## Statistics

10    Answer the whole of this question on a sheet of graph paper.

The ages of a sample of 40 students were recorded.
The results are given in the table below.

| Age ($x$ years) | $8 < x \leqslant 10$ | $10 < x \leqslant 11$ | $11 < x \leqslant 12$ | $12 < x \leqslant 14$ | $14 < x \leqslant 16$ | $16 < x \leqslant 19$ |
|---|---|---|---|---|---|---|
| Frequency | 7 | 8 | 6 | 10 | 3 | 6 |

(c)   Calculate an estimate of the mean age of the students.                [3]
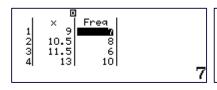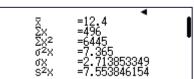
Solution:
If the frequency option is off, first we should turn it on.
SHIFT MENU ▼ 3 1

Once you have turned the frequency on, go to statistics menu
MENU 6 1 9

after entering the data, press OPTN 3 to see the results. The first value is for mean.
The sum of $fx$ can be seen in $\sum x$ and $\sum f$ can be seen in $n$ by navigating downwards.

5    (a)   Sweet packets contain sweets of different colours.
The number of yellow sweets in each of 25 packets was recorded.
The table below shows the results.

| Number of yellow sweets | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Frequency | 8 | 5 | 5 | 4 | 2 | 1 |

For this distribution,

(i)   write down the mode,                [1]

(ii)   write down the median,                [1]

(iii)   calculate the mean.                [2]

Solution:
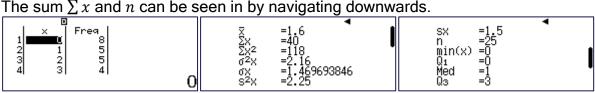If the frequency option is off, first we should turn it on.
SHIFT MENU ▼ 3 1

Once you have turned the frequency on, go to statistics menu
MENU 6 1 9

after entering the data, press OPTN 3 to see the results. The first value is for mean.
The sum $\sum x$ and $n$ can be seen in by navigating downwards.

| | x | Freq |
|---|---|---|
| 1 | 0 | 8 |
| 2 | 1 | 5 |
| 3 | 2 | 5 |
| 4 | 3 | 4 |

0

$\bar{x}$ =1.6
$\sum x$ =40
$\sum x^2$ =118
$\sigma^2 x$ =2.16
$\sigma x$ =1.469693846
$s^2 x$ =2.25

sx =1.5
n =25
min(x) =0
$Q_1$ =0
Med =1
$Q_3$ =3

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**December 2005 P2 Q4**

4   Answer the whole of this question on a sheet of graph paper.

The table shows the number of cars owned by each of 25 families.

| | | | | |
|---|---|---|---|---|
| 2 | 0 | 3 | 4 | 1 |
| 0 | 1 | 1 | 2 | 3 |
| 2 | 3 | 6 | 1 | 0 |
| 1 | 2 | 0 | 3 | 2 |
| 3 | 4 | 1 | 2 | 1 |

(a)   Draw a bar chart to represent the information in the table.                     [2]

(b)   Find

   (i)   the median number of cars,                                              [1]

   (ii)   the modal number of cars,                                             [1]

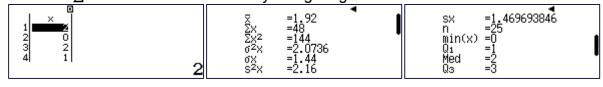   (iii)   the mean number of cars.                                             [1]

Solution:
Go to statistics menu and enter the data values
MENU 6 1 9

after entering the data, press OPTN 3 to see the results. The first value is for mean.
The sum $\sum x$ and $n$ can be seen in by navigating downwards.

| | x | |
|---|---|---|
| 1 | 4 | |
| 2 | 0 | |
| 3 | 2 | |
| 4 | 1 | |

2

$\bar{x}$ =1.92
$\sum x$ =48
$\sum x^2$ =144
$\sigma^2 x$ =2.0736
$\sigma x$ =1.44
$s^2 x$ =2.16

sx =1.469693846
n =25
min(x) =0
$Q_1$ =1
Med =2
$Q_3$ =3

**(b)** Each member of a group of 16 children solved a puzzle.
The times they took are summarised in the table below.

| Time ($t$ minutes) | $5 < t \leqslant 10$ | $10 < t \leqslant 12$ | $12 < t \leqslant 14$ | $14 < t \leqslant 16$ | $16 < t \leqslant 20$ |
|---|---|---|---|---|---|
| Frequency | 2 | 4 | 6 | 3 | 1 |

    **(i)** Write down an estimate of the number of children who took less than 13 minutes. [1]

    **(ii)** Calculate an estimate of the mean time taken to solve the puzzle. [3]
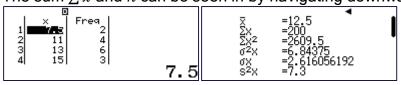
Solution:
If the frequency option is off, first we should turn it on.
[SHIFT] [MENU] [▼] [3] [1]

Once you have turned the frequency on, go to statistics menu
[MENU] [6] [1] [9]

after entering the data, press [OPTN] [3] to see the results. The first value is for mean.
The sum $\sum x$ and $n$ can be seen in by navigating downwards.

**5** Emma noted the number of letters in each of the 25 words in an examination question.
The results are given in the table below.

| Number of letters | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| Frequency | 2 | 6 | 5 | 5 | 4 | 0 | 3 |

**(a)** For this distribution,

    **(i)** write down the mode, [1]

    **(ii)** find the median, [1]

    **(iii)** calculate the mean. [2]

Solution:
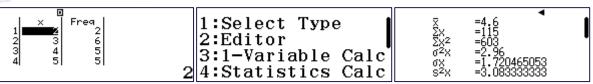If the frequency option is off, first we should turn it on.
[SHIFT] [MENU] [▼] [3] [1]

Once you have turned the frequency on, go to statistics menu
[MENU] [6] [1] [9]

after entering the data, press [OPTN] [3] to see the results. The first value is for mean.
The sum $\sum x$ and $n$ can be seen in by navigating downwards.

| | × | Freq |
|---|---|---|
| 1 | 2 | 2 |
| 2 | 3 | 6 |
| 3 | 4 | 5 |
| 4 | 5 | 5 |

```
1:Select Type
2:Editor
3:1-Variable Calc
2 4:Statistics Calc
```

```
x̄      =4.6
Σx     =115
Σx²    =603
σ²x    =2.96
σx     =1.720465053
s²x    =3.083333333
```

2    (a)    The results of a survey of the number of cars owned by 50 families are given in the table below.

| Number of cars | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Number of families | 4 | 35 | 6 | 5 |

(i)    Calculate the mean number of cars per family.

Solution:
If the frequency option is off, first we should turn it on.
[SHIFT] [MENU] [▼] [3] [1]

Once you have turned the frequency on, go to statistics menu
[MENU] [6] [1] [9]

after entering the data, press [OPTN] [3] to see the results. The first value is for mean.
The sum $\sum x$ and $n$ can be seen in by navigating downwards.

| | × | Freq |
|---|---|---|
| 1 | 0 | 4 |
| 2 | 1 | 35 |
| 3 | 2 | 6 |
| 4 | 3 | 5 |

```
x̄      =1.24
Σx     =62
Σx²    =104
σ²x    =0.5424
σx     =0.7364781056
s²x    =0.5534693878
```