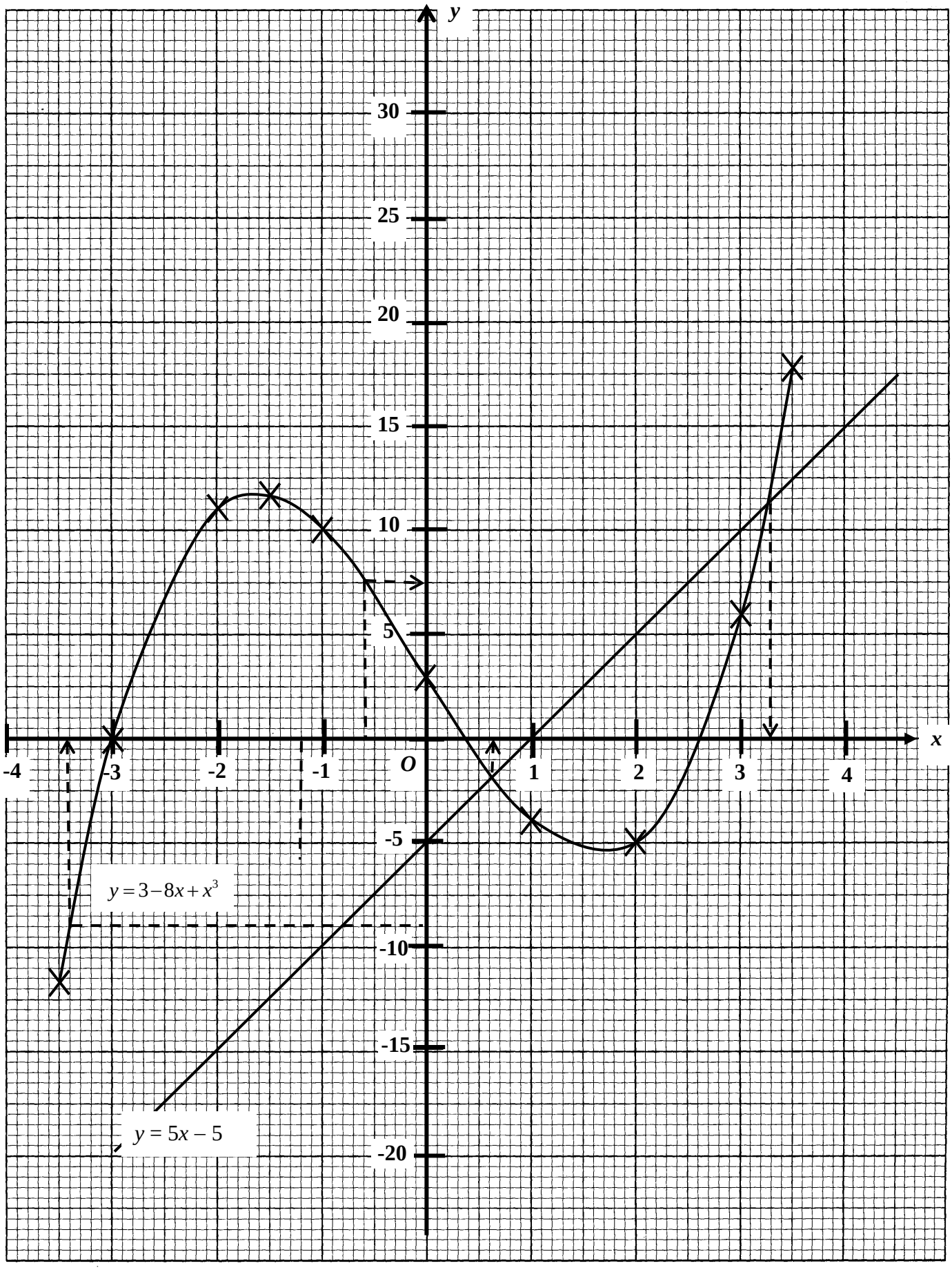
4.	4p + 2k = 8 *atau* 2p – 4k = 14 *atau* setara 5p = 15 *atau* 5k = - 10 **ATAU** p + 2k = 7 *atau* k = 4 – 2p *atau* setara (K1) 5p = 15 *atau* 5k = - 10 *atau* setara (K1) p =3 k = -2	K1 K1 N1 N1	**4**
5.	(a) Pernyataan (b) Jika Sin θ = 1 maka $\theta = 90^0$ Jika $\theta = 90^0$ maka Sin θ = 1 (c) *m* tidak boleh dibahagi tepat dengan 2.	P1 P1 P1 K2	**5**

6	$\frac{1}{2}\times 7\times 5\times 10$ *atau* setara $\frac{1}{2}\times\frac{22}{7}\times\left(\frac{7}{2}\right)^2\times 10$ *atau* setara $\frac{1}{2}\times 7\times 5\times 10 + \frac{1}{2}\times\frac{22}{7}\times\left(\frac{7}{2}\right)^2\times 10$ *atau* setara $367\frac{1}{2}$ *atau* 367.5	K1 K1 K1 N1	**4**
7	(a) $\frac{8}{20}\times\frac{7}{19}$ $\frac{14}{95}$ (b) $\frac{12}{20}\times\frac{8}{19} + \frac{8}{20}\times\frac{12}{19}$ $\frac{48}{95}$	K1 N1 K2 N1	**5**
8.	(a) $\frac{180}{360}\times 2\times\frac{22}{7}\times 10.5$ *or* $\frac{120}{360}\times 2\times\frac{22}{7}\times 7$ $\frac{180}{360}\times 2\times\frac{22}{7}\times 10.5 + \frac{120}{360}\times 2\times\frac{22}{7}\times 7 + 7 + 7 + 7$ 68.67 or $68\frac{2}{3}$ or $\frac{206}{3}$ (b) $\frac{180}{360}\times\frac{22}{7}\times 10.5^2$ *or* $\frac{120}{360}\times\frac{22}{7}\times 7^2$ $\frac{180}{360}\times\frac{22}{7}\times 10.5^2 - \frac{120}{360}\times\frac{22}{7}\times 7^2$ 121.92 or $121\frac{11}{12}$ or $\frac{1463}{12}$	K1 K1 N1 K1 K1 N1	**6**

9	(a) 4 (b) $\frac{12-30}{6-0}$ -3 (c) $176 = 4\times 12 + \frac{1}{2}(12 + u)\times 8$ or *any equivalent* $u = 20$	P1 K1 N1 K2 N1	**6**
10	(a) $k = 3(1) + 2$ *atau* $\frac{k-2}{1-0}=3$ *atau* setara $k = 5$ (b) $mQR = 3$ $6 = 3(0) + c$ *atau* setara $y = 3x + 6$ Nota : Jawapan tanpa kerja dapat K2N1.	K2 N1 P1 K1 N1	**6**
11.	(a) $\frac{1}{3\times 4-6\times 1}\begin{pmatrix}4 & -6\\ -1 & 3\end{pmatrix}$ $\frac{1}{6}\begin{pmatrix}4 & -6\\ -1 & 3\end{pmatrix}$ or $\begin{pmatrix}\frac{2}{3} & -1\\ \frac{-1}{6} & \frac{1}{2}\end{pmatrix}$ or *any equivalent* (b) $\begin{pmatrix}3 & 6\\ 1 & 4\end{pmatrix}\begin{pmatrix}x\\ y\end{pmatrix}=\begin{pmatrix}12\\ 10\end{pmatrix}$ $\begin{pmatrix}x\\ y\end{pmatrix}=\frac{1}{6}\begin{pmatrix}4 & -6\\ -1 & 3\end{pmatrix}\begin{pmatrix}12\\ 10\end{pmatrix}$ $x = -2$ $y = 3$ Note : $\begin{pmatrix}x\\ y\end{pmatrix}=\begin{pmatrix}-2\\ 3\end{pmatrix}$, give N1	K1 N1 P1 K1 N1 N1	**6**

12	(a) (i) (2, 2)	P1	
	(ii) (3, – 2)	P1	
	(iii) (7, – 3)	P2	
	(b) (i) (a) **M:** Rotation, 90^0 clockwise, centre at E @ (- 2, 1) Note : (1) Rotation, 90^0 clockwise or (2) Rotation, centre at E @ (- 2, 1) give P2 (3) Rotation only give P1	P3	
	(b) **N:** Enlargement, scale factor 2, Centre at E @ (- 2, 1) Note : (1) Accept M is enlargement, N is Rotation or Accept N is enlargement, M is Rotation as MN= NM for P3. (2) Enlargement , scale factor 2 or (3) Enlargement, centre at E (- 2, 1) give P2 (4) Enlargement only give P1	P3	
	(ii) $14 \times (2)^2$	K1	
	56	N1	**12**

13	(a) $y = 11$, $y = -5$	K1K1	
	Note: (1) If not stated, give K1K1 for the table @ if points are correctly marked on the graph @ the curve passes exactly through the points.		
	(b) *Graph :* Axes are drawn in the correct direction with uniform scale. in the range $-3.5 \leq x \leq 3.5$ and $-15 \leq y \leq 17$.	K1	
	All 7 points and 2 points* are correctly marked	K2	
	Smooth curve and continuously in range of $-3.5 \leq x \leq 3.5$ with no straight line part and passing through all the correct 9 points.	N1	
	Note: (i) 7 @ 8 points are correctly plotted, K1 (ii) Other scale used, minus 1 mark from the KN marks obtained.		
	(c) (i) $5.4 \leq y \leq 5.5$	K1	
	(ii) $3.3 \leq x \leq 3.4$	K1	
	(d) The equation $y = 5x - 5$	K1	
	Straight line $y = 5x - 5$ correctly drawn and meet the curve.	K1	
	The value of x : $3.2 \leq x \leq 3.3$ $0.6 \leq x \leq 0.7$	N1 N1	
	Note: (i) Allow N mark if x is shown on the graph. (ii) The value of x obtained by calculation, give N0		**12**


y
30
25
20
15
10
5
x
-4
-3
-2
-1
O
1
2
3
4
-5
-10
-15
-20
$y = 3 - 8x + x^3$
$y = 5x - 5$

14

(a)

	Class Interval	Midpoint	Frequency
I	*65 - 69*	67	2
II	*70 - 74*	72	3
III	75 - 79	77	5
IV	80 - 84	82	9
V	85 - 89	87	7
VI	90 - 94	92	3
VII	95 - 99	97	1

Class interval : (II to VII) all correct P1
Midpoint : (I to VII) all correct P1
Frequency : (I to VII) all correct P2

Note : 5 or 6 frequency are correct, give P1

(b)

$$\frac{(67\times 2)+(72\times 3)+(77\times 5)+(82\times 9)+(87\times 7)+(92\times 3)+(97\times 1)}{30}$$ K2

or $\frac{2455}{30}$

81.83 or $81\frac{5}{6}$ or $\frac{491}{6}$ N1

(c) Histogram

Axes are drawn in the correct direction.
Uniform scale is used and x-axis is labeled by midpoints. K1

All 7 bars are correctly drawn
Complete histogram K2

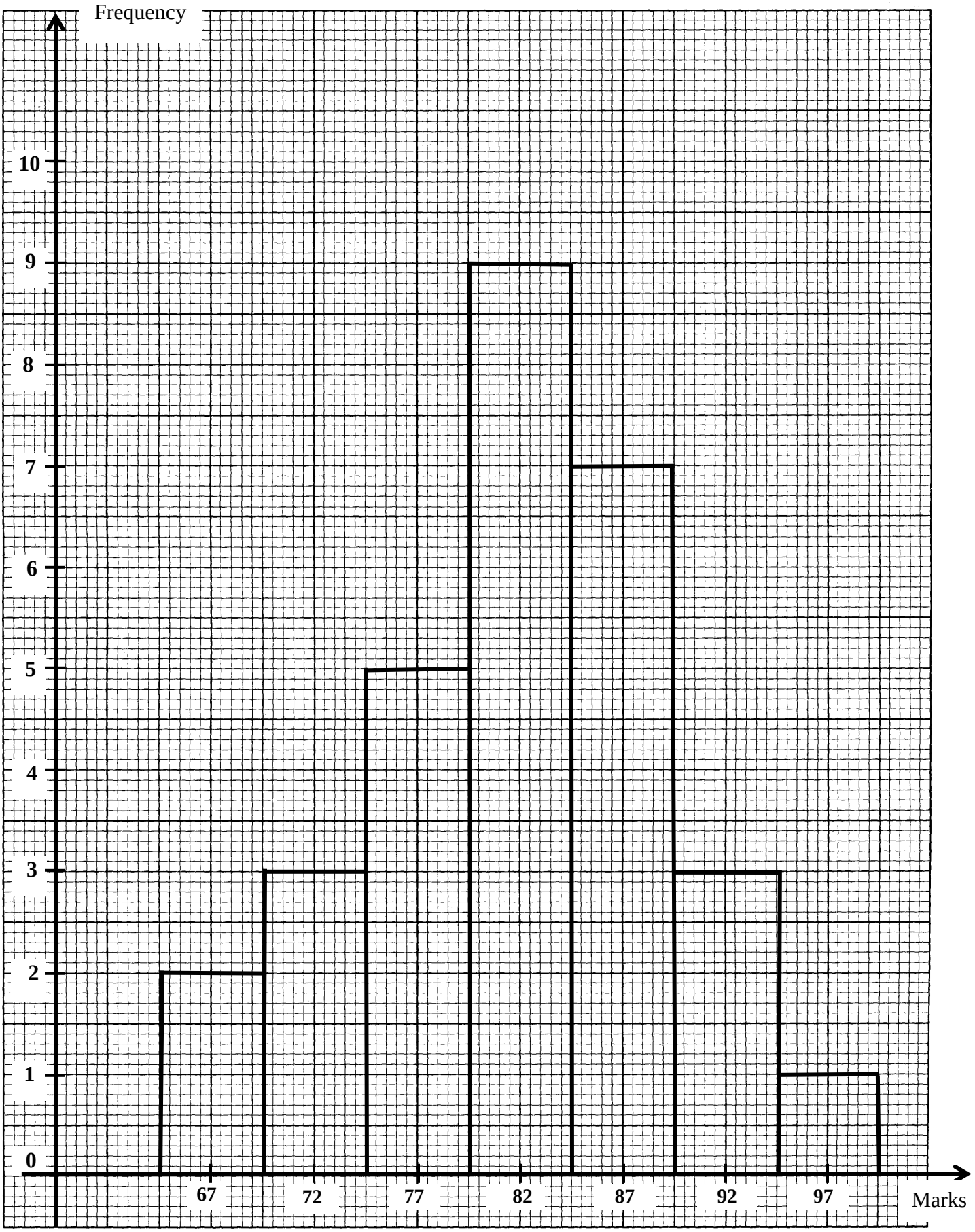
Note:
5 or 6 bars are correctly drawn, give K1N0

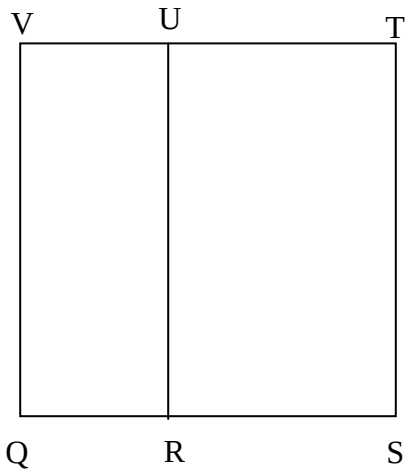
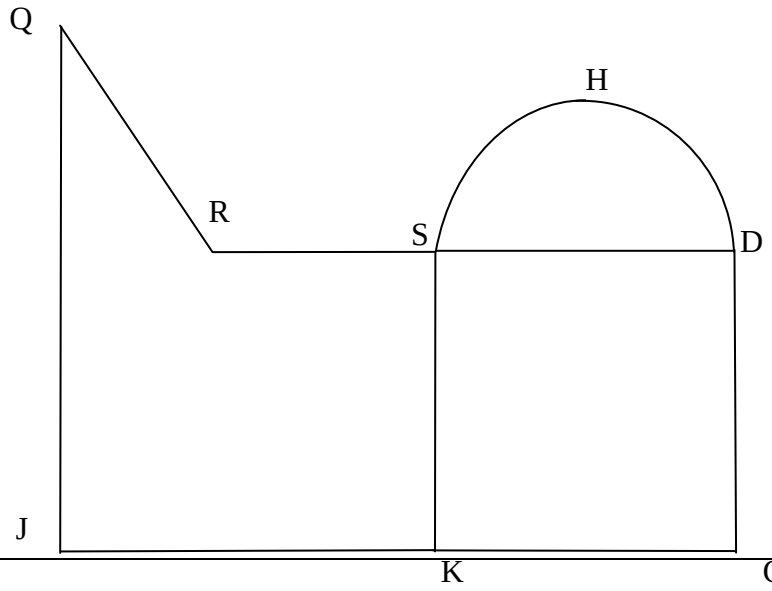
(d) Modal Class = 80 – 84 N1

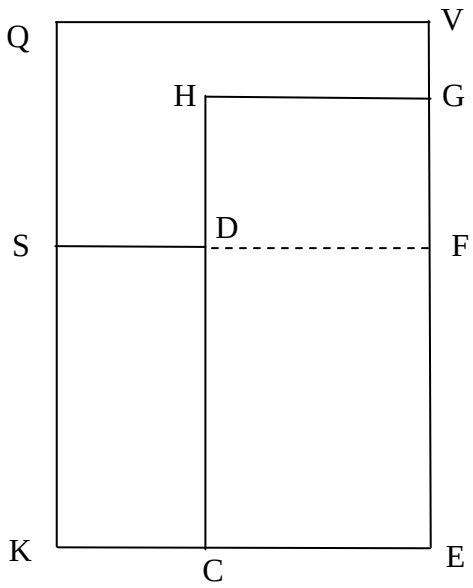
(e) *Example*

Many workers at 31 - 35 ages
or Few workers at 51 - 55 ages
or Top workers age is 33
or …….. K1

12


Frequency
10
9
8
7
6
5
4
3
2
1
0
67
72
77
82
87
92
97
Marks

15 (a)	Plan  The shape looked correct with rectangles QRUV and RSTU. All are in full lines. QV = VT, UT> VU, RS > QR The measurements are up to $\pm$ 0.2 cm (one direction) . Angles are $= 90^\circ \pm 1^\circ$ at all corners of rectangles.	K1 K1 Dept K1 N1 Dep K1K1	**3**
(b) (i)	The Elevation from X  		

	The shape looked correct with pentagon JKSRQ , rectangle KCDS and semi circle SDH. All are in full lines. JQ > JK>KC = DS = CD >RS, semicircle SHD The measurements are up to $\pm$ 0.2 cm (one direction). Angles are $90^\circ \pm 1^\circ$ at all corner of rectangles.	K1 K1 Dep K1 N2 Dep K1K1	**4**
(b) (ii)	<u>The elevation from Y</u>  The shape looked correct with rectangle KCDS, KEVQ, and CEGH <u>Note</u> : Ignore line DF. D – F is connected by dashed lines. QK > KE = QV > HG = CE > HD = SD =GF The measurements are up to $\pm$ 0.2 cm (one direction) and angles are $90^\circ \pm 1^\circ$ at all corners of rectangle.	K1 K1 Dep K1 K1 Dep K1K1 N2 Dep.K1K1K1	**5** --- **12**

16	(a) *Melengkapkan Jadual* k = -5 m = 10 *Nota*: (1) Jika jadual tidak lengkap, benarkan K1K1 jika ditanda dengan tepat pada grafnya atau lengkung melalui titik yang betul. (2) Jika nilai-nilai y dalam jadual salah, terima yang dihitung betul. (b) *Graf:* Paksi dilukis dengan arah yang betul, skala seragam dalam $-3 \leq x \leq 4$ dan $-18 \leq y \leq 11$. 6 titik dan 2 titik* ditanda betul dalam $-3 \leq x \leq 4$. Lengkung licin dan berterusan dalam $-3 \leq x \leq 4$ tanpa bahagian lurus dan melalui 8 titik yang betul. *Nota*: Jika skala lain digunakan, tolak 1 markah daripada markah KN yang diperoleh. (c) (i) $9.0<y<10.0$ (ii) $-1.6<x<-1.4$ $3.0<x<3.2$ (d) $9 + 3x - 2x^2 = 5x - 10$ *atau* $y = 5x - 10$ *atau* dua pasang nilai (x, y) yang betul. Garis lurus $y = 5x - 10$ dilukis betul Nilai x: $2.6 \leq x \leq 2.7$	 K1 K1 K1 K2 N1 P1 P1 P1 K1 K1 N1	 2 4 3 3 **12** ===

THE END OF MARKING SCHEME