S2 Final Assessment Revision Booklet C- Statistics MP1/2

Contents

Averages

Exercise 1

1. Calculate the **mean** for each set of data :-

   (a) 3, 8, 4, 2, 10, 7, 8

   (b) 50, 60, 52, 58, 54, 56

   (c) 1·3, 2·6, 3·2, 4·1, 5, 4·8, 4, 1·9, 0·1, 2

   (d) the first ten prime numbers.

2. Find the **median** for each set of data :-

   (a) 1, 3, 5, 6, 8, 11, 14

   (b) 16, 22, 23, 25, 31, 40, 61, 63

   (c) 4, 1, 14, 12, 6, 7, 11, 13, 9

   (d) 5, 8, 21, 12, 5, 16, 33, 12, 15, 9.

3. Find the **mode** for each set of data :-

   (a) 1, 1, 2, 3, 5, 8, 13, 21, 34, 55

   (b) 3, 2, 1, 8, 4, 5, 9, 2, 7, 6, 0,

   (c) 1·7, 2·3, 1·6, 3, 2·3, 3·7, 2·9,

   (d) A, C, F, G, H, Y, T, E, D, D, G, H, G.

4. Find the **range** for each set of data in question 3(a) to (c).

5. Find the **mean**, **median**, **mode** and **range** of each set of data :-

   (a) 10, 14, 15, 15, 16, 19, 22, 23, 27, 29, 30

   (b) 46, 31, 66, 73, 83, 43, 16, 66

   (c) All the prime numbers between 30 and 50.

6. 

   The mean weight of 4 boxes is 300 kg.
   Three of the boxes each weigh 85 kg.
   What is the weight of the fourth box ?

7. The mean cost for 12 people to hire a bus was to be £15.
   Unfortunately, some people did not turn up for the bus trip.
   Each of those who went on the trip ended up paying £22·50.
   How many must have turned up ?

Frequency Tables

Exercise 2

1. The data below shows the number of cars parked on a main street each day at lunchtime.

16	11	32	40	65	32	33	18	12	6	23
57	16	54	42	67	32	78	47	49	52	70
16	38	7	13	35	79	71	52	24	15	10

Class Intervals	Tally	Frequency
0 - 9		
10 - 19	COPY	
20 - 29		
30 - 39		
40 -		

(a) **COPY** and complete the frequency table.

(b) On how many days was data collected ?

(c) On how many days were there more than 30 cars parked at lunchtime ?

2. Shown is the number of children attending football training each week.

22	3	5	17	24	17	4	11
10	18	8	26	19	19	23	9
13	23	13	22	26	9	23	15
2	18	17	15	26	11	19	10
12	10	19	11	14	6	7	20

(a) Which of these would be the most suitable class interval to use :-

(0 - 9) or (0 - 4) or (0 - 1) ?

(b) Construct a frequency table using your chosen class interval.

3. For each set of data below, choose a suitable class interval and construct a frequency table.

(a)

13	4	41	69	51	58	57	33
11	40	46	61	22	22	52	63
14	53	46	54	42	56	60	54
50	29	43	13	46	17	25	21
25	36	39	20	7	11	14	6

(b)

20	18	5	18	13	9	11	21
7	17	8	22	13	23	4	19
6	15	13	26	10	19	17	22
14	26	10	8	18	19	24	3
11	11	15	23	8	26	17	5

(c)

2·9	5·7	5·1	4·9	3·0	1·1	2·4	6·8	0·9	5·5	1·7	6·2
0·5	6·3	4·5	3·4	5·6	3·1	3·4	4·6	3·7	2·5	1·6	3·7
5·0	2·9	4·3	2·1	5·4	4·6	5·3	6·1	2·2	5·7	5·8	1·3

Frequency Tables

Exercise 3

1. A footballer practised taking 4 penalties every day. The table shows the results over several weeks.

   (a) **COPY** and complete the table.

   (b) How many days did he record taking penalties ?

   (c) How many penalties were scored in total ?

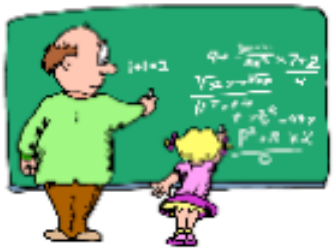
   (d) Calculate the mean number of penalties scored.

No. scored (x)	Freq (f)	$f \times x$
0	2	0 x 2 = 0
1	2	1 x 2 = ...
2	11	2 x .. = ...
3	16	.. x .. = ...
4	9	.. x .. = ...
	...	...

2. Shown are the test scores for classes 2X1 and 2Y1.

2X1 scores (x)	Freq (f)
12	1
14	6
16	8
18	9
20	6

2Y1 scores (x)	Freq (f)
12	5
14	5
16	11
18	8
20	1



(a) How many pupils are in each class ?

(b) Find the mean score for each class.

(c) Find the median score for each class .

3. A group of 18 year old boys were asked how old they were when they went out on their first "date".
   The results are shown in this bar graph.

   (a) Form a frequency table from the information in the bar graph.

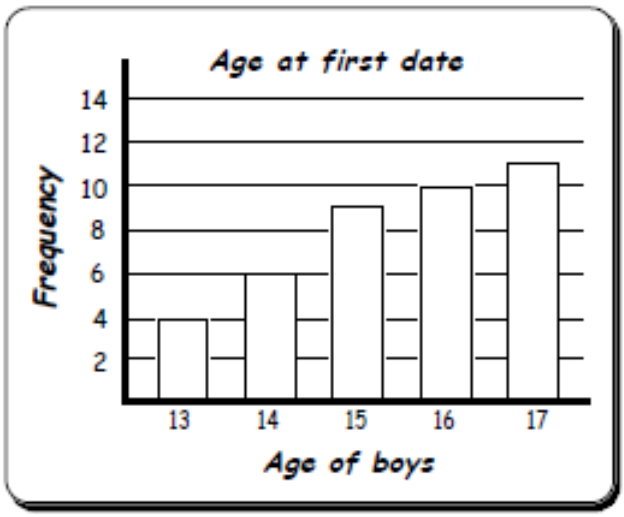
   (b) Calculate the : -

   (i) mode

   (ii) range

   (iii) mean

   (iv) median.



Frequency Tables

Exercise 4

1. A gardener recorded the number of **new** dandelions that appeared in his lawn each week over a 7 week period.

   He began to use a weed killer and studied the results.

   (a) Copy and complete the table.

   (b) Which week did the gardener start using the weedkiller ?

   (c) Find the median.

Week	Frequency (new weeds)	Cumulative freq. (total so far)
1	3	3
2	12	15
3	36	..
4	68	..
5	40	..
6	12	..
7	1	...

2. For each table below :-

   (i) add a cumulative frequency column (ii) find the median.

(a)

Goals	Frequency
0	1
1	4
2	12
3	11
4	8
5	6
6	0

(b)

Score	Frequency
0	2
1	3
2	5
3	15
4	18
5	6
6	2

(c)

No.	Frequency
10	3
11	3
12	12
13	16
14	15
15	24
16	35

Exercise 5

1. The table shows the results of a questionnaire asking a group of 90 pupils their favourite bedtime drink.

   (a) **COPY** and complete the table.

   (b) Construct an accurate pie chart using a pair of compasses, a protractor and the table information.

Drink	Number	Fraction	Angle
Water	10	$\frac{10}{90}$	$\frac{10}{90} \times 360 = 40°$
Chocolate	15	$\frac{15}{90}$	$\frac{15}{90} \times 360 = \ldots..°$
Milk	30	$\frac{\ldots..}{90}$	$\frac{\ldots..}{90} \times 360 = \ldots..°$
None	35	$\frac{\ldots..}{90}$	$\frac{\ldots..}{90} \times 360 = \ldots..°$
TOTAL	**90**	**1**	**360°**



Frequency Tables

2. For each table below, construct an accurate pie chart, showing all your working.

(a)

Favourite pet	Number
Cat	20
Dog	10
Mouse	12
Rabbit	18
TOTAL	....

(b)

People's weight (kg)	Number
30 - 50	80
51 - 70	120
71 - 90	480
91 - 110	40
TOTAL	....

3. The table shows the results of a survey asking how old people were when they first went to the cinema.

9	8	6	7	5	6	9	5	6	5	5	6
5	9	7	6	9	7	6	9	9	6	5	5
5	6	7	6	8	6	8	7	6	6	8	6

Construct a **pie chart** to show this information.

Stem and Leaf

Exercise 6

1. The stem and leaf diagram shows the ages of spectators watching a football match.
   (a) Write a key for the diagram.
   (b) Write out all the ages shown in the diagram.
   (c) How old was the youngest spectator ?
   (d) What was the modal age ?
   (e) Find the median.

Spectators ages

1	2 2 6 9
2	0 4 5 6
3	0 1 1 1 2 4
4	2
5	0 3

2. The unordered stem and leaf diagram shows the money donated to a local charity by a Primary seven class.
   (a) **COPY** the diagram, but put the donations in order.
   (b) How many pupils donated money ?
   (c) What was the largest donation ?
   (d) What was the modal donation ?
   (e) Find the average (mean) donation.

Key : 2 | 9 means £2·90

Money collected

1	1 7 4 0
2	9 1 3 4
3	9 8 2 3 2 2
4	0
5	3 0

3. For each set of data shown :-
   (i) Construct an ordered stem and leaf diagram. (ii) Find the mode and median.

   (a) Ages of mature students at a University.

23	42	27	37	25	60	29	35	26	45	35	26
50	39	27	26	42	47	26	59	42	23	29	29
20	51	43	44	28	46	42	27	52	30	30	42

   (b) Distances (in metres) jumped from a standing position.

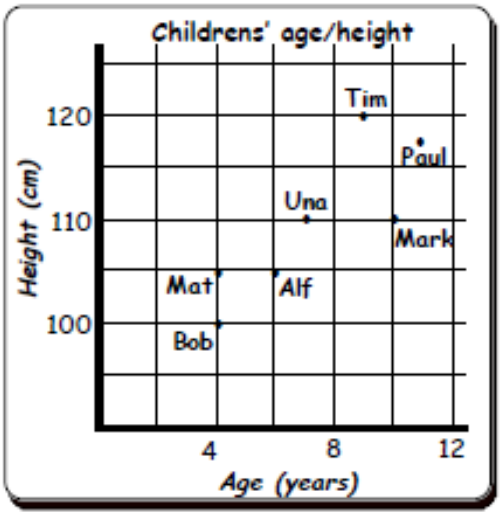
1·62	1·23	1·41	1·15	0·97	1·31	1·23	1·26	1·5
1·33	1·29	1·12	1·23	1·19	1·36	1·53	1·08	1·23
0·9	1·2	1·51	1·03	1·66	1·53	1·44	1·23	1·39

Scattergraphs

Exercise 7

1. State whether each of the following statements is likely to have a positive correlation, a negative correlation or neither.
   (a) The temperature in a park and the sales of ice-creams.
   (b) The amount of sunshine and the sales of umbrella's.
   (c) The distance travelled by an aeroplane and the cost of the flight.
   (d) The number of chairs in a classroom and the number of teachers.
   (e) The cost of a car and the mileage travelled by the car.

2. The scattergraph shows childrens' ages and heights (in cm).
   (a) List the age and height of each person.
   (b) State whether you think there is a positive correlation, a negative correlation or neither.
   (c) **Copy** the scattergraph and draw a line of best fit.
   (d) Use your line of best fit to estimate :-
      (i) the height of Abby aged 9.
      (ii) the age of Alex who is 125 cm tall.



3. For each data set, construct a scattergraph and draw a line of best fit :-

(a)

Engine size (1000cc)	1·1	1·1	1·1	1·4	1·4	1·4	1·6	1·6	1·6	1·8	1·8	1·8	2·0	2·0
km / litre	50	60	55	50	40	45	40	30	35	35	25	30	30	20

(b)

Age (years)	5	6	6	7	7	8	9	9	9	10	10	10	11	11	12	12	12	12
Javelin throw (m)	4	5	6	7	5	6	6	8	9	11	12	9	10	11	14	18	15	12

Probability

Exercise 8/9

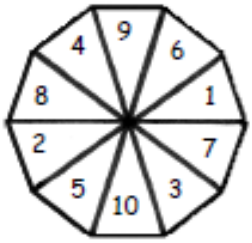
1. State the likelihood of each statement :-

   (a) All cars will be able to fly tomorrow.

   (b) If today is Monday, tomorrow will be Tuesday.

   (c) Toss a coin, it lands tails.

   (d) We will play outside next week during the P.E. class.

2. 

A ten sided dice numbered 1 to 10 is thrown.
Find :-

(a) P(even) (b) P(less than 3)

(c) P(prime) (d) P(square number).

3. A toy box contains building bricks.

There are 3 green, 1 black, 9 blue, 12 orange, and 15 white bricks.

Find :-

(a) P(green) (b) P(blue) (c) P(orange) (d) P(white)

(e) P(black) (f) P(not orange) (g) P(white or blue) (h) P(red).

4. 

Paul and Peter each toss a coin and record the results.

Paul : H H T H T H H H T T H H T H T H T H H T T

Peter : H T H H T H H T T H T H ... ...

If the probability of heads to tails was the same for both boys, what were Peter's last two tosses ?

Answers

Exercise 1

1. a 6 b 55 c 2·9 d 12·9
2. a 8 b 28 c 9 d 12
3. a 1 b 2 c 2·3 d *G*

Exercise 2

1. a Freq = 2 9 2 6 4 4 2 4
   b 33 c 20
2. a 0 - 3 b Various
3. a/b/c Various

Exercise 3

1. a Total Freq = 38
   fx = 0 2 22 42 36 Total = 102
   b 38 c 102 d 2·7 ???
2. a 30 in each class b 16·9 & 15·7
   c 17 & 16
3. a Table with 4 @ 13, 6 @ 14, 9 @ 15,
   10 @ 16, 11 @ 17.
   bi 17 ii 4 iii 15·45 iv 16

Exercise 4

1. a Cum Freq = 3 15 51 119 159 171 172
   b Week 5 c 68 weeds
2. a Cum Freq = 1 5 17 28 36 42 42
   Median = 3
   b Cum Freq = 2 5 10 25 43 49 51
   Median = 4
   c Cum Freq = 3 6 18 34 49 73 108
   Median = 15

Answers

Exercise 5

1. a Angles = 40° 60° 120° 140°
   b Drawing
2. a Angles = 120° 60° 72° 108° Drawing
   b Angles = 40° 60° 240° 20° Drawing
3. Angles = 80° 130° 50° 40° 60° Drawing

Exercise 6

1. a Various eg 2/4 = 24
   b 12 12 16 19 20 24 25 26 30
   31 31 31 32 34 42 50 53
   c 12 d 31 e 30
2. a b 17 c £5·30

1	0 1 4 7
2	1 3 4 9
3	2 2 2 3 8 9
4	0
5	0 3

   d £3·20 e £2·93
3. a

2	0 3 3 5 6 6 6 6 7 7 7 8 9 9 9
3	0 0 5 5 7 9
4	2 2 2 2 2 3 4 5 6 7
5	0 1 2 9
6	0

   Key eg 3/5 = 35
   Mode 42 Median 36·8
   b

0·9	0 7
1·0	3 8
1·1	2 5 9
1·2	0 3 3 3 3 3 6 9
1·3	1 3 6 9
1·4	1 4
1·5	0 1 3 3
1·6	2 6

   Key eg 1/23 = 1·23
   Mode 1·23 Median 1·23

Exercise 7

1. a +ve b -ve c +ve d neither
   e -ve
2. a Bob 4/100 cm Mat 4/105 cm
   Alf 6/105 cm Mary 7/110 cm
   Tim 9/120 cm Mark 10/110 cm
   Paul 11/118 cm
   b +ve c **James got original**
   di 115 cm ii 12

Exercise 8/9

1. a No Chance 0 b Definite 1
   c 50/50 $^1/_2$ d 50/50 $^1/_2$
2. a $^1/_2$ b $^1/_5$ c $^2/_5$ d $^3/_{10}$
3. a $^3/_{40}$ b $^9/_{40}$ c $^3/_{10}$ d $^3/_8$
   e $^1/_{40}$ f $^7/_{10}$ g $^3/_8$ h 0
4. H T (or T H)