## Averages Practice Questions

1. Chris has done many English exams this year.

His scores are shown below.
$97 \quad 88 \quad 45$
a) Calculate his mean score.

Answer: $\qquad$
b) What score does Chris need on his next test to have an overall mean score of 70? [2 marks]

Answer: $\qquad$
2.
a) Lawrence likes gardening.

He has 10 rose bushes in his garden, and he counted the roses on each bush.
These were his results.
7
10
6
90
2
5
7
0
7
i. Calculate the Mean.
[2 marks]

Answer: $\qquad$
ii. Calculate the Median.
[2 marks]

Answer: $\qquad$
iii. Calculate the Mode.
[1 mark]

Answer:
$\qquad$
b) David also enjoys gardening but only has 6 rose bushes. These were his results.

| 2 | 3 | 1 | 25 | 0 | 5 |
| :--- | :--- | :--- | :--- | :--- | :--- |

i. Calculate the Mean.

Answer: $\qquad$
ii. Calculate the Median.

Answer: $\qquad$
iii. Calculate the Mode.
iv. Calculate the Range.

Answer: $\qquad$
[2 marks]

Answer: $\qquad$
c) By comparing the mean number of roses for Lawrence and David, who is the better gardener? Write your answer in full sentences.
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$

## What does it＇Mean＇？

| Outliers | 外れ値（集団から大きく外れている値） |
| :---: | :---: |
| Spread | 広がり具合，散らばり具合 |
| Represent | を表す，を代表する |
| Deviation | 偏差（標準となる数値，平均値などからの偏り） |
| Observations | 観測 |
| Observed | 観測された |

Activity 1：Listen to the presentation and fill in the missing information in the table below．

|  | Advantages | Disadvantages |
| :---: | :---: | :---: |
| Mode | It doesn＇t use all the data |  |
| Median | Takes a long time to calculate for <br> large sets of data |  |
| Mean | Uses all the data and is well <br> known |  |
| Range |  | Is affected by outliers |

## Interquartile Range－IQR

The IQR describes the middle $50 \%$ of values when ordered from lowest to highest．

## Example

The following data shows the number of Haribo in each packet．There are 8 packets．
$\begin{array}{lllll}6 & 11 & 2 & 5 & 10\end{array}$
$9 \quad 5$
7

Calculate the interquartile range．

Activity 2: Answer the question below. You can work with your partner.

1. The following data shows how many songs are on each of Emma's CDs she has at home.
$\begin{array}{llllllllll}10 & 9 & 10 & 12 & 10 & 9 & 14 & 7 & 11 & 12\end{array}$
Calculate interquartile range.

Answer: $\qquad$

## Standard Deviation - $\sigma$

Standard deviation is a measure of how spread out the data is from the mean.

## Example

Five friends measured the height of their dogs (in millimeters).
The heights at the shoulders are: $600 \mathrm{~mm}, 470 \mathrm{~mm}, 170 \mathrm{~mm}, 430 \mathrm{~mm}$ and 300 mm .
Step 1: Calculate the mean $-\mu$

Step 2: Calculate the difference. Subtract the mean from each of the dogs' heights $-\left(\mathrm{x}_{\mathrm{i}}-\mu\right)$.

Step 3: Calculate the variance $-\sigma^{2}$

Step 4: Calculate the Standard Deviation $-\sigma$

What does this tell us about the data?

- A high standard deviation shows the data is widely spread $\qquad$ )
- A low standard deviation shows the data isn't widely spread $\qquad$ )

