# Data Analysis

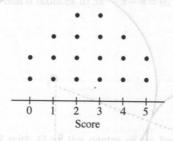




- 1. The values of 15 numbers are 15, 12, 5, 5, 12, 13, 10, 5, 8, 5, 5, 3, 15, 15, 7. Find
  - (a) the mode of the numbers,
  - (b) the median of the numbers,
  - (c) the mean of the numbers.
- 65. The figure shows the avangement of 13 spherical chocolates in a cylindrical lower 2. The mass, in grams, of 30 oranges is the total volume of the to

154	162	158	172	166	181
170	124	134	162	155	166
144	174	157	165	162	156
163	162	164	162	171	153
126	163	oo lor 133 lada 1	the 161 mine	158	162

- (a) Draw a stem and leaf diagram to represent the above information. (a) Simple of the state of
- (b) Hence, find
  - (i) the modal mass of the oranges,
  - (ii) the median mass of the oranges, a yellowloop or nond O, respectively a segment of the median mass of the oranges,
  - (iii) the mean mass of the oranges. If W.A. to Hibst and Hibst and
- 3. The dot diagram shows the results of a math quiz given to a group of x students.



- (a) Find the value of x.
- (b) Given that maximum score is 5, how many students manage to score a pass of 50% and above?
- 4. A survey is conducted to find the number of hours that a student spent on watching television drama. The result of the survey is as shown below.

2	1	4	4	Find the value of r.	
0	1	1	5	Hence, write doth in ter	
3	2	2	3	(ii) the volume 0	
0	0	0	1	4 R mades to	

- (a) Draw a dot diagram to represent the data.
- (b) What is a possible reason that some students had 0 hour?

7. The stem-and-leaf diagram below shows the time taken to complete an assignment. Only award managing of the stem-and-leaf diagram below shows the time taken to complete an assignment.

Stem										
11	2	4	5	5	6	6	8	8	9	
12 13	0	0	0	1	1	3	4	5	7	
13	0	4	5					1	01	

Key: 15 | 4 means 15.4 minutes

Find

- (a) the number of students who had completed the assignments,
- (b) the shortest time taken to complete the assignment,
- (c) the most common time taken to complete the assignment.
- **8.** Kenny was being introduced to a game called 'Floppy Bird' and the result below showed the number of stage he had reached in his first 20 tries.

3	14	20	ış in t <b>č</b> e clası	nobu 13
10	23	nsd 01810m	10 2119 1 4 10	ogs 814
17	15	8	16	12
14	13	12	19	16

- (a) Draw a stem-and-leaf diagram to represent the above data.
- (b) If Kenny reached stage 10 or more, he will be awarded a medal. What is the percentage that Kenny would be awarded?
- (c) What is his highest stage that he managed to achieve?
- 9. 7 students took a quiz. The marks obtained were 1, 8, 5, 6, 2, 7 and 6.
  - (a) Find the mean mark.
  - (b) Find the modal mark.
  - (c) Find the median mark.
- 10. A survey was conducted on 14 students on the number of magazine that they had bought. The result of the survey is shown below.

10	13	13	15	7	9	12
8	12	14				

Using the given data, calculate the median number of magazine that they have bought.



11. The table shows the number of spelling mistakes made by each of the 30 students in a spelling test.

Number of mistakes	0	1 19900	200	di 3 oa	iqe4oi)	ns:5018
Number of students	5	2	6	w	3	8

Find

- (a) the value of w,
- (b) the modal number of spelling mistakes,
- (c) the median number of spelling mistakes,
- (d) the mean number of spelling mistakes.

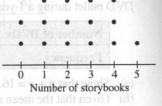
- 12. 4 objects weigh 1.5 kg each. Another 5 objects weigh 1.4 kg each. The mass of one other object is x kg. If the total mass of all the objects is 16 kg, calculate
  - (a) the mean mass,

(b) the value of x,

- (c) the median mass.
- 13. The number of goals scored per match of a soccer team in 2006 is recorded in the table below.

Goals scored per match	0	1	2	3	4	5
Frequency	10	12	08472	>001	3	2

- (a) Write down the minimum value of x if the modal score is 3.
- (b) Write down the value of x if the median number of goals scored is 2.5.
- c) Extended the mean lifestion of the distributions on the 14. The dot diagram shows the number of storybooks owned by a group of students.
- (a) How many students are in the group?
  - (b) Find
    - (i) the modal number of storybooks owned,
    - (ii) the median number of storybooks owned,
    - (iii) the mean number of storybooks owned.
  - (c) The mean number of storybooks owned is 2.5 if two students are removed from the group. Calculate the total number of storybooks these two students liven that the mean number of DVDs borrowed is 4.4, show that 2p + 3q = 45



15. The number of days that each of 20 employees was on medical leave a 6-month period is shown below:

20. The values of 5 numbers are 
$$\frac{1}{2}$$
 and  $\frac{2}{2}$  and  $\frac{1}{2}$  a

- (a) Draw a dot diagram to represent the above information.un and the median difference of the second bariful (d)
- (b) Find
  - 21. The distance in km travelled by 20 adults to their place of work is nece, notindirtain and fo abom and (i)
  - (ii) the median of the distribution,
  - (iii) the mean of the distribution.
- (c) Calculate the percentage of employees whose days on medical leave is more than the mean of the distribution.
- 16. The CIP hours of 25 students after the first semester are recorded below.

3	0		belled,	
e is pe	ual distanc	of the act	ded verongly	3
5	1	4 Aprilay	distance tra	0
4	5	4	2	4
2	3 159	0	own below.	18 013

- (a) Draw a dot diagram to represent the above information.
- (b) Due to a calculation error, the CIP hours of all students who have done CIP for at least 3 hours is over-reported by 1 hour each. Draw a dot diagram to represent the actual CIP hours of the 25 students.
- (c) Hence, find

  - (i) the actual modal CIP hours, (ii) the actual median CIP hours,
  - (iii) the actual mean CIP hours.
- 17. The mean of 2x + 5, 3x 2, 4x 1 and x + 10 is 4.5. We ask an arrange of the mean of 2x + 5, 3x 2, 4x 1 and 4x + 10 is 4.5. We ask as 4x 1 and 4x 1 and
- (c) If the test mark of one more student is included, the mean mark of the 25 student x to substant and (a) dent
  - (b) Each of the numbers is increased by w so that the mean is 6. Find the value of w. no dominates a mose

18. The lifespan, in days, of 100 bulbs is given in the frequency table below. Sold and a sold of the lifespan and a sold of the lifespan and the lifespan and the lifespan are sold of the lifespa

Lifespan (x days)	Number of bulbs	a) the mean mass,
$100 < x \le 120$	8	c) the median mass.
$120 < x \le 140$	d per match of a soccer team	The number of goals sopre
$140 < x \le 160$	0 24 mag from	Gogles
$160 < x \le 180$	4 010 a 35	17requir
$180 < x \le 200$	17	

- (a) Write down the value of w. Write down the value of w. Write down the value of w. (d)
- (b) Which class interval contains the median? This scored per second goals scored goals goals
- (c) Estimate the mean lifespan of the distribution.
- 19. The frequency table records the number of movie DVDs borrowed by 50 customers from a particular automated DVD outlet during a 1-year period.

Number of DVDs	3	4	1511/0	of sto 6 book	
Frequency	20	p	14	2/00d (10/2	

- from the group. Calculate the total number of storybooks these two students. (a) Show that p + q = 16.
- (b) Given that the mean number of DVDs borrowed is 4.4, show that 2p + 3q = 45.
- (c) Hence, find the values of p and q.
- 15. The number of days that each of 20 employees was on med beword adVD for radmun and state (b)
- 20. The values of 5 numbers are  $3x^2 + 2$ ,  $2x^2 + 1$ ,  $x^2$ ,  $5x^2 + 4$  and  $4x^2 + 3$  where x is an integer.
  - (a) Find the value of x if the mean of the 5 numbers is 7x.
  - (b) Find the value of x if the median of the 5 numbers is equal to 5x. It has organ of margain to be ward (a)
- 21. The distance in km travelled by 20 adults to their place of work is recorded below. and to about adults to their place of work is recorded below.

- (a) Draw a stem-and-leaf diagram to represent the information.
- (b) Write down the median distance travelled.
- (c) The distance 41 km was recorded wrongly. If the actual distance is recorded, the median distance travelled will be 20 km. Find the actual distance travelled.
- (d) Hence, calculate the actual mean distance travelled.
- 22. The test marks of 24 students are shown below.

68	62	71	80	45	55	
48	55	810 <b>77</b> 118	62	82	56	
63	72	64	88	67	47	
63	76	78	65	65	63	

- (a) Draw a stem-and-leaf diagram to represent the information.
- (b) The minimum mark for a distinction is 75 marks. What fraction of the students scored a distinction?
- (c) If the test mark of one more student is included, the mean mark of the 25 students will be 66. Did this student score a distinction? Explain your answer.

- **23.** The values of 7 numbers are 11, 23, 32, 16, 19, x, y. The mean of the 7 numbers is 20 and x: y = 5: 8.
  - (a) Calculate the values of x and y.
  - (b) Hence, find the median of the 7 numbers.
- **24.** The values of 6 numbers are z 4, z 4, z, z 4, z + 5, z + 7.
  - (a) Find the value of z if the median of the numbers is twice the mode.
  - (b) Hence, find the mean of the numbers.
- 25. The 6 numbers below are arranged in ascending order.
  - x 2y, 4x 3y, 2x + y, 2x + 3y, 4x + 5y, 5x + 7y(a) Form an equation in x and y if the median is 11.
  - (b) Form another equation in x and y if the mean is 13.
  - (c) Hence, solve for x and y.
- 26. The scores, to the nearest 10 points, of 50 participants in a dart throwing competition are listed below. The unknown numbers x, y and z are not 0.

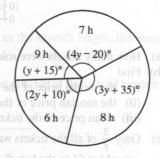
Score	40	50	60	70	80	90
Frequency	6	14	3 ×	3.97	y	3.4z

- (a) Find the value of x if the median score is 65 points.
- (b) Form an equation in y and z.
- (c) Form another equation in y and z if the mean score is 65.
- (d) Hence, solve for y and z.
- 27. A group of working adults was surveyed to find out how well they sleep on weekend nights. The pie chart shows, correct to the nearest hour, the hours of sleep of these adults on a particular weekend night.

  Find



- (b) the modal number of hours of sleep,
- (c) the median number of hours of sleep,
- (d) the mean number of hours of sleep.



students borrowed 2 books from the library.

28. The height measurements, in centimetres, of 20 primary three boys are recorded by the PE teacher and shown below.

				139	148		
		129	118	123	196	ks that a stoup of	
		145	159	127	143	139	
		116	113	8 139 8	139	148	

- (a) (i) One of the measurements is recorded in metres. Identify the measurement and rewrite it in centimetres.
  - (ii) The height of another boy is measured wrongly by an additional 40 cm. Identify the wrong measurement and write down the correct measurement in centimetres.
- (c) If the median of the distribution is 2.5, show the distribution is 2.5, show the mean height.

40. The table below shows the number of times students log on to social networking platform in a day.

Number of times	0	1	2	3	4
Number of students	10	14	x	9	3

- (a) If the mode is 2, find the smallest possible value of x.
- (b) If the median is 1, find the largest possible value of x.
- (c) Find the value of x given that the median of the distribution is 1.5.
- 41. The back-to-back stem-and-leaf diagram below shows the test results for the subject of Mathematics and Science.

ore is 4	Ma	the	mat	ics	Sco	res	Stem	S	cien	ce S	cor	es				
alue (st	\$	3	5,	8	6	030	3,8,1.	0	5,-	3,6						
		5	4	2	2	1	9704 b	8					rien			(0)
	9	8	4	2	1	1	5	2	5	7	9				Find	
			8	6	4	3	6	1		2						
					6	2	7	5	5	6	7	8			(li)	
						DSGE	8	1	3	4			DK			

Key: 4 9 means 49 marks.

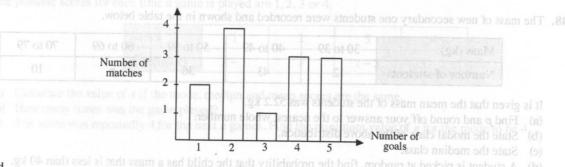
- (a) Find the mean scores for
  - (i) Mathematics,

- (ii) Science.
- (b) Which test is easier? Justify your answer.
- 42. The distribution below shows the results of a science test taken by a class of 15 students.

14	39	37	18	28
42 0	21	14	32	da v35
25	47	7 ZII	40	23

- (a) Convert the data given above into a stem-and-leaf diagram.
- (b) Find the
  - (i) mean,

- (iii) mode of the distribution.
- (ii) median, le alemonte esta o asibem ont bord (a)
- (c) The data as shown in the above table is to be represented by a nie chart. Calculate the angle which repre-43. The bar char below shows the number of goals scored in each game in a soccer tournament. It is liquid and



Find

- (a) the median number of goal scored,
- (b) the modal number of goal scored,
- (c) the mean number of goal scored per match.

44. The table below shows the Prelim aggregate score for English for a class of 40 students between 1 to 5.

Aggregate score	1 0	2	3	4	5
Number of students	6 01	x	11	6	у

- (b) Given that the mean aggregate score for English is 2.8, show that 2x + 5y = 49.
- (c) Hence, solve for x and y.

45. The data below shows the number of days students are absent from school in the year 2013.

- (a) Construct a bar chart using the data provided above.
- - (i) mode,
  - (ii) mean,
  - (iii) median number of days that the students were absent from school in 2013.

46. The table below shows the score from a 6-sided fair die when is it tossed.

Score	1 3	2	3	4	5101	6	Find the mean	
Frequency	olog (	8	3	5	x	6	(i) Mathema Which test is	

- (a) What is the maximum value for x if the modal score is 2.
- (b) Determine the value of x, given that the mean score is 3.75. x = 3.75. The distribution below shows the results of x = 3.75.
- (c) Find the maximum and minimum value of x if the median score is 4.

47. The class frequency table below shows the height distribution of 80 pupils.

Height (h cm)	$105 < h \le 115$	$115 < h \le 125$	$125 < h \le 135$	$135 < h \le 145$
Frequency	15	and-leaf 20 seram	above i 06 a stem-	ert the chta given

- (a) Find the median class interval.
- (b) Determine the mean height of the 80 pupils.
- (c) The data as shown in the above table is to be represented by a pie chart. Calculate the angle which represents the pupil with a height interval of  $115 < h \le 125$ . The bar char below shows the number of goals scored 125.
- 48. The mass of new secondary one students were recorded and shown in the table below.

Mass (kg)	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79
	12	43	36	Number of	10
Number of students	12	40	111 2000		AND DESCRIPTION OF

It is given that the mean mass of the students was 52.2 kg.

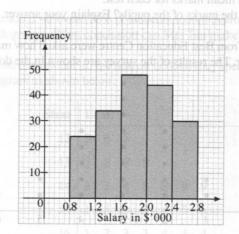
- (a) Find p and round off your answer to the nearest whole number.
- (b) State the modal class of the above distribution.
- (c) State the median class.
- (d) A student is picked at random, find the probability that the child has a mass that is less than 40 kg.

### A die with 6 faces numbered 1 to 6 is tossed and the scores are recorded in the table below.

40   18	00	06						
Score	0.01	082	3	0.4	315	26	28	33
Frequency	835	9	5	016	Elx	517	28	48

- (a) Write down the maximum value of x if the modal score is 2.
- (b) Calculate the value of x if the mean score is 3.4.
- (c) If the median score is 4, find the
  - (i) minimum value of x.
  - (ii) maximum value of x.

## 50. The histogram below shows the salaries in thousand dollars of all employees in a company.



- (a) How many employees does the company employ?
- (b) (i) Which class interval contains the median salary?
  - (ii) Estimate the mean salary, correct to the nearest dollar.
- (c) Suppose the salary of every employee is increased by \$400. Deduce and write down the corresponding
  - (i) class interval that contains the median salary,
  - (ii) estimated mean salary to the nearest dollar.

## 51. The possible scores for each time a game is played are 1, 2, 3 or 4.

Score	1	2	3	4
Frequency	x-1	x	x-5	x - 3

- (a) Calculate the value of x if the mode, median and mean scores are the same.
- (b) How many times was the game played?
- (c) The score was repeatedly 4 for the next n games. Find the minimum value of n for the mode to be 4.