Jawapan

Praktis 7

Praktis Formatif

7.1 Serakan
Dispersion

1

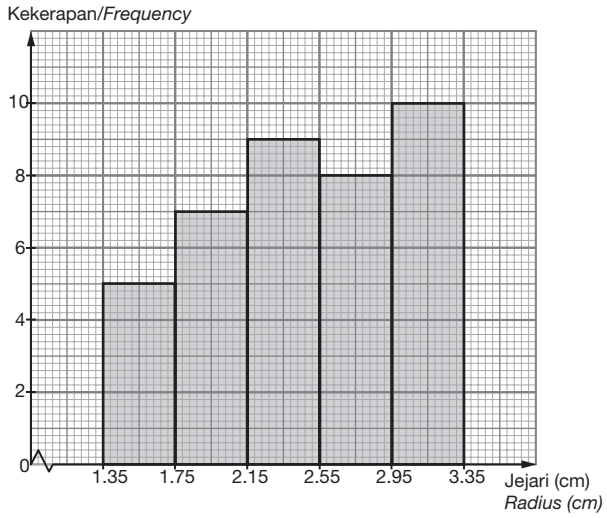
Panjang (cm) ***Length* (cm)**	3 – 6	7 – 10	11 – 14	15 – 18	19 – 22
Markah ***Marks***	36 – 40	41 – 45	46 – 50	51 – 55	56 – 60

2

Panjang (cm) ***Length* (cm)**	**Sempadan bawah** ***Lower boundary***	**Sempadan atas** ***Upper boundary***	**Titik tengah** ***Midpoint***	**Saiz selang kelas** ***Size of Class Interval***
2.0 – 2.4	$\frac{1.9 + 2.0}{2}$ = 1.95	$\frac{2.4 + 2.5}{2}$ = 2.45	$\frac{2.0 + 2.4}{2}$ = 2.2	2.45 – 1.95 = 0.5
2.5 – 2.9	$\frac{2.4 + 2.5}{2}$ = 2.45	$\frac{2.9 + 3.0}{2}$ = 2.95	$\frac{2.5 + 2.9}{2}$ = 2.7	2.95 – 2.45 = 0.5
3.0 – 3.4	$\frac{2.9 + 3.0}{2}$ = 2.95	$\frac{3.4 + 3.5}{2}$ = 3.45	$\frac{3.0 + 3.4}{2}$ = 3.2	3.45 – 2.95 = 0.5
3.5 – 3.9	$\frac{3.4 + 3.5}{2}$ = 3.45	$\frac{3.9 + 4.0}{2}$ = 3.95	$\frac{3.5 + 3.9}{2}$ = 3.7	3.95 – 3.45 = 0.5
4.0 – 4.4	$\frac{3.9 + 4.0}{2}$ = 3.95	$\frac{4.4 + 4.5}{2}$ = 4.45	$\frac{4.0 + 4.4}{2}$ = 4.2	4.45 – 3.95 = 0.5

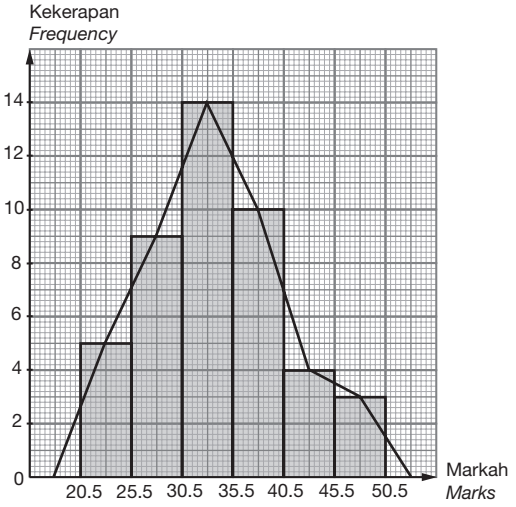
3

Jejari (cm) ***Radius* (cm)**	**Bilangan bebola** ***Number of balls***	**Sempadan bawah** ***Lower boundary***	**Sempadan atas** ***Upper boundary***
1.4 – 1.7	5	1.35	1.75
1.8 – 2.1	7	1.75	2.15
2.2 – 2.5	9	2.15	2.55
2.6 – 2.9	8	2.55	2.95
3.0 – 3.3	10	2.95	3.35



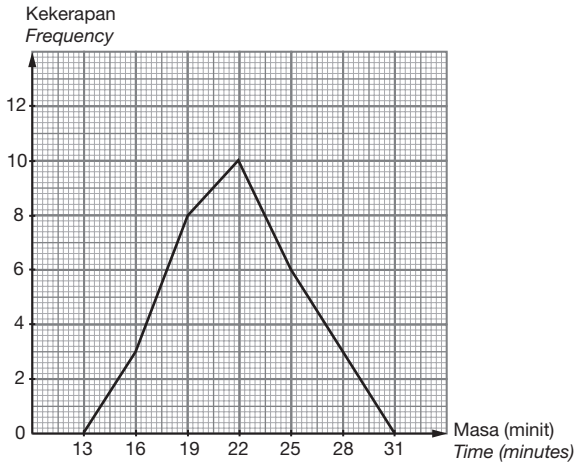
4

Markah ***Marks***	**Titik tengah** ***Midpoint***	**Kekerapan** ***Frequency***
16 – 20	18	0
21 – 25	23	5
26 – 30	28	9
31 – 35	33	14
36 – 40	38	10
41 – 45	43	4
46 – 50	48	3
51 – 55	53	0



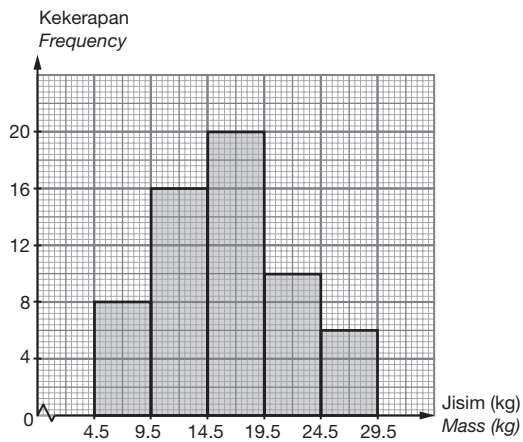
5

Masa (minit) *Time (minutes)*	Bilangan murid *Number of students*	Titik tengah *Midpoint*
12 – 14	0	13
15 – 17	3	16
18 – 20	8	19
21 – 23	10	22
24 – 26	6	25
27 – 29	3	28
30 – 32	0	31



6 Histogram *A*

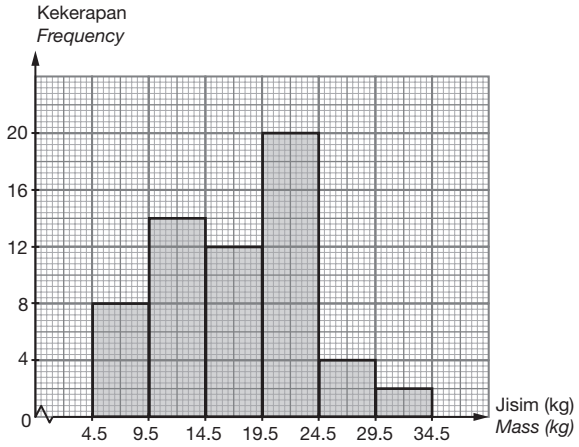
Jisim (kg) *Mass* (kg)	Kekerapan *Frequency*	Sempadan bawah *Lower boundary*	Sempadan atas *Upper boundary*
5 – 9	8	4.5	9.5
10 – 14	16	9.5	14.5
15 – 19	20	14.5	19.5
20 – 24	10	19.5	24.5
25 – 29	6	24.5	29.5



Tafsiran:
Jisim bungkusan di dalam stor *A* tertabur daripada 5 kg hingga 29 kg dengan perbezaan 24 kg.
Interpretation:
The mass of parcel in store A distribute from 5 kg *to* 29 kg *with a difference of* 24 kg.

Histogram *B*

Jisim (kg) *Mass* (kg)	Kekerapan *Frequency*	Sempadan bawah *Lower boundary*	Sempadan atas *Upper boundary*
5 – 9	8	4.5	9.5
10 – 14	14	9.5	14.5
15 – 19	12	14.5	19.5
20 – 24	20	19.5	24.5
25 – 29	4	24.5	29.5
30 – 34	2	29.5	34.5

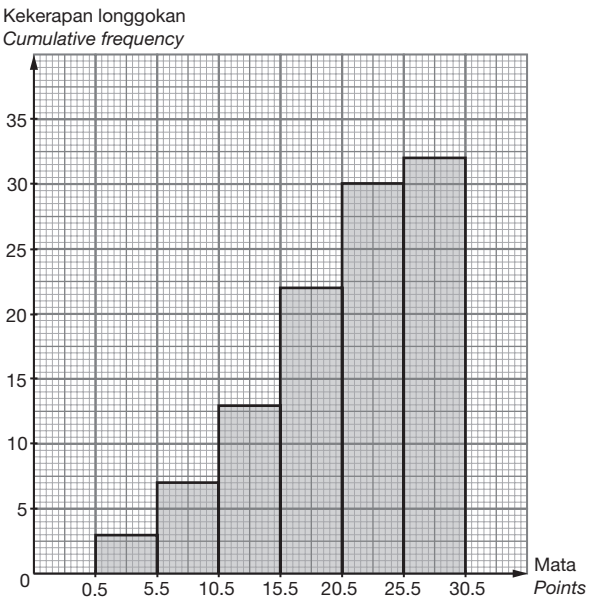


Tafsiran:
Jisim bungkusan di dalam stor *B* tertabur daripada 5 kg hingga 34 kg dengan perbezaan 29 kg.
Interpretation:
The mass of parcel in store B distribute from 5 kg *to* 34 kg *with a difference of* 29 kg.
Kesimpulan:
Bungkusan di dalam stor *B* mempunyai serakan jisim yang lebih luas berbanding dengan bungkusan di dalam stor *A*. Secara am, jisim bungkusan di dalam stor *B* melebihi jisim bungkusan di dalam stor *A*.
Conclusion:
The mass of parcels in store B is more widely spread compared to the mass of parcels in store A. Generally, the mass of parcels in store B is more than the mass of parcels in store A.

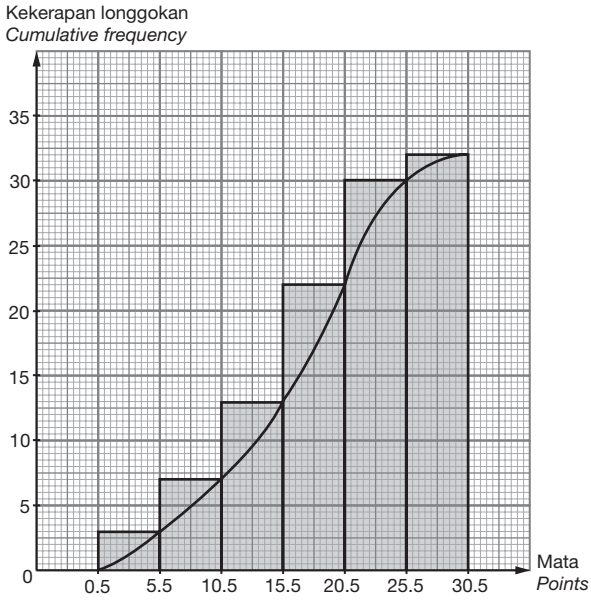
7 (a)

Mata *Points*	Kekerapan *Frequency*	Sempadan bawah *Lower boundary*	Sempadan atas *Upper boundary*	Kekerapan longgokan *Cumulative frequency*
1 – 5	3	0.5	5.5	3
6 – 10	4	5.5	10.5	7
11 – 15	6	10.5	15.5	13
16 – 20	9	15.5	20.5	22
21 – 25	8	20.5	25.5	30
26 – 30	2	25.5	30.5	32

(i)



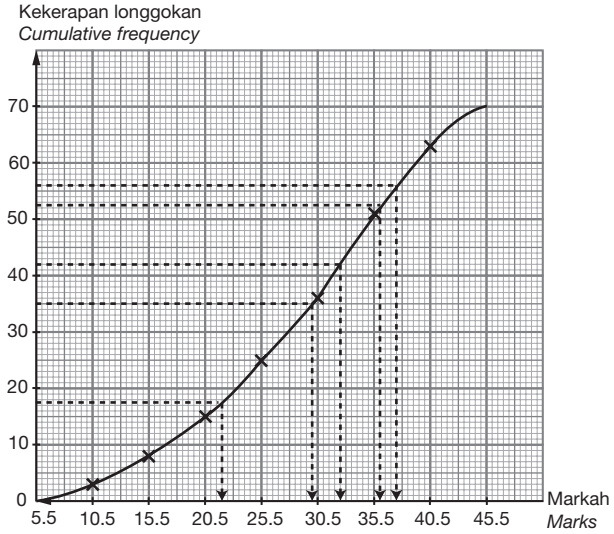
(ii)



(b) Ogif ialah graf kekerapan longgokan yang melalui semua titik (sempadan atas, kekerapan longgokan) yang bermula dengan sifar.
Ogive is a cumulative frequency graph that passes through all the points (upper boundary, cumulative frequency) starting from zero.

8

Markah *Marks*	Kekerapan *Frequency*	Sempadan atas *Upper boundary*	Kekerapan longgokan *Cumulative frequency*
1 – 5	0	5.5	0
6 – 10	3	10.5	3
11 – 15	5	15.5	8
16 – 20	7	20.5	15
21 – 25	10	25.5	25
26 – 30	11	30.5	36
31 – 35	15	35.5	51
36 – 40	12	40.5	63
41 – 45	7	45.5	70



(a) $\frac{70}{4}$ = 17.5 orang murid/*students*

Daripada ogif, kuartil pertama, K_1 = 22
From ogive, first quartile

(b) $\frac{70}{2}$ = 35 orang murid/*students*

Daripada ogif/*from ogive*, median, m = 30

(c) $\frac{3}{4} \times 70 = 52.5$ orang murid *students*

Daripada ogif, kuartil ketiga, *From ogive, third quartile* $K_3 = 36$

(d) $\frac{60}{100} \times 70 = 42$ orang murid *students*

Daripada ogif, persentil ke-60 *From ogive,* 60^{th} *percentile* = 32.5

(e) $\frac{80}{100} \times 70 = 56$ orang murid *students*

Daripada ogif, persentil ke-80 *From ogive,* 80^{th} *percentile* = 37.5

(f) $\frac{43}{70} \times 100 = 61.43\%$

(g) 70 – 60 = 10

7.2 Sukatan Serakan
Measures of Dispersion

1

Tinggi (cm) *Height* **(cm)**	**Kekerapan,** f *Frequency,* f	**Titik tengah,** x *Midpoint,* x	fx	fx^2
145 – 149	4	147	588	86 436
150 – 154	8	152	1 216	184 832
155 – 159	11	157	1 727	271 139
160 – 164	10	162	1 620	262 440
165 – 169	7	167	1 169	195 223
	$\sum f = 40$		$\sum fx = 6320$	$\sum fx^2 = 1\,000\,070$

Varians/*Variance* $= \frac{1\,000\,070}{40} - \left(\frac{6\,320}{40}\right)^2$

$= 37.75$ cm^2

Sisihan piawai/*Standard deviation* $= \sqrt{37.75} = 6.144$ cm

2 (a) Julat = Titik tengah kelas tertinggi – Titik tengah kelas terendah

Range = Highest midpoint – lowest midpoint

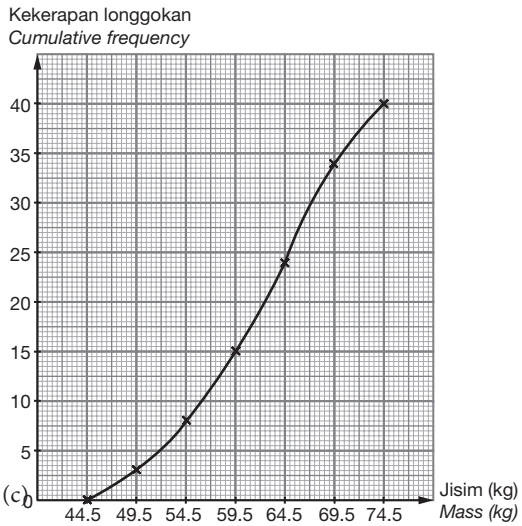
$= \frac{70+74}{2} - \frac{45+49}{2}$

= 72 – 47

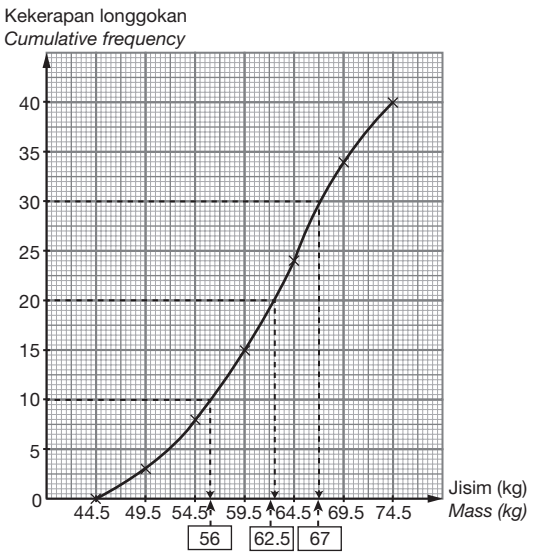
= 25 kg

(b)

Jisim (kg) *Mass* **(kg)**	**Kekerapan** (*f*) *Frequency* (*f*)	**Sempadan atas** *Upper boundary*	**Kekerapan longgokan** *Cumulative frequency*
40 – 44	0	44.5	0
45 – 49	3	49.5	3
50 – 54	5	54.5	8
55 – 59	7	59.5	15
60 – 64	9	64.5	24
65 – 69	10	69.5	34
70 – 74	6	74.5	40



(c)



$\frac{1}{4} \times 40 = 10$ orang/*persons*

Kuartil pertama, $K_1 = 56$ kg
First quartile,

$\frac{1}{2} \times 40 = 20$ orang/*persons*

Median, $m = 62.50$ kg

$\frac{3}{4} \times 40 = 30$ orang/*persons*

Kuartil ketiga, $K_3 = 67$ kg
Third quartile,

Julat antara kuartil = Kuartil ketiga – Kuartil pertama
Interquartile range = Third quartile – First quartile
$= K_3 - K_1 = 67 - 56$
$= 11$ kg

(d)

Jisim (kg) *Mass* (kg)	Kekerapan (*f*) *Frequency* (*f*)	Titik tengah (*x*) *Midpoint* (*x*)	*fx*	fx^2
45 – 49	3	47	141	6 627
50 – 54	5	52	260	13 520
55 – 59	7	57	399	22 743
60 – 64	9	62	558	34 596
65 – 69	10	67	670	44 890
70 – 74	6	72	432	31 104
	$\sum f = 40$		$\sum fx = 2\,460$	$\sum fx^2 = 153\,480$

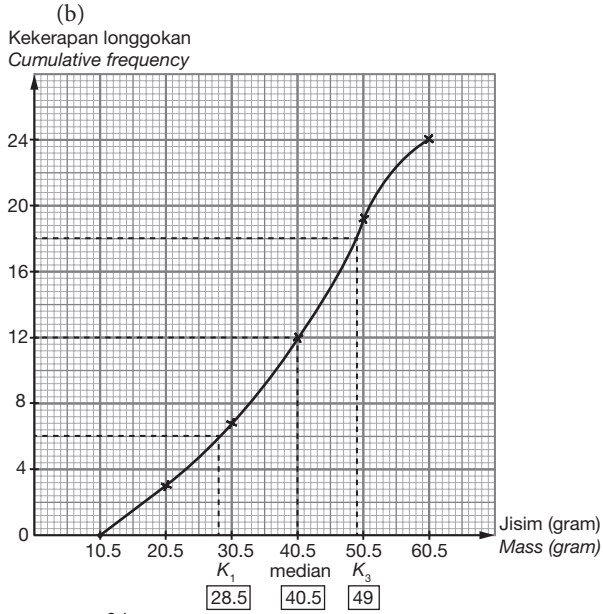
Varians/*Variance* $= \left(\frac{153\,480}{40}\right) - \left(\frac{2\,460}{40}\right)^2$
$= 54.75$ kg^2

Sisihan piawai/*Standard deviation* $= \sqrt{54.75}$
$= 7.399$ kg

3 (a)

Jisim(gram) *Mass(gram)*	Kekerapan *Frequency*	Sempadan atas *Upper boundary*	Kekerapan longgokan Cumulative frequency
1 – 10	0	10.5	0
11 – 20	3	20.5	3
21 – 30	4	30.5	7
31 – 40	5	40.5	12
41 – 50	7	50.5	19
51 – 60	5	60.5	24

(b)



$\frac{24}{4} = 6$ bungkusan/*packets*

Daripada ogif, kuartil pertama, $K_1 = 28.5$
From ogive, first quartile,

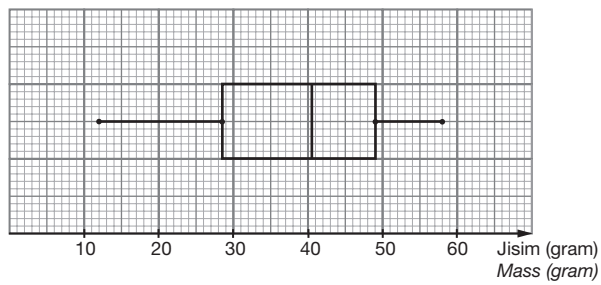
$\frac{24}{2} = 12$ bungkusan/*packets*

Daripada ogif, median, $m = 40.5$
From ogive, median,

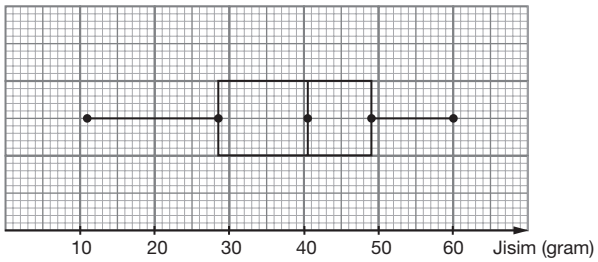
$\frac{3}{4} \times 24 = 18$ bungkusan/*packets*

Daripada ogif, kuartil ketiga, $K_3 = 49$
From ogive, third quartile,

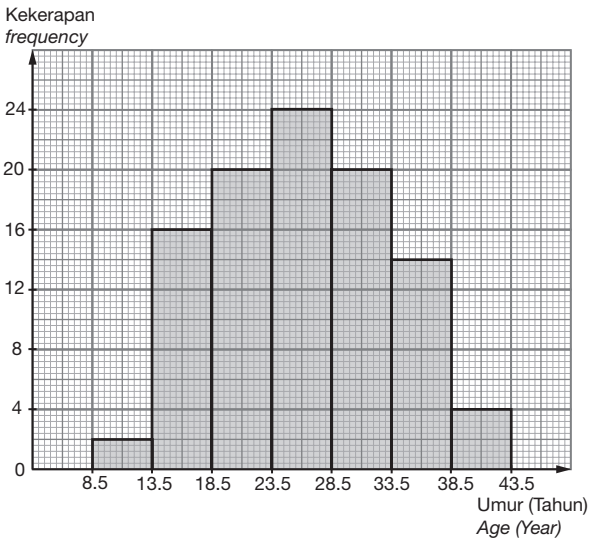
(c) Nilai terkecil/*The smallest value* = 12
Nilai terbesar/*The largest value* = 58



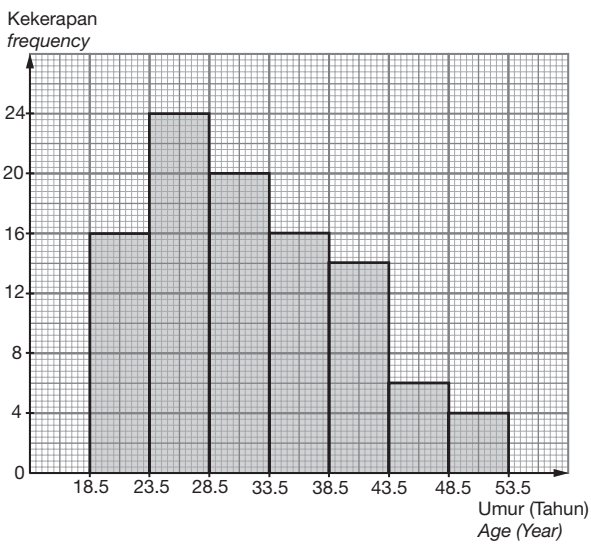
(d) Nilai terkecil (had bawah bagi selang kelas terendah) = 11
The smallest value (the lower limit for the lowest class) = 11
Nilai terbesar(had atas bagi selang kelas tertinggi) = 60
The largest value(the upper limit for the highest class) = 60



4 Histogram *A* bagi taburan umur untuk expo Pendidikan
Histogram A for distribution of age for education expo

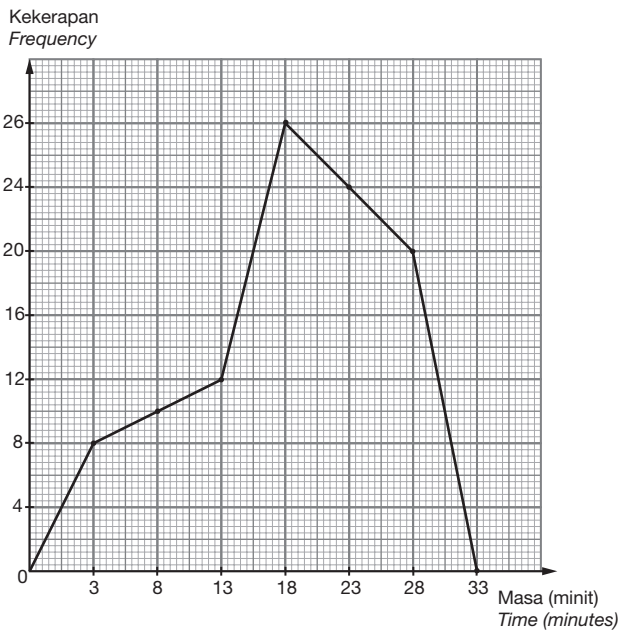


Histogram *B* bagi taburan umur untuk expo Pekerjaan
Histogram B for distribution of age for occupation expo



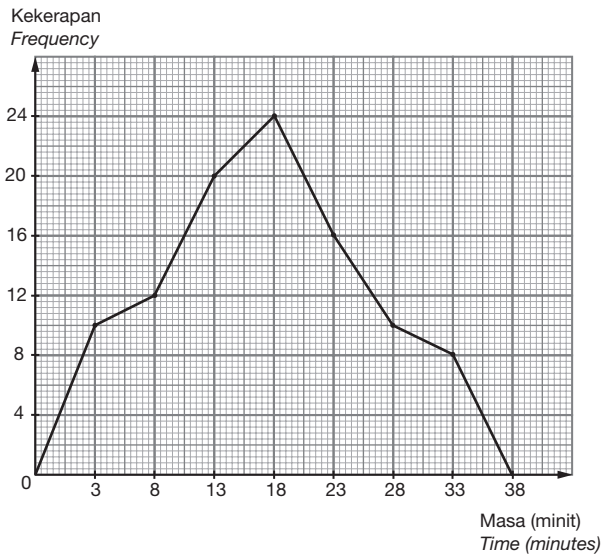
Taburan bagi set data *A* adalah hampir simetri. Taburan bagi set data *B* adalah lebih tertumpu pada bahagian umur yang lebih rendah.
Umur bagi pelawat yang melawat expo pekerjaan adalah lebih tinggi daripada umur bagi pelawat yang melawat expo pendidikan. Julat umur bagi pelawat yang melawat kedua-dua expo itu adalah sama.
Sisihan piawai bagi taburan *A* = 7.314
Sisihan piawai bagi taburan *B* = 8.264
Taburan *A* mempunyai sisihan piawai yang lebih kecil, maka data dalam taburan *A* kurang terserak berbanding dengan taburan *B*.
Distribution of data in set A is nearly symmetrical. Distribution of data in set B is more focus on the lower age group.
Age of visitors who visit the occupation expo is higher than age of visitors who visit the education expo. Range of age for visitors who visit both the expos are equal.
Standard deviation for distribution A = 7.314
Standard deviation for distribution B = 8.264
Distribution A has smaller standard deviation, therefore data in distribution A is less dispersed compared to distribution B.

5 (a)



Poligon kekerapan bagi taburan *A*
Frequency polygon for distribution A

Taburan masa perbualan telefon penduduk kampung *A* adalah berkelompok pada selang kelas (16 – 30). Julat masa perbualan telefon penduduk kampung *A* ialah 25 minit. Sisihan piawai untuk masa perbualan telefon penduduk kampung *A* ialah 7.539 minit.



Poligon kekerapan untuk taburan *B*
Frequency polygon for distribution B

Taburan masa perbualan telefon penduduk kampung *B* adalah hampir simetri. Julat masa perbualan telefon penduduk kampung *B* ialah 30 minit. Sisihan piawai untuk masa perbualan telefon penduduk kampung *B* ialah 8.427 minit.

Kedua-dua julat dan sisihan piawai untuk masa perbualan telefon penduduk kampung *B* adalah lebih daripada masa perbualan telefon penduduk kampung *A*. Maka, masa perbualan telefon penduduk kampung *B* mempunyai serakan masa yang lebih besar.

The distribution of duration of conversation for telephone calls for residence in village A are grouped around class intervals (16 – 30). *Range of duration of telephone conversation for residence in village A is* 25 *minutes. Standard deviation for duration of telephone conversation of residence of village A is* 7.539 *minutes. Distribution of duration of conversation for telephone calls for residence in village B is nearly symmetrical. Range of duration of telephone conversation for residence in village B is* 30 *minutes. Standard deviation for duration of telephone conversation of residence of village B is* 8.427 *minutes.*

Both the range and standard deviation of duration for telephone conversation of residence in village B are more than residence in village A. Therefore, duration of conversation for telephone calls for residence in village B has larger dispersion.

6 (a) Perenang/*Swimmer P*

Masa (saat) ***Time (seconds)***	**Kekerapan (perenang *P*)** ***Frequency (swimmer P)***	**Titik tengah (*x*)** ***Midpoint (x)***	***fx***	***fx*²**
28.20 – 28.29	1	28.245	28.245	797.78
28.30 – 28.39	2	28.345	56.69	1 606.88
28.40 – 28.49	1	28.445	28.445	809.12
28.50 – 28.59	2	28.545	57.09	1 629.63
28.60 – 28.69	2	28.645	57.29	1 641.07
28.70 – 28.79	1	28.745	28.745	826.28
28.80 – 28.89	1	28.845	28.845	832.03
	$\sum f = 10$		$\sum fx = 285.35$	$\sum fx^2 = 8\ 142.79$

Min/*Mean*, $\bar{x} = \frac{285.35}{10} = 28.535$ saat/*seconds*

Sisihan piawai/*Standard deviation*, $\sigma = \sqrt{\frac{8\ 142.79}{10} - \left(\frac{285.35}{10}\right)^2}$

$= \sqrt{0.032775} = 0.1810$ saat/*seconds*

Perenang/*Swimmer Q*

Masa (saat) ***Time (seconds)***	**Kekerapan (perenang Q)** ***Frequency (swimmer Q)***	**Titik tengah *(x)*** ***Midpoint (x)***	***fx***	***fx*²**
28.20 – 28.29	0	28.245	0	0
28.30 – 28.39	2	28.345	56.69	1 606.88

Masa (saat) *Time (seconds)*	Kekerapan (perenang Q) *Frequency (swimmer Q)*	Titik tengah *(x) Midpoint (x)*	*fx*	fx^2
28.40 – 28.49	3	28.445	85.335	2 427.35
28.50 – 28.59	2	28.545	57.09	1 629.63
28.60 – 28.69	1	28.645	28.645	820.54
28.70 – 28.79	1	28.745	28.745	826.28
28.80 – 28.89	1	28.845	28.845	832.03
	$\sum f = 10$		$\sum fx = 285.35$	$\sum fx^2 = 8\ 142.71$

Min/*Mean*, $\bar{x} = \frac{285.35}{10} = 28.535$ saat/*seconds*

Sisihan piawai/*Standard deviation*, $\sigma = \sqrt{\frac{8\ 142.71}{10} - \left(\frac{285.35}{10}\right)^2}$

$= \sqrt{0.0251775} = 0.1587$ saat/*seconds*

(b) Perenang *P* dan *Q* mempunyai min masa yang sama. Perenang *Q* mempunyai nilai sisihan piawai yang lebih kecil, Maka, perenang *Q* lebih konsisten daripada perenang *P* dengan nilai perbezaan sisihan piawai 0.0223 saat.
Swimmers P and Q have the same value of mean. Swimmer Q has a smaller value of standard deviation. Swimmer Q is more consistent than swimmer P with a difference in the value of standard deviation of 0.0223 *second.*

7 (a) Julat jangka hayat bagi kalkulator jenama *A* dan *B* adalah sama = 3 000 jam.
Range of life span of calculators brands A and B are the same = 3 000 *hours.*

(b)

Masa (jam) *Time (hours)*	Bilangan kalkulator (jenama *A*), *f* *Number of calculators (brand A), f*	Titik tengah (*x*) *Midpoint* (*x*)	*fx*
1 – 500	10	250.5	2 505
501 – 1 000	12	750.5	9 006
1 001 – 1 500	14	1 250.5	17 507
1 501 – 2 000	18	1 750.5	31 509
2 001 – 2 500	36	2 250.5	81 018
2 501 – 3 000	50	2 750.5	137 525
3 001 – 3 500	60	3 250.5	195 030
	$\sum f = 200$		$\sum fx = 474\ 100$

Min jangka hayat bagi kalkulator jenama A/ *Mean life span of calculator brand A*

$= \frac{474\ 100}{200}$

= 2 370.5 jam/*hours*

Masa (jam) *Time (hours)*	Bilangan kalkulator (jenama *B*), *f* *Number of calculators (brand B), f*	Titik tengah (*x*) *Midpoint* (*x*)	*fx*
1 – 500	5	250.5	1 252.5
501 – 1 000	8	750.5	6 004
1 001 – 1 500	30	1 250.5	37 515

Masa (jam) ***Time (hours)***	**Bilangan kalkulator (jenama *B*),** ***f*** ***Number of calculators (brand B), f***	**Titik tengah (*x*)** ***Midpoint* (*x*)**	***fx***
1 501 – 2 000	60	1 750.5	105 030
2 001 – 2 500	70	2 250.5	157 535
2 501 – 3 000	20	2 750.5	55 010
3 001 – 3 500	7	3 250.5	22 753.5
	$\sum f = 200$		$\sum fx = 385\ 100$

Min jangka hayat bagi kalkulator jenama *B*/*Mean life span of calculator brand B*

$= \frac{385\,100}{200}$

= 1925.5 jam/*hours*

(c) Kelas mod jangka hayat bagi kalkulator jenama *A*= 3 001 – 3 500 jam
Modal class of life span of calculator brand A = 3 001 – 3 500 *hours*
Kelas mod jangka hayat bagi kalkulator jenama *B* = 2 001 – 2 500 jam
Modal class of life span of calculator brand B = 2 001 – 2 500 *hours*

(d)

Masa (jam) ***Time (hours)***	**Bilangan kalkulator (jenama *A*),** ***f*** ***Number of calculators (brand A), f***	**Titik tengah (*x*)** ***Midpoint* (*x*)**	x^2	fx^2
1 – 500	10	250.5	62 750.25	627 502.5
501 – 1 000	12	750.5	563 250.25	6 759 003
1 001 – 1 500	14	1 250.5	1 563 750.25	21 892 503.5
1 501 – 2 000	18	1 750.5	3 064 250.25	55 156 504.5
2 001 – 2 500	36	2 250.5	5 064 750.25	182 331 009
2 501 – 3 000	50	2 750.5	7 565 250.25	378 262 512.5
3 001 – 3 500	60	3 250.5	10 565 750.25	633 945 015
	$\sum f = 200$			$\sum fx^2 = 1\ 278\ 974\ 050$

Varians/*Variance* $= \frac{1\ 278\ 974\ 050}{200} - 2370.5^2$

= 775 600

Sisihan piawai/*Standard deviation* $= \sqrt{775\ 600}$

= 880.68 cm

Sisihan piawai jangka hayat bagi kalkulator jenama *A* = 880.68 jam
Standard deviation of life span of calculator brand A = 880.68 *hours*

Masa (jam) ***Time (hours)***	**Bilangan kalkulator (jenama *B*),** ***f*** ***Number of calculators (brand B), f***	**Titik tengah (*x*)** ***Midpoint* (*x*)**	x^2	fx^2
1 – 500	5	250.5	62 750.25	313 751.25
501 – 1 000	8	750.5	563 250.25	4 506 002
1 001 – 1 500	30	1 250.5	1 563 750.25	46 912 507.5
1 501 – 2 000	60	1 750.5	3 064 250.25	183 855 015
2 001 – 2 500	70	2 250.5	5 064 750.25	354 532 517.5

Masa (jam) *Time (hours)*	Bilangan kalkulator (jenama *B*), *f* *Number of calculators (brand B), f*	Titik tengah (*x*) *Midpoint* (*x*)	x^2	fx^2
2 501 – 3 000	20	2 750.5	7 565 250.25	151 305 005
3 001 – 3 500	7	3 250.5	10 565 750.25	73 960 251.75
	$\sum f = 200$			$\sum fx^2 = 815\,385\,050$

Varians/*Variance* $= \frac{815\,385\,050}{200} - 1\,925.5^2$

$= 369\,375$

Sisihan piawai/*Standard deviation* $= \sqrt{369\,375}$

$= 607.76$ cm

Sisihan piawai jangka hayat bagi kalkulator jenama *B* = 607.76 jam

Standard deviation of life span of calculator brand B = 607.76 hours

Kalkulator jenama *A* dan *B* mempunyai julat jangka hayat yang sama.

Min, kelas mod dan sisihan piawai jangka hayat untuk kalkulator jenama *A* adalah jauh lebih tinggi daripada kalkulator jenama *B*. Walaupun jangka hayat kalkulator jenama *A* mempunyai serakan yang lebih besar daripada jangka hayat kalkulator jenama *B*, ia masih didapati lebih baik dengan min jangka hayat yang jauh lebih tinggi.

Calculators brand A and B have the same range of life span.

Mean, modal class and standard deviation of life span of calculator brand A is far higher than calculator brand B. Although life span of calculator brand A has larger dispersion than life span of calculator brand B, it is still better with a much higher mean life span.

Praktis Sumatif

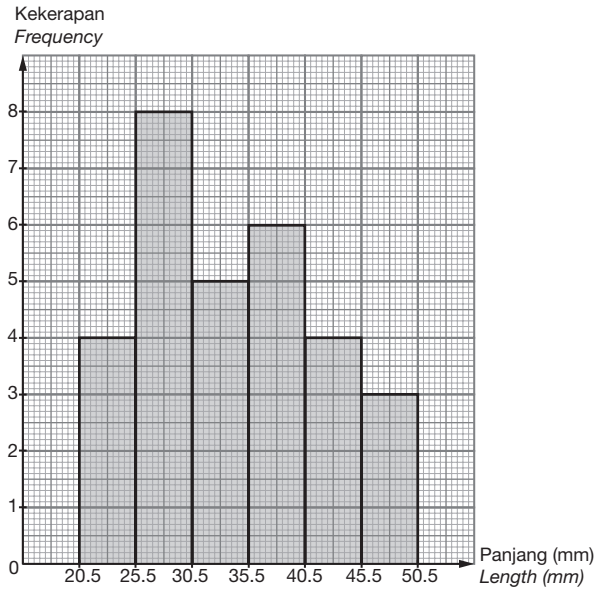
Kertas 1

1 C **2** A **3** A **4** D **5** C
6 B **7** B

Kertas 2

Bahagian/*Section* B

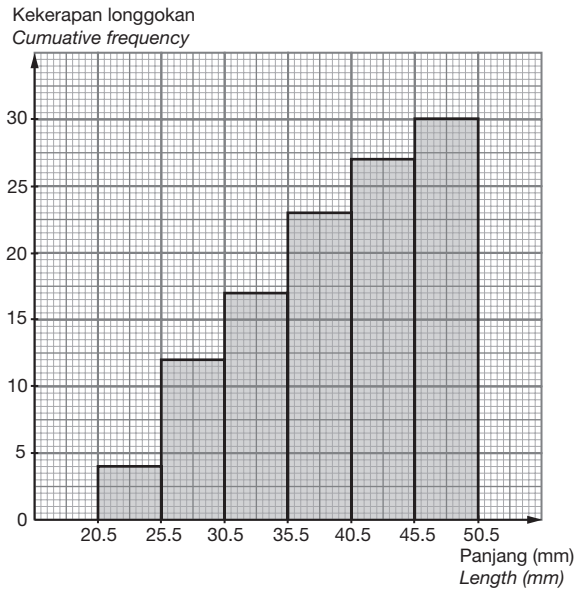
1 (a)



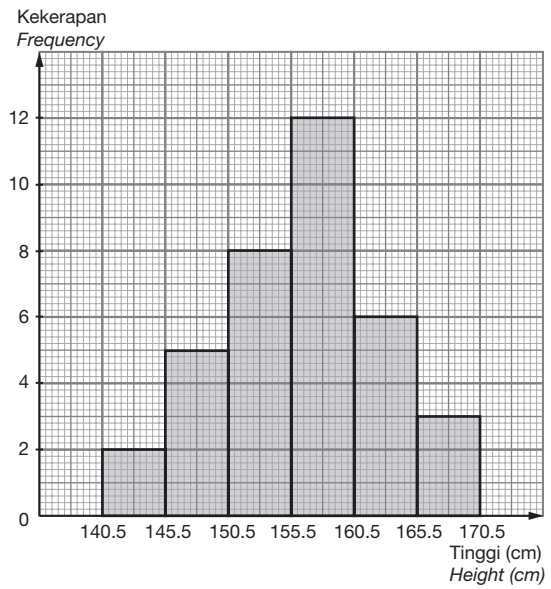
(b)

Panjang (mm) *Length* (mm)	*Bilangan paku Number of nails*	*Kekerapan longgokan Cumulative frequency*
21 – 25	4	4
26 – 30	8	12
31 – 35	5	17
36 – 40	6	23
41 – 45	4	27
46 – 50	3	30

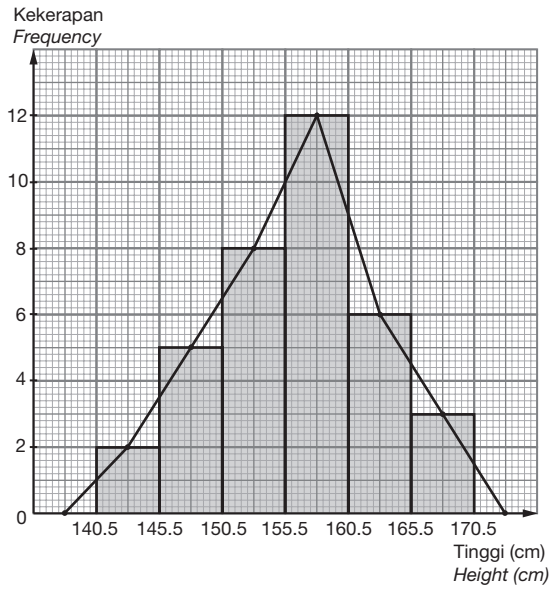
(c)



2 (a)



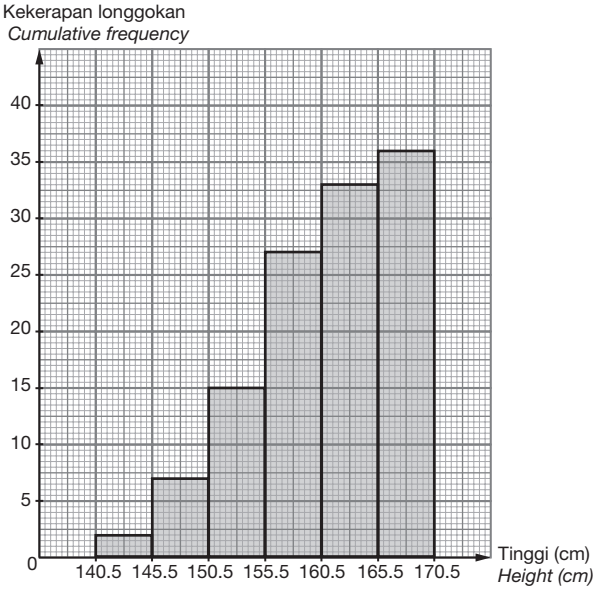
(b)



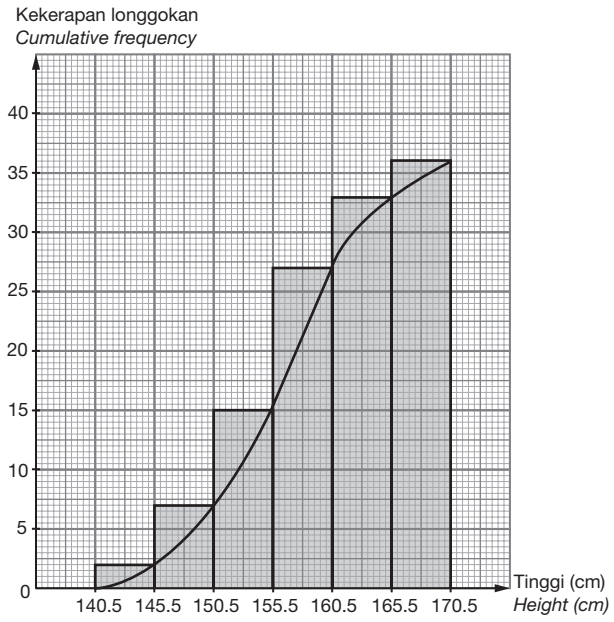
(c)

Tinggi (cm) ***Height* (cm)**	***Bilangan murid Number of students***	***Kekerapan longgokan Cumulative frequency***
141 – 145	2	2
146 – 150	5	7
151 – 155	8	15
156 – 160	12	27
161 – 165	6	33
166 – 170	3	36

(d)



(e)



3 (a) 3 + 7 + 12 + 9 + 5 + 2
= 38 orang/*persons*

(b) 10 – 12 minit/*minutes*

(c) 9 + 5 + 2 = 16 orang/*persons*

(d)

Masa menunggu (minit) ***Waiting time (minutes)***	4 – 6	7 – 9	10 – 12	13 – 15	16 – 18	19 – 21
Bilangan pelanggan ***Number of customers***	3	7	12	9	5	2

(e) 12 + 9 + 5 = 26 orang/*persons*

(f) $\frac{10}{38} \times 360° = 94.74°$

4 (a)

Jadual kekerapan kutipan derma kelas *A*
Frequency table for collection of donations of class A

Kutipan derma (RM) ***Collection of donations*** **(RM)**	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70
Kekerapan ***Frequency***	2	3	5	10	12	8

Jadual kekerapan kutipan derma kelas *B*
Frequency table for collection of donations of class B

Kutipan derma (RM) ***Collection of donations*** **(RM)**	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60
Kekerapan ***Frequency***	11	12	8	5	4

(b) Kelas *A* mempunyai serakan yang lebih besar iaitu dari RM11 hingga RM70 manakala kelas *B* dari RM11 hingga RM 60.
Class A has a larger dispersion that is from RM11 *to* RM70 *whereas class B from* RM11 *to* RM60.

(c) Kelas/*Class A*
12 + 8 = 20
Kelas/*Class B* = 4

(d) Kelas/*Class A*
$\frac{5}{40} \times 100\% = 12.5\%$
Kelas/*Class B*
$\frac{23}{40} \times 100\% = 57.5\%$

(e) Kelas *A* terpesong ke kiri dan kelas *B* terpesong ke kanan.
Class A is skewed to the left and class B is skewed to the right.

5 (a) $h + 30 + 25 + 16 + 6 = 100$
$h = 23$
$k + 26 + 20 + 14 + 12 = 100$
$k = 28$

(b) Syarikat *Y* kerana masa bekerja seminggu adalah dari 31 jam hingga 55 jam manakala masa bekerja seminggu untuk syarikat *X* ialah dari 41 jam hingga 65 jam.
Company Y because its weekly working hours is from 31 *hours to* 55 *hours while weekly working hours for company X is from* 41 *hours to* 65 *hours.*

(c) Syarikat/*Company X*
$\frac{25 + 16 + 6}{100} \times 100\% = 47\%$
Syarikat/Company *Y*
$\frac{12}{100} \times 100\% = 12\%$

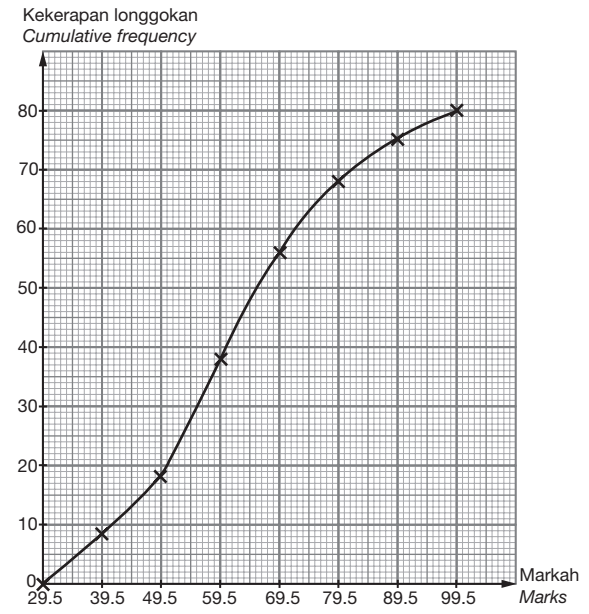
(d) Tiada perbezaan sebab kedua-dua syarikat mempunyai perbezaan masa terpanjang dan masa terpendek yang sama iaitu 24 jam.
No difference because both the companies have the same difference between the longest and shortest hours that is 24 *hours.*

Bahagian/*Section* C

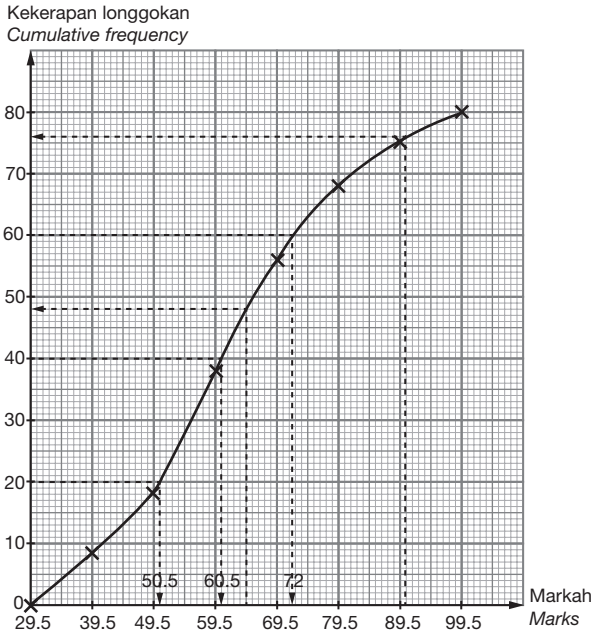
6 (a)

Markah *Marks*	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79	80 – 89	90 – 99
Kekerapan *Frequency*	9	9	20	18	12	7	5
Sempadan atas *Upper boundary*	39.5	49.5	59.5	69.5	79.5	89.5	99.5
Kekerapan longgokan *Cumulative frequency*	9	18	38	56	68	75	80

(b)



(c)



(i) nilai data ke – $\left(\frac{1}{4} \times 80\right)$

= nilai data ke-20

the $\left(\frac{1}{4} \times 80\right)$ *th value*

= *the* 20^{th} *value*

= 50.5 markah/*marks*

(ii) nilai data ke – $\left(\frac{1}{2} \times 80\right)$

= nilai data ke-40

the $\left(\frac{1}{2} \times 80\right)$ *th value*

= *the* 40^{th} *value*

= 60.5 markah/*marks*

(iii) nilai data ke – $\left(\frac{3}{4} \times 80\right)$

= nilai data ke-60

the $\left(\frac{3}{4} \times 80\right)$ *th value*

= *the* 60^{th} *value*

= 72 markah/*marks*

(d) $\frac{76}{80} \times 100 = 95$

$n = 95$

(e) $80 - 76 = 4$

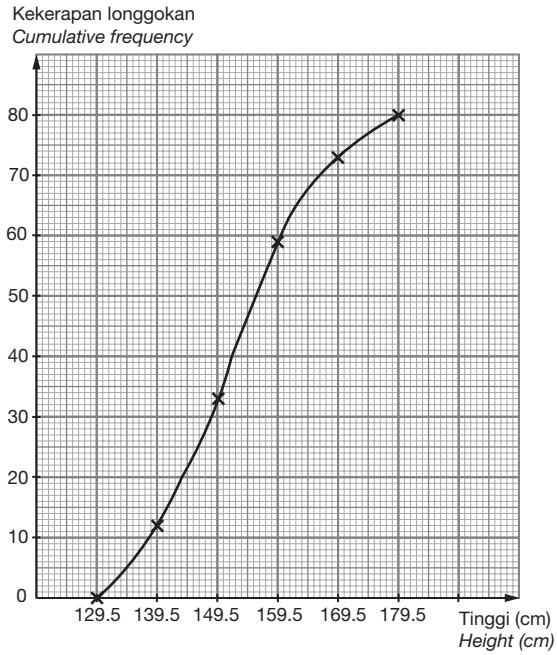
(f) $80 - 48 = 32$

$\frac{32}{80} \times 100\% = 40\%$

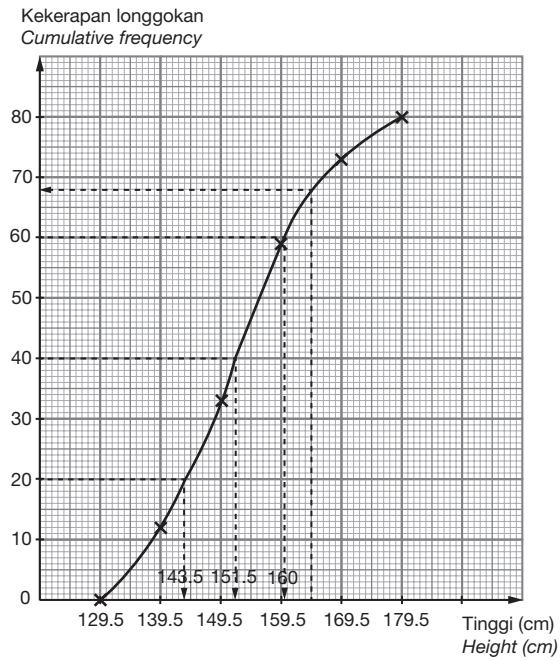
7 (a)

Tinggi (cm) *Height* **(cm)**	120 – 129	130 – 139	140 – 149	150 – 159	160 – 169	170 – 179
Bilangan pelajar *Number of students*	0	12	21	26	14	7
Kekerapan longgokan *Cumulative frequency*	0	12	33	59	73	80
Sempadan atas *Upper boundary*	129.5	139.5	149.5	159.5	169.5	179.5

(b)



(c)



(i) nilai data ke – $\left(\frac{1}{4} \times 80\right)$

= nilai data ke-20

the $\left(\frac{1}{4} \times 80\right)$ *th value*

= *the* 20^{th} *value*

=143.5 cm

(ii) nilai data ke – $\left(\frac{1}{2} \times 80\right)$

= nilai data ke-40

the $\left(\frac{1}{2} \times 80\right)$ *th value*

= *the* 40^{th} *value*

=151.5 cm

(iii) nilai data ke – $\left(\frac{3}{4} \times 80\right)$

= nilai data ke-60

the $\left(\frac{3}{4} \times 80\right)$ *th value*

= *the* 60^{th} *value*

= 160 cm

(iv) Julat antara kuartil = 160 cm – 143.5 cm = 16.5 cm

Beza antara ketinggian yang paling tinggi dengan ketinggian yang paling rendah yang berada pada 50% bahagian tengah taburan ialah 16.5 cm.

Interquartile range = 160 cm – 143.5 cm = 16.5 cm

Difference between the greatest height and the shortest height that lies in the middle 50% *of the distribution is* 16.5 cm.

(v) 80 – 68 = 12 orang/*persons*

(d)