**1.** The table gives information about the number of people staying in a hotel each quarter in 2011 and in 2012.

|  |  |  |
| --- | --- | --- |
| **Year** | **2011** | **2012** |
| **Quarter** | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| **Number of people** | 261 | 353 | 372 | 290 | 193 | 309 | 292 | 202 |

(*a*) Calculate the 4-point moving averages for this information.

The first three have been done for you.

319, 302, 291, .......................... , ..........................

**(2)**

The information in the table is shown on the grid.

(*b*) On the grid, plot the 4-point moving averages.



**(2)**

(*c*) Describe what the moving averages show about the trend in the number of people staying at the hotel over this period.

......................................................................................................................................................

**(1)**

**(Total for Question 1 is 5 marks)**

**2.** The table shows information about the numbers of shoes sold in a shop.

|  |  |  |
| --- | --- | --- |
| **Year** | **Quarter** | **Number of Shoes** |
| **2010** | 1 | 255 |
|  | 2 | 309 |
|  | 3 | 285 |
|  | 4 | 243 |
| **2011** | 1 | 294 |
|  | 2 | 330 |

(*a*) Calculate the 4-point moving averages for this information.

........................... ........................... ...........................

**(2)**

(*b*) Describe what the moving averages show about the trend in the numbers of shoes sold in the shop over this period of time.

......................................................................................................................................................

**(1)**

**(Total for Question 2 is 3 marks)**

**3.** The table shows information about the number of games consoles sold each month by a shop.

The table also shows 3-point moving averages for this information.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Month** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| **Number of games consoles** | 64 | 84 | 53 | 91 | 108 | 92 | 154 |
| **3-point moving average** |  | 67 | 76 | 84 | 97 | *x* |  |

(*a*) Using the information given in the table, work out the last 3-point moving average, *x*.

..........................................

**(2)**

(*b*) Describe what the moving averages show about the trend in the number of games consoles sold in the shop over these months.

.....................................................................................

**(1)**

**(Total for Question 3 is 3 marks)**

**4.** The table shows the number of laptops sold in each of the first five months of 2012.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Month** | **January** | **February** | **March** | **April** | **May** |
| **Number of laptops** | 2190 | 2220 | 2280 | 2250 | 2280 |

(*a*) Work out the 3-point moving averages for the first five months of 2012.

.................... .................... ....................

**(2)**

The 3-point moving average of the number of laptops sold in April, May and June of 2012 was 2300.

(*b*) Work out the number of laptops sold in June 2012.

..........................................

**(2)**

(*c*) Describe what the moving averages show about the trend in the number of laptops
sold in the shop in the first six months of 2012.

...................................................................................

**(1)**

**(Total for Question 4 is 5 marks)**

**5** The time-series graph gives information about the number of chocolate eggs sold in a

shop each quarter in 2013 and in 2014.



(*a*)Calculate the 4-point moving averages for the information in the graph.

 You must show your working.

 The first three have been done for you.

240, 257.5, 277.5, ......................................... , .........................................

**(3)**

(*b*)Describe what the moving averages show about the trend in the number of chocolate

 eggs sold in the shop during this period.

..................................................................................

**(1)**

**(Total for Question 5 is 4 marks)**

**6.** The table gives information about the number of students who enrol for a course in each
term in 2011, in 2012 and in 2013.

The 3-point moving averages are given correct to 3 significant figures.

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Term** | **Number of students** | **3-point moving average** |
| **2011** | Autumn | 330 |  |
| Spring | 180 | 200 |
| Summer | 90 | 220 |
| **2012** | Autumn | 390 | 237 |
| Spring | 230 | 263 |
| Summer | 170 | 287 |
| **2013** | Autumn | 460 | 297 |
| Spring | 260 | *x* |
| Summer | 210 |  |

(*a*) Calculate the value of *x* in the table.

Give your answer correct to 3 significant figures.

..........................................

**(2)**

(*b*) Plot the 3-point moving averages on the time-series graph.

The first four have been done for you.

  **(2)**

(*c*) On the time-series graph, draw a trend line for the 3-point moving averages.

**(1)**

(*d*) (i) Use your trend line to find an estimate for the mean seasonal variation in numbers enrolling for the Autumn Term.

..........................................

**(2)**

 (ii) Predict the number of students who will enrol in the Autumn Term of 2014.

..........................................

**(2)**

**(Total for Question 6 is 9 marks)**

**7.** This time-series graph gives information about the quarterly electricity bills paid by a household from 2010 to 2012.



A trend line has been drawn on the graph.

(*a*) Describe the trend.

......................................................................................................................................................

**(1)**

(*b*) Work out the seasonal variation for quarter 2 of 2012.

..........................................

**(2)**

**(Total for Question 7 is 3 marks)**

**8.** The time-series graph shows information about the number of cameras sold by a shop
each quarter from 2012 to 2014.





The graph also shows the first eight 4-point moving averages for this information.

(*a*) Work out the last 4-point moving average for this information and plot it on the grid.

**(3)**

(*b*) Describe the trend shown by the moving averages.

.......................................................................

**(1)**

(*c*) (i) Find an estimate for the mean seasonal variation for quarter 1.

..........................................

 (ii) Work out an estimate for the number of cameras sold in quarter 1 of 2015.

..........................................

**(4)**

**(Total for Question 8 is 8 marks)**

**9.** The time–series graph shows information about the number of tourists who visited a museum each quarter for the years 2012, 2013 and 2014.

The graph also shows the 4-point moving averages for this information.

A trend line for the moving averages has been drawn.



(*a*) Describe the trend.

....................................................................................

**(1)**

(*b*) Calculate the mean seasonal variation for quarter 1.

..........................................

**(2)**

**(Total for Question 9 is 3 marks)**

**10** The time-series graph gives information about the quarterly sales, in thousands of pounds, from a factory over a three year period.



A trend line has been drawn on the graph.

(*a*) Describe the trend.

......................................................................................................................................................

**(1)**

(*b*) Calculate an estimate for the mean seasonal variation for quarter 1.

£.........................................

**(3)**

**(Total for Question 10 is 4 marks)**