

Data handling diagnostic test

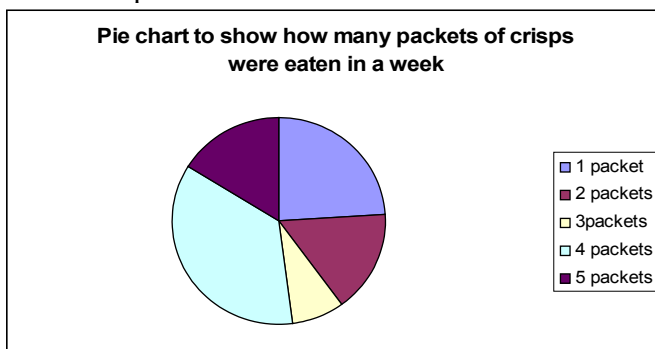
E grade:

1. What fraction of the children eat 2 packets of crisps a week? $4/25$
2. What is the modal amount of packets? 4

No. packets of crisps eaten in a week	No. of children
1	6
2	4
3	2
4	9
5	4

D grade:

3. What is the median no. of crisps eaten? 4
4. What percentage of children eat 4 packets of crisps?
 $9/25 = 36\%$
5. If you were to pick a child at random, from this sample, what is the probability that they eat less than 3 packets of crisps a week? $10/25 = 2/5$
6. Draw a pie chart to show this data.



$1 \text{ packet} = 6/25 \times 360 = 86.4^\circ$
 $2 \text{ packets} = 4/25 \times 360 = 57.6^\circ$
 $3 \text{ packets} = 2/25 \times 360 = 28.8^\circ$
 $4 \text{ packets} = 9/25 \times 360 = 129.6^\circ$

C grade:

7. In a group of students the following data was collected:
 - a) Explain why the probabilities do not add up to 1. **Some belong to more than one group.**
 - b) What is the probability of choosing a student who is right handed? 0.6
 - c) If the data was collected from 50 students how many of them had long hair? 10

characteristic	probability
female	0.6
Left-handed	0.4
Long hair	0.2
Liked science	0.7

8. Draw a frequency polygon to show the speed of cars on the motorway.
See graphs answer sheet

Speeds of cars on a motorway	
speed	No. of cars
$40 \leq \text{speed} < 50$	10
$50 \leq \text{speed} < 60$	47
$60 \leq \text{speed} < 70$	103
$70 \leq \text{speed} < 80$	40

9. Which class interval contains the median mark? 100.5^{th} car ie $60 \leq \text{speed} < 70$
10. Draw possible scatter diagrams to show
 - a) length of hair compared to ability in maths, **no linear correlation**
 - b) the age of a teenager and their weight **weak positive correlation**
 - c) the speed of a car on a motorway and the time taken to travel 50 miles on that motorway.
Strong negative correlation

11. This data gives the ages of the males and females in a cinema.

Put these numbers into a stem and leaf diagram:

Males: 23, 34, 69, 70, 35, 25, 26, 54, 34, 6, 53, 25, 55, 37, 25, 64, 63, 27, 35, 33, 27, 65, 35

Females: 35, 55, 43, 23, 9, 37, 54, 33, 65, 37, 43, 55, 64, 37, 47, 44, 65, 44, 53, 41, 33.

Data handling diagnostic test/int and higher

Write a sentence comparing the two sets of data.
Males females

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

key: 2 I 3 reps 23

There was a broader range in the age of males; the median age was higher for the females

12. The table below shows the no of visitors to a seaside town in thousands.
Plot the data on graph paper, and plot a 4 point moving average alongside it.
Describe the trend. **The number of visitors is increasing**

year	1999	1999	1999	2000	2000	2000	2000	2001	2001
quarter	2	3	4	1	2	3	4	1	2
visitors	10	15	6	2	12	20	16	8	10
		8.25	8.75	10	12.5	14	13.5		
		$(10+15+6+2)/4$	$(15+6+2+12)/4$	etc					

B grade:

13. Estimate the mean speed of the cars on the motorway (using the previous chart).

$$(45 \times 10 + 55 \times 47 + 65 \times 103 + 75 \times 40) / 200 = 12730 / 200 = 63.65 \text{ mph}$$

14. A 5 sided spinner labelled 0 – 4 was spun 100 times with these results:

Score	0	1	2	3	4
frequency	3	15	49	17	16

- Give the relative frequency, to 2dp, of the spinner giving a score of 3. $17/100$
- Do you think the spinner is biased? Why? **Yes, because the outcomes vary so much**
- The spinner was spun another 75 times...predict the number of times it scores 4. **12**
- Is this an accurate prediction? Why? **No, it's an estimate...this is based on what has happened in the past but does not ensure the future!**

15. Would you use theoretical probability or relative frequency to find the probability of dropped toast landing jam side down? **Relative frequency**

16. This table shows how many hours a year 11 group spent in revision the week prior to their GCSEs.

- Make a cumulative frequency table for the data.
- Draw the cf graph
- Estimate the median amount of time spent: 27hrs
- Estimate the inter-quartile range: $34.5 - 20 = 14.5$ hrs
- Estimate how many students spend more than 35 hours revising? 25 students spent <25, so 7 students spent more
- Draw a box plot for this data

Data handling diagnostic test/int and higher

No of hours	No of students		cf
$0 < h \leq 10$	1	<10	1
$10 < h \leq 20$	7	<20	8
$20 < h \leq 30$	11	<30	19
$30 < h \leq 40$	10	<40	29
$40 < h \leq 50$	3	<50	32

A Grade

17. This table shows the distribution of heights of trees in a wood.

a) Draw a histogram for the data

b) Use the histogram to estimate the no of trees whose heights are between 10 and 20m.
 $=7+3=10$

Height, metres	frequency	fd
$0 < h \leq 5$	8	1.6
$5 < h \leq 7.5$	12	4.8
$7.5 < h \leq 10$	18	7.2
$10 < h \leq 15$	7	1.4
$15 < h \leq 25$	6	0.6