

Mathematics

Edexcel IAL

S1

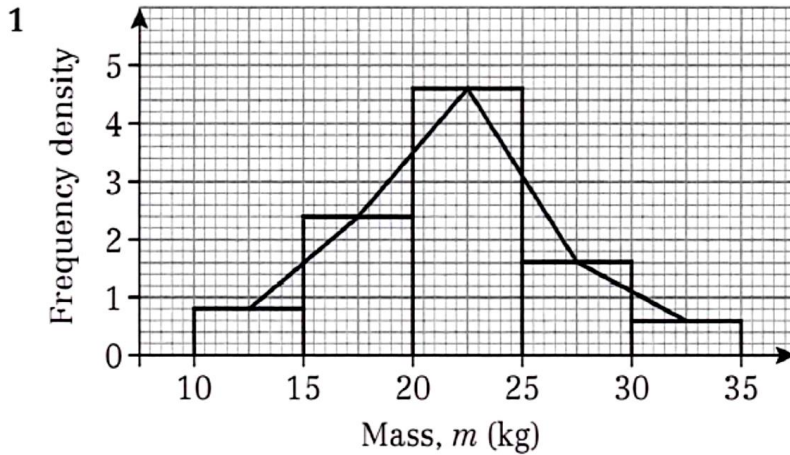
Worksheet Answers

Representations of Data

Eng. Nagy Elraheb

Representations of data

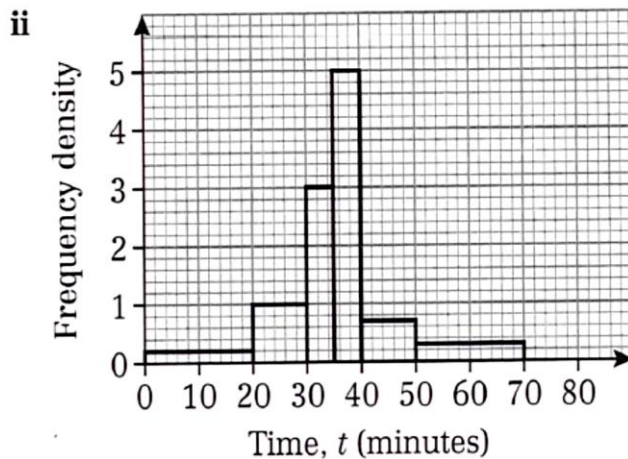
Exercise 1:



- 2 a The quantity (time) is continuous.
 b 150 c 369 d 699
- 3 a The quantity (distance) is continuous.
 b 310 c 75 d 95 e 65
- 4 a 32 lambs is represented by 100 small squares,
 therefore 25 small squares represents 8 lambs.
 b 32 c 168 d 88

5 a i

Time, t (min)	Frequency
$0 \leq t < 20$	4
$20 \leq t < 30$	10
$30 \leq t < 35$	15
$35 \leq t < 40$	25
$40 \leq t < 50$	7
$50 \leq t < 70$	6



b 35

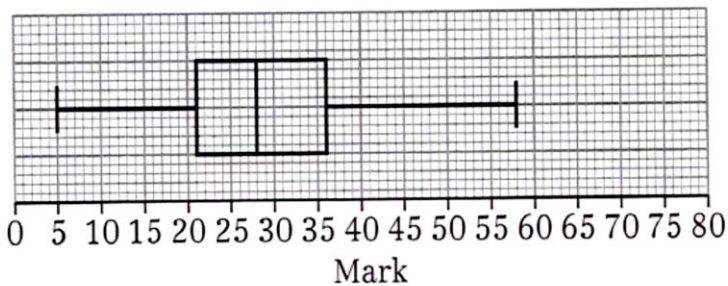
- 6 a 12.5 and 14.5
 b i 6 cm ii 3 cm
- 7 a Width 0.5 cm, height 12 cm
 b Mean €10.4, standard deviation 2.4
 c €9 d 4.7 employees
 (rounded to 5)

Exercise 2:

- 1 a 7 is an outlier b 88 is not an outlier
 c 105 is an outlier
- 2 a No outliers b 170 g and 440 g
 c 760 g
- 3 a 11.5 kg
 b Smallest 2.0 kg, largest 10.2 kg
- 4 a Mean 10.2, standard deviation 7.36
 b It is an outlier as it is more than 2 standard deviations above the mean.
 c e.g. It could be the age of a parent at the party.
 d Mean 7.75, standard deviation 2.44

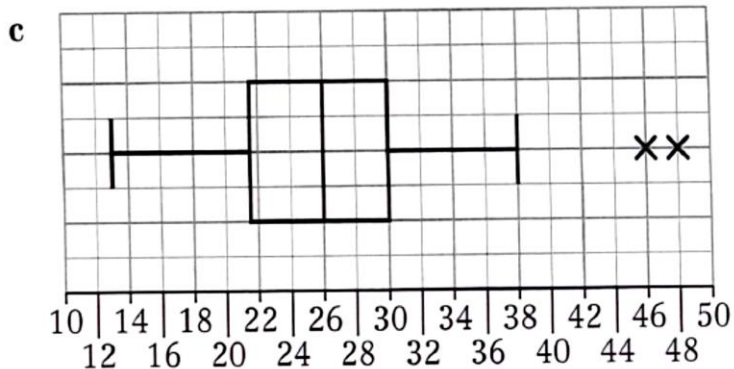
Exercise 3:

1 Marks in a test



- 2 a 47, 32 b 38 c 15 d 64
- 3 a The male turtles have a higher median mass, a greater interquartile range and a greater total range.
 b It is more likely to have been female. Very few of the male turtles had a mass this low, but more than a quarter of the female turtles had a mass of more than this.
 c 500 g

- 4 a $Q_1 = 21.5, Q_2 = 26, Q_3 = 30$
 b $Q_3 + 1.5(30 - 21.5) = 22.75$, and both 46 and 48 are above this value.



Exercise 4:

- 1 Ordered Key 1 | 2 means 12 movies

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

a 25 b 15 c 29

- 2 a 49 b 8 c 3 d 37

e 34 f 21 g 37

- 3 a Ordered Key 2 | 6 means 26

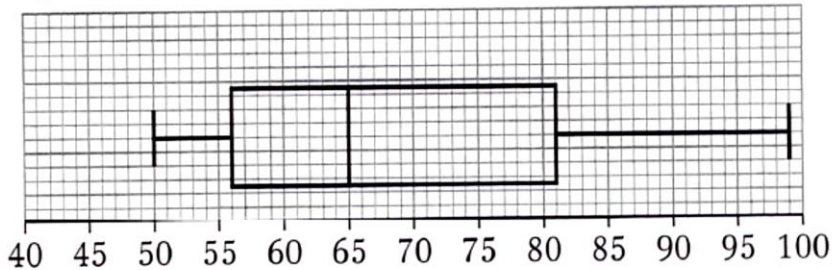
Boys	Girls
9 8	2 4 6 8
4 2 2	3 2 3 4 4 9
8 7 5 5 4	4 5 6 7
7 6 6 4 4	5 2 4
0	6

b Girls gained lower marks than boys

- 4 a 19
 b $IQR = 3$ and outliers are 27, 34, 34 and 41

Exercise 5:

- 1 $Q_2 - Q_1 > Q_3 - Q_2$
- 2 **a** Skew = 0.46 therefore a positive skew
b Median and quartiles because of the skew
- 3 **a** 64
b Median = 65, Lower quartile = 56 and Upper quartile = 81
c



- d** Positive skew
- e** Mean = 68.72 and standard deviation = 13.73
- f** $Q_2 - Q_1 = 65 - 56 = 9$ and $Q_3 - Q_2 = 81 - 65 = 16$
 $Q_2 - Q_1 < Q_3 - Q_2 \Rightarrow$ Positive skew
$$\frac{3(Q_3 - Q_1)}{Q_2} = \frac{3(81 - 56)}{65} = 1.15 \Rightarrow$$
 Positive skew
- g** **b** - because of the skew

Exercise 6:

- 1 The median speed is higher on motorway A than on motorway B. The spread of speeds for motorway B is greater than the spread of speeds for motorway A (comparing IQRs).
- 2 Class 2B: mean 32.5, standard deviation 6.6
Class 2F: mean 27.2, standard deviation 11.4
The mean time for Class 2B is higher than the mean time for Class 2F. The standard deviation for Class 2F is bigger than for Class 2B, showing that the times were more spread out.
- 3 **a** Median = 26.5
IQR (in complete years) is 17
b Any of the following:
 - The median for both groups is similar but the median for females is higher
 - Both males and females have most of their members in their 20s
 - Male range is greater
 - Generally, females are younger than the males

- 4
- Median marks for students taking their exam for the first time are lower than students retaking their exam.
 - Interquartile range of marks for students taking their exam for the first time is smaller than students retaking their exam.
 - The range of marks for students taking the exam for the first time is lower than that for students retaking the exam.
 - Both groups marks are positively skewed.