Module Mathematics SPM: Statistic

1. The data in Diagram 1 shows the marks obtained by 36 students in Mathematics test..

66	60	25	46	57	55
23	39	47	86	50	45
41	33	48	54	52	31
53	35	55	41	34	74
65	51	33	50	40	58
59	42	43	48	53	76

Diagram 1

a) Using the data in Diagram 1, and a **class interval of10 marks**, complete the following table.

Marks	Midpoint	Frequency
20 – 29		
30 – 39		

b) Based on the table in (a),
   i. State the ***modal class***
   ii. Calculate the ***mean*** mark for the test.

c) For this part of the question, use the graph paper.
By using a scale of **2 cm to 10 marks on the x-axis** and **2 cm to 2 students on the y-axis**, draw a ***histogram*** for the data.

2. The masses, in kg, of 32 parcels are given below.

27	32	18	20	13	25	29	25
26	29	14	26	22	22	27	24
16	26	25	29	33	10	21	24
20	24	19	16	23	24	28	21

Diagram 2

a) Based on the data in Diagram 2 and by using the class intervals of 3, complete the table below.

Class Interval	Frequency	Midpoint
10 – 12		
13 - 15		

b) Based on the table in (a), calculate the estimated mean mass parcels.

c) For this part of the question, use the graph paper.
By using a scale of 2 cm to 3 kg on the x-axis and 2 cm to 1 parcel on the y-axis, draw the ***histogram*** for the data.

d) State one information obtained based on the histogram in (c).

3. The data in Diagram 3 shows the scores by 25 participants in a game.

70	43	70	65	82
78	62	37	55	53
68	53	82	64	35
40	67	85	80	88
53	75	49	66	60

Diagram 3

a) Using data in Diagram 3 and a class interval of 10 scores, complete the table below.

Scores	Midpoint	Frequency
31 – 40		
41 – 50		

b) Based on your table in (a),
   i. state the modal class,
   ii. calculate the mean score by the participants.

c) *For this part of the question, use the graph paper.*
   By using a scale of 2 cm to 10 scores on the horizontal axis and 2 cm to 1 participant on the vertical axis, draw a ***histogram*** for the data.

4. The data in Diagram 4 show the ages of 30 patients who received treatment in a clinic.

21	17	28	27	15	13
18	12	30	19	9	17
25	24	20	28	8	22
18	26	26	23	35	17
14	24	15	20	16	25

Diagram 4

a) Based in the data in Diagram 4 and by using a class interval of 5, complete the table below.

Age (years)	Midpoint	Frequency
6 – 10		
11 – 15		

b) Based on Table 2 in (a), calculate the estimated mean of the donation collected by a pupil.
c) *For this part of the question, use the graph paper.*
   By using a scale of 2 cm to 5 years on the horizontal axis and 2 cm to 1 patient on the vertical axis, draw a ***frequency polygon*** for the data.
d) Based on the frequency polygon in (c), state one piece of information about the donations.

5. The data in Diagram 1 shows the donations, in **RM**, of **40** families to their childrens' school welfare fund.

40	24	17	30	22	26	35	19
23	28	33	33	39	34	39	28
27	35	45	21	38	22	27	35
30	34	31	37	40	32	13	28
20	32	29	26	32	22	38	44

Diagram 1

d) Using the data in Diagram 1, an a **class interval of RM5**, complete the following table.

Donation (RM)	**Frequency**	**Cumulative Frequency**
11 – 15		
16 – 20		

e) For this part of the question, use the graph paper.
By using a scale of **2 cm to RM5 on the x-axis** and **2 cm to 5 families on the y-axis**, draw an **ogive** based on the data.

f) From ***your ogive*** in (b),
   i. find the **third quartile**
   ii. hence, explain briefly the **meaning of the third quartile**.

6. The data in Diagram 2 shows the masses, in kg, of suitcases for a group of tourist. Each tourist has one suitcase.

27	10	22	28	21	14	29	25
29	18	22	13	20	21	24	27
27	25	16	19	16	24	26	27
29	19	33	25	23	24	26	31

Diagram 2

d) Based on the data in Diagram 2 and by using the class intervals of 3, complete the table below.

Donation (RM)	**Frequency**	**Midpoint**
10 – 12		
13 - 15		

e) Based on the table in (a), calculate the estimated mean mass of the suitcases.

f) For this part of the question, use the graph paper.
By using a scale of 2 cm to 3 kg on the x-axis and 2 cm to 1 suitcase on the y-axis, draw the ***histogram*** for the data.

d) State one information obtained based on the histogram in (c).

7. The data in Diagram 3 shows the marks for an English Language monthly test for 42 pupils.

51	20	45	31	26	40	30
25	32	37	41	21	36	38
46	38	28	37	39	23	39
33	35	42	29	38	31	23
42	34	26	35	43	28	22
25	47	31	48	44	34	54

Diagram 3

c) Using data in Diagram 3 and a class interval of 5 marks, complete the table below.

Marks	Midpoint	Frequency
20 - 24		
25 – 29		

d) Based on your table in (a),
   i. state the modal class,
   ii. calculate the mean mark for the English Language monthly test and give your answer correct to decimal places.

c) *For this part of the question, use the graph paper.*
By using a scale of 2 cm to 5 marks on the horizontal axis and 2 cm to 1 pupil on the vertical axis, draw a ***histogram*** for the data.

8. The data in Diagram 4 show the donations, in RM, collected by 40 pupils.

49	26	38	39	41	45	45	43
22	30	33	39	45	43	39	31
27	24	32	40	43	40	38	35
34	34	25	34	46	23	35	37
40	37	48	25	47	30	29	28

Diagram 4

c) Based in the data in Diagram 4 and by using a class interval of 5, complete the table below.

Donation (RM)	Midpoint	Frequency
21 – 25		
26 – 30		

d) Based on Table 2 in (a), calculate the estimated mean of the donation collected by a pupil.

c) *For this part of the question, use the graph paper.*
By using a scale of 2 cm to RM5 on the horizontal axis and 2 cm to 1 pupil on the vertical axis, draw a ***frequency polygon*** for the data.

d) Based on the frequency polygon in (c), state one piece of information about the donations.

9. The data in Diagram 1 shows the distance between the working place and homes, in km of 60 workers.

21	18	9	26	16	11	6	21	17	25
27	16	12	32	20	19	22	15	28	7
6	13	21	7	22	25	17	8	19	13
28	22	14	23	19	23	15	20	27	16
18	4	17	24	12	4	19	34	24	15
29	16	11	3	22	8	13	22	18	20

Diagram 1

a) Using data in diagram 1, and class interval of 5 km, complete the Table 1. (4m)

Distance (km)	Frequency	Midpoint
1 - 5		

Table 1

b) For this part of the question, use the graph paper
By using a scale of 2 cm to 5 km on the *x*-axis and 2 cm to 2 workers on the *y*-axis, draw a ***frequency polygon*** for the data. (4m)

c) From your frequency polygon in (b),
   i) find the modal class
   ii) calculate the estimated mean for the distance. (4m)

10. The data in Diagram 2 shows the marks obtained by a group of 50 students in a mathematics test.

30	40	65	78	60	28	46	53	23	68
49	82	58	66	57	73	53	69	51	84
70	64	81	58	83	63	86	37	88	38
53	27	56	36	71	66	67	65	47	75
61	75	37	74	48	41	84	79	63	56

Diagram 2

a) Using data in diagram 2, and class interval of 10 marks, complete the Table 2. (4m)

Mark	Frequency	Midpoint
20 -29	**3**	
30-39		

Table 2

b) Using data in Table 2,,
   a. State the modal class
   b. calculate the estimated mean for the distance. (4m)

c) For this part of the question, use the graph paper
By using a scale of 2 cm to 10 marks on the *x*-axis and 2 cm to 2 students on the *y*-axis, draw a ***histogram*** for the data in (a) . (4m)

11. The data in Diagram 3 shows the masses, in kg, for a group of 32 workers in a factory.

44	64	59	49	35	40	50	51
60	50	40	43	47	45	57	53
54	49	58	54	48	47	53	45
51	52	62	59	56	46	51	56

Diagram 3

a) Using data in diagram 3, complete the Table 3. (4m)

Mass (kg)	Frequency	Midpoint
30 - 34	**0**	

Table 3

b) Using data in Table 3,
   a. calculate the estimated mean for the distance. (2m)

c) For this part of the question, use the graph paper
By using a scale of 2 cm to 5 kg on the *x*-axis and 2 cm to 1 worker on the *y*-axis, draw a ***histogram*** for the data. Then draw a ***frequency polygon*** based on the histogram. (5m)

d) Stated one any information from your graph in (c). (1m)

12. The data in Diagram 4 shows the ages, in years, of a group of 45 tourists.

22	39	40	32	54	27	40	41	43
44	37	42	44	21	38	34	33	50
36	32	38	40	29	33	26	47	31
40	28	47	30	46	35	42	38	48
45	43	45	27	43	50	38	52	24

Diagram 4

a) Using data in diagram 4, and class interval of 5, complete the Table 4. (4m)

Age (years)	Frequency	Upper boundary	Cumulative frequency
16 -20	**0**	**20.5**	**0**

Table 4

b) For this part of the question, use the graph paper
By using a scale of 2 cm to 5 years on the *x*-axis and 2 cm to 5 tourists on the *y*-axis, draw an ***ogive*** for the data in (a) . (4m)

c) From your ogive in (b), find
   i) The median
   ii) The interquartile range . (4m)

13. The data in Diagram 1 shows the marks obtained by a group of 50 students in a Mathematics Test.

30	40	65	78	60	28	46	53	23	68
49	82	58	66	57	73	53	69	51	84
70	64	81	58	83	63	86	37	88	38
53	27	56	36	71	66	67	65	47	75
61	75	37	74	48	41	84	79	63	56

a) Using data in Diagram 1, and a class interval of 10 marks, complete the following table.

Mark	**Frequency**	**Midpoint**	
20 – 29			
30 – 39			

b) Using data in table,

i) state the modal class

ii) calculate the estimated mean for the marks

c) *For this part of the question, use the graph paper*.
By using a scale of 2 cm to 10 marks on the x-axis and 2 cm to 2 students on the y-axis, draw a ***frequency polygon*** for the data in (a).

14. The data in Diagram 4 shows the ages, in years, of a group of 45 tourists.

22	39	40	32	54	27	40	41	43
44	37	42	44	21	38	34	33	50
36	32	38	40	29	33	26	47	31
40	28	47	30	46	35	42	38	48
45	43	45	27	43	50	38	52	24

Diagram 4

d) Using data in diagram 4, and class interval of 5, complete the Table 4. (4m)

Age (years)	**Frequency**	**Upper boundary**	**Cumulative frequency**
16 -20	**0**	**20.5**	**0**

Table 4

e) For this part of the question, use the graph paper
By using a scale of 2 cm to 5 years on the *x*-axis and 2 cm to 5 tourists on the *y*-axis, draw an ***ogive*** for the data in (a) . (4m)

f) From your ogive in (b), find

i) The median

ii) The interquartile range . (4m)