

Foundation Check In - 12.03a and 12.03b

Analysing data: Summary statistics

For questions 1-5 use the table below.

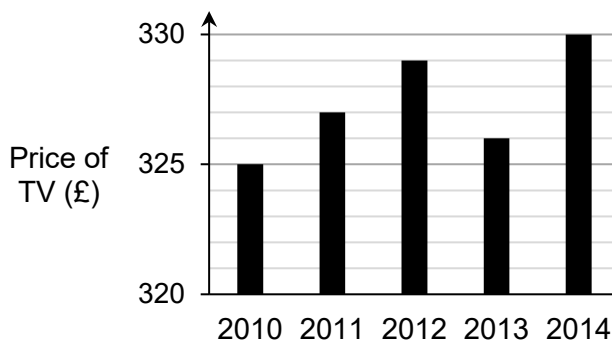
| Hours of driving lessons (h) | Frequency |
|----------------------------------|-----------|
| $0 \leq h < 10$ | 12 |
| $10 \leq h < 20$ | 34 |
| $20 \leq h < 30$ | 55 |
| $30 \leq h < 40$ | 59 |
| $40 \leq h < 50$ | 18 |
| $50 \leq h < 60$ | 15 |
| $60 \leq h < 70$ | 7 |

The table shows the results of a survey of 200 17-19 year olds which asked how many hours of driving lessons they had before they passed their driving test.

1. State the modal group for the number of hours needed to pass.
2. Find the group that contains the median number of hours needed to pass.
3. Estimate the mean number of hours needed to pass.
4. Estimate the range of hours needed to pass.
5. Choose one of the following to correctly complete this statement.
“The answers to questions 3 and 4 are estimates because _____.”

- A) it is possible to work them out without using a calculator
- B) samples bigger than 50 are always estimated
- C) the exact numbers of hours are not known
- D) time can be measured more accurately with minutes and seconds

6. John states that the average price of a TV in 2014 has doubled since 2010. Explain why the graph is misleading.



7. The table below shows 'like for like' daily sales data in December in 2014 and in 2015 in a shop. Suggest why the mean and range values are higher in 2015, but the median value is higher in 2014.

| | 2014 | 2015 |
|----------------------|----------|----------|
| Mean daily sales | £299 985 | £326 558 |
| Median daily sales | £250 248 | £243 148 |
| Range of daily sales | £449 978 | £489 837 |

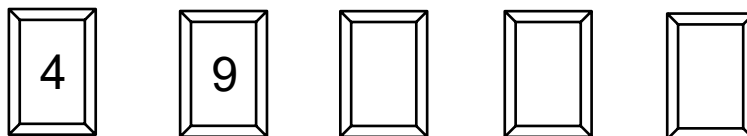
8. Darren is looking to sign up for a set of driving lessons and is comparing prices between different instructors. Use the survey data from questions 1-5 to help Darren make his choice.

Pass Right
1 hour lesson £7
30 hours of lessons for £150

Safe Drive
1 hour lesson £7
60 hours of lessons for £280

First Time
1 hour lesson £7
100 hours of lessons for £400

9. Neil has a mean throwing distance of 65.4 m for his first 9 javelin throws. What is his new mean throwing distance if his 10th throw is 69.4 m?
10. Zoe places five numeric cards, two facing up showing a 4 and a 9, and three facing down.



The cards have a mean of 7, median of 7 and a range of 13. What are the three hidden numbers on the cards?

Extension

Five fair, six-sided dice are rolled. How many different ways can you roll the dice so that the mean, median and mode of the face values would be 4?

Answers

1. $30 \leq h < 40$
2. $20 \leq h < 30$
3. 30.5 hours
4. 70 hours
5. C
6. The y-axis scale is misleading because it does not start from zero. Although the height of the bar has doubled, the average price has only risen from £325 to £330.
7. The mean is affected by extreme values. Since the range is higher in 2015 it may be assumed that there was at least one or more days with very high sales in 2015 which distorted the mean upwards but had no effect on the median.
8. Since students pass their driving test, on average, within 30 hours of driving lessons it does not seem to be cost effective to pay for 60 or 100 hours of lessons even though the cost per lesson is less.
9. 65.8 m
10. 1, 7, 14

Extension

Four different dice results:

- 4, 4, 4, 4, 4
- 3, 4, 4, 4, 5
- 2, 4, 4, 4, 6
- 1, 4, 4, 5, 6

GCSE (9–1)

MATHEMATICS



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GCSE (9–1) MATHEMATICS

| Assessment Objective | Qu. | Topic | R | A | G |
|----------------------|-----|--|---|---|---|
| AO1 | 1 | Find the modal group for grouped data | | | |
| AO1 | 2 | Calculate an estimate of the median from grouped data | | | |
| AO1 | 3 | Calculate an estimate of the mean from grouped data | | | |
| AO1 | 4 | Calculate an estimate of the range from grouped data | | | |
| AO1 | 5 | Understand why the mean and range of grouped data are estimates | | | |
| AO2 | 6 | Recognise graphical misrepresentation of data | | | |
| AO2 | 7 | Compare data sets using 'like for like' summary values and understand their advantages and disadvantages | | | |
| AO2 | 8 | Interpret summary values in context and make simple comparisons | | | |
| AO3 | 9 | Solve a problem involving the mean of ungrouped data | | | |
| AO3 | 10 | Solve a problem involving the mean, median and range of ungrouped data | | | |

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