Jawapan

Bab 12

1. (a) Mod/ *Mode* = 400 g

Susunan data mengikut tertib menaik:
Data arrangement in ascending order:
170 g, 260 g, 400 g, 400 g, 420 g, 430 g

Median/ *Median* $= \frac{400 + 400}{2} = 400$ g

Min/ *Mean*

$= \frac{170 + 420 + 430 + 400 + 400 + 260}{6}$

= 346.67 g

(b) Mod/ *Mode* = RM9

Susunan data mengikut tertib menaik:
Data arrangement in ascending order:
RM9, RM9, RM9, RM10, RM10, RM12, RM17, RM30, RM40

Median/ *Median* = RM10

Min/ *Mean*

$= \frac{12 + 9 + 17 + 9 + 30 + 9 + 40 + 10 + 10}{9}$

= RM16.22

(c) Mod/ *Mode* = Tiada / *None*

Susunan data mengikut tertib menaik:
Data arrangement in ascending order:
1.35 m, 1.50 m, 1.60 m, 1.65 m, 1.70 m, 1.75 m, 1.80 m

Median/ *Median* = 1.65 m

Min/ *Mean*

$= \frac{1.35 + 1.70 + 1.75 + 1.80 + 1.50 + 1.65 + 1.60}{7}$

= 1.62 m

2. (a) Jumlah kekerapan / *Total frequency*
= 3 + 4 + 5 + 2 = 14
Mod/ *Mode* = Saiz 6 / *Size* 6
Median/ *Median*

$= \frac{1}{2}\left[\text{data ke-}\left(\frac{14}{2}\right) + \text{data ke-}\left(\frac{14}{2} + 1\right)\right]$

$\frac{1}{2}\left[\left(\frac{14}{2}\right)^{\text{th}} \textit{ data} + \left(\frac{14}{2} + 1\right)^{\text{th}} \textit{ data}\right]$

$= \frac{1}{2}$[data ke-(7) + data ke-(8)]

$\frac{1}{2}[(7)^{\text{th}} \textit{ data} + (8)^{\text{th}} \textit{ data}]$

$= \frac{1}{2}(5 + 6)$

= 5.5

Min/ *Mean*

$= \frac{(4 \times 3) + (5 \times 4) + (6 \times 5) + (7 \times 2)}{14}$

= 5.43

(b) Jumlah kekerapan/ *Total frequency*
= 4 + 5 + 7 + 6 + 7 = 29
Mod / *Mode* = 70 markah / *70 marks*
Median/ *Median*

$= \text{data ke-}\left(\frac{29 + 1}{2}\right)$

$\left(\frac{29 + 1}{2}\right)^{\text{th}} \textit{ data}$

= data ke-15 / 15^{th} *data*

= 52 markah / *52 marks*

Min/ *Mean*

$$= \frac{\begin{array}{c}30 + (32 \times 2) + 38 + (45 \times 3) + 48 + 49 + \\ (50 \times 3) + (52 \times 4) + (66 \times 2) + 67 + \\ (68 \times 2) + \\ 69 + (70 \times 5) + (71 \times 2)\end{array}}{29}$$

= 55.79

3. (a) Mod / *Mode* = 5.4 kg
Susunan data mengikut tertib menaik
Data arrangement in ascending order
5.2, 5.3, 5.4, 5.4, 5.4, 5.4, 53
Median = 5.4 kg

$$\text{Min / } \textit{Mean} = \frac{5.2 + 5.4 + 5.4 + 5.3 + 53 + 5.4 + 5.4}{7}$$

= 12.16 kg

(b) Mod / *Mode* = 5.4 kg
Susunan data mengikut tertib menaik
Data arrangement in ascending order
5.2, 5.3, 5.3, 5.4, 5.4, 5.4, 5.4

Median = 5.4 kg

$$\text{Min / } \textit{Mean} = \frac{5.2 + 5.4 + 5.4 + 5.3 + 5.3 + 5.4 + 5.4}{7}$$

= 5.34 kg

Nilai 53 kg ialah nilai ekstrem. Nilai min berubah daripada 12.16 kg kepada 5.34 kg manakala, nilai mod dan median tidak berubah.
53 kg *is an extreme value . The mean value changes from* 12.16 kg *to* 5.34 kg *whereas the value of mode and median remain unchanged.*

4. (a) Mod / *Mode* = RM2.50

Median = RM2.50

$$\text{Min / } \textit{Mean} = \frac{2.00 + 2.50 + 2.50 + 2.50 + 3.00 + 3.00}{6}$$
$$= \text{RM}2.58$$

(b) Senarai harga baharu / *New price list*
RM3.50, RM4.00, RM4.00, RM4.00, RM4.50, RM4.50

Mod / *Mode* = RM4.00

Median = RM4.00

$$\text{Min / } \textit{Mean} = \frac{3.50 + 4.00 + 4.00 + 4.00 + 4.50 + 4.50}{6}$$
$$= \text{RM}4.08$$

(c) Harga setiap jenis makanan berubah secara seragam. Nilai mod, median dan min juga berubah secara seragam, iaitu bertambah sebanyak RM1.50.
The price of each type of food changes uniformly. The values of mode, median and mean also changes uniformly, which increased by RM1.50.

5. (a)

Kelas *Class*	**Gundalan** *Tally*	**Kekerapan** *Frequency*
21 – 30	𝍸 /	6
31 – 40	𝍸	5
41 – 50	𝍸 𝍸	10
51 – 60	////	4
61 – 70	𝍸	5

(b) (i) Selang kelas 31 – 40 dan 61 – 70 dengan kekerapannya ialah 5.
Class intervals of 31 – 40 *and* 61 – 70 *with its frequency is* 5.

(ii) Kekerapan tertinggi ialah 10 dengan selang kelas 41 – 50. Ini menunjukkan kebanyakan murid dalam ujian itu memperoleh markah antara 41 hingga 50.
The highest frequency is 10 *with the class interval of* 41 – 50. *This shows that most of the students obtained marks between* 41 *to* 50.

6. (a)

Suhu (°C) *Temperature* (°C)	**Gundalan** *Tally*	**Kekerapan** *Frequency*
21 – 25	𝍸 |||	8
26 – 30	𝍸 ||	7
31 – 35	𝍸 ||||	9
36 – 40	||||	4

(b) 31 – 35

7. (a) RM2 000 – RM2 999

(b) 2.5 km – 2.9 km

8. (a)

Masa (minit) *Time* (*minutes*)	**Titik tengah** *Midpoint*
4.5 – 4.9	4.7
5.0 – 5.4	5.2
5.5 – 5.9	5.7
6.0 – 6.4	6.2

(b)

Upah (RM) *Wages* (RM)	**Titik tengah** *Midpoint*
100 – 199	149.5
200 – 299	249.5
300 – 399	349.5
400 – 499	449.5

9. (a)

Jisim (kg) *Weight* (kg)	**Titik tengah, *x*** *Midpoint, x*	**Kekerapan, *f*** *Frequency, f*	***f* × *x***
21 – 30	$\frac{21 + 30}{2} = 25.5$	6	$6 \times 25.5 = 153$
31 – 40	$\frac{31 + 40}{2} = 35.5$	5	$5 \times 35.5 = 177.5$
41 – 50	$\frac{41 + 50}{2} = 45.5$	10	$10 \times 45.5 = 455$
51 – 60	$\frac{51 + 60}{2} = 55.5$	5	$5 \times 55.5 = 277.5$
61 – 70	$\frac{61 + 70}{2} = 65.5$	4	$4 \times 65.5 = 262$
		$\sum f = 30$	$\sum fx = 1\,325$

Min/ *Mean*
$= \frac{\sum fx}{\sum f}$
$= \frac{1\,325}{30}$
$= 44.17$

10. (a) Mod bagi menunjukkan hari yang paling banyak menerima surat.
Mode to show the day that received the highest number of letters.

(b) Median kerana terdapat nilai ekstrem dalam set data iaitu 17.
Median because there is an extreme value in the set of data which is 17.

(c) Mod kerana ini ialah data kategori dan untuk menunjukkan item kegemaran.
Mode because this is a categorical data and to show favourite item.

(d) Min kerana tiada nilai ekstrem dalam set data.
Mean because there is no extreme value in the set of data.

11. (a) (i) Min / *Mean* $= \frac{50 + 50 + 25 + 60 + 20}{5}$
$= 41$

(ii) Tingkatan 4 / *Form* 4

(iii) Kedudukan median / *Position of median*
$= \frac{n + 1}{2} = \frac{205 + 1}{2} = 103$
Median = Tingkatan 3 / *Form* 3

(b) (i) 4 markah / *marks*

(ii)

Markah *Marks*	**Kekerapan** *Frequency*
5	8
4	16
3	5
2	4
1	7

Min / *Mean*
$= \frac{8 \times 5 + 16 \times 4 + 5 \times 3 + 4 \times 2 + 7 \times 1}{40}$
$= 3.35$

(iii) Median = di antara nilai ke-20 dan ke-21
between 20^{th} *and* 21^{th} *value*
= 4 markah / *marks*

12. (a) (i) Kilang / *Factory A*:
Min / *Mean*
$= \frac{80 + 75 + 80 + 80 + 80 + 81 + 84}{7}$
$= 80$ kg

Kilang / *Factory B*:
Min / *Mean*
$= \frac{82 + 85 + 70 + 80 + 81 + 78 + 84}{7}$
$= 80$ kg

(ii) Kilang / *Factory A*:
Julat / *Range* = 84 – 75 = 9 kg

Kilang / *Factory B*:
Julat / *Range* = 85 – 70 = 15 kg

(iii) Kilang *A*. Walaupun kedua-dua kilang itu mempunyai min jisim tepung gandum yang sama, tetapi kilang *A* membekalkan jisim tepung gandum yang lebih konsisten berbanding dengan kilang *B*.
Factory A. Although both factories have the same mean mass of wheat flour, but factory A provides a more consistent mass of wheat flour compared to factory B.

(b) (i) Bagi gerai *P*, sukatan kecenderungan memusat yang sesuai ialah median kerana terdapat nilai ekstrem, iaitu 45 dalam data tersebut.
For stall P, the appropriate measure of central tendency is median because there is an extreme value, which is 45 *in the data.*

45, 70, <u>80</u>, 85, 87

Median/ *Median* = 80

Bagi gerai *Q*, sukatan kecenderungan memusat yang sesuai ialah min kerana taburan markah adalah sekata.
For stall Q, the appropriate measure of central tendency is mean because the distribution of the marks is uniform.

Min/ *Mean* $= \frac{85 + 80 + 79 + 73 + 78}{5}$
$= \frac{395}{5} = 79$

(ii) Julat gerai *P* / *Range of stall P* = 87 – 45
= 42

Julat gerai *Q* / *Range of stall Q* = 85 – 73
= 12

Min gerai *P* / *Mean of stall P* $= \frac{85 + 80 + 70 + 87 + 45}{5}$
$= \frac{367}{5}$
$= 73.4$

Gerai *Q* kerana secara keseluruhan, markah bagi gerai *Q* adalah lebih tinggi (min *Q* > min *P*) dan lebih konsisten (julat *Q* < julat *P*) berbanding gerai *P*.
Stall Q because as overall, the mark for stall Q is higher (mean of Q > mean of P) and more consistent (range of Q < range of P) than stall P.

Praktis Masteri 12

BAHAGIAN A

1. Mod / *Mode* = 70
Susunan data mengikut tertib menaik
Data arrangement in ascending order
70, 70, 70, 71, 71, 72
Median / *Median* $= \frac{70 + 71}{2} = 70.5$
Jawapan / *Answer*: **A**

2. Min / *Mean* $= \dfrac{50 + 55 + 54 + x + 1 + x}{5}$

$54.4 = \dfrac{160 + 2x}{5}$

$160 + 2x = 272$

$2x = 112$

$x = 56$

Jawapan / *Answer*: **C**

3. Bilangan murid yang memperuntukkan 1 hingga 5 jam seminggu untuk mengulang kaji
Number of students who allocate 1 to 5 hours a week to study
= 14
Bilangan murid yang memperuntukkan lebih daripada 10 jam seminggu untuk mengulang kaji
Number of students who allocate more than 10 hours a week to study
= 1
Beza bilangan murid
Difference in the number of students
= 14 – 1
= 13

Jawapan / *Answer*: **D**

4. Jawapan / *Answer*: **A**

BAHAGIAN B

5.

4, 5, 6, 7, 8, 9	Median *Median*	6.5
	Min *Mean*	6.5
itik, ayam, kucing, ayam, kambing, itik, ayam *duck, chicken, cat, chicken, goat, duck, chicken*	Mod *Mode*	Ayam *Chicken*
K, L, P, R, S, W	Mod *Mode*	Tiada mod *No mode*

6.

Data *Data*	Gundalan *Tally*	Kekerapan *Frequency*
40 – 49	||	2
50 – 59	𝍸 ||||	9
60 – 69	||||	4
70 – 79	𝍸	5

BAHAGIAN C

7. (a) (i) Mod / *Mode* = 5

Median = Data ke – $\left(\dfrac{15+1}{2}\right)$

$\left(\dfrac{15+1}{2}\right)^{\text{th}}$ *data*

= Data ke – 8 / 8^{th} *data*

= 6

Min / *Mean* $= \dfrac{(1 \times 1) + (3 \times 1) + (5 \times 5) + (6 \times 4) + (7 \times 4)}{15}$

= 5.4

(ii) Jumlah soalan yang dijawab dalam tiga hari
Total number of questions answered in three days
= 15 × 3 = 45
Mod / *Mode* = 5 × 3 = 15
Median = 6 × 3 = 18
Min / *Mean* = 5.4 × 3 = 16.2

(b) (i) Median / *Median*

$= \dfrac{1}{2}\left[\text{data ke-}\left(\dfrac{10}{2}\right) + \text{data ke-}\left(\dfrac{10}{2}+1\right)\right]$

$\dfrac{1}{2}\left[\left(\dfrac{10}{2}\right)^{th}\ data + \left(\dfrac{10}{2}+1\right)^{th}\ data\right]$

$= \dfrac{1}{2}(\text{data ke-5} + \text{data ke-6})$

$\dfrac{1}{2}(5^{\text{th}}\ data + 6^{\text{th}}\ data)$

$= \dfrac{1}{2}(15 + 15)$

= 15

(ii) Mod. Kerana terdapat nilai ekstrem dalam set data.
Mode. Because there is an extreme value in the data set.

Fokus KBAT

Nilai data yang tertinggal, x
The value of the missing data, x

$\dfrac{(0 \times 5) + (1 \times 7) + (2 \times x) + (3 \times 2)}{5 + 7 + x + 2} = 1$

$\dfrac{0 + 7 + 2x + 6}{14 + x} = 1$

$13 + 2x = 14 + x$

$x = 1$

Mod / *Mode* = 1

Median = data ke – $\left(\dfrac{15+1}{2}\right)$ / $\left(\dfrac{15+1}{2}\right)^{\text{th}}$ *data*

= data ke – 8
= 1

Maka, nilai min, mod dan median adalah sama.
Thus, the value of mean, mode and median is the same.