AQA – Time Series – GCSE Statistics – 2019

1. June/2019/Paper_1F/No.12

The table, from the Office of National Statistics, shows conception (becoming pregnant) rates for women of all ages and for women under 16 from 2000 to 2016.

Year of conception	All ages		Under 16	
	Number of conceptions	Conception rate per 1000 women in age-group	Number of conceptions	Conception rate per 1000 women in age-group
2016	862 785	77.3	2821	3.1
2015	876 934	78.3	3466	3.8
2014	871 038	77.8	4160	4.4
2013	872 849	77.8	4648	4.9
2012	884 748	78.5	5432	5.6
2011	909 109	80.4	5991	6.1
2010	909 245	80.5	6674	6.8
2009	896 466	79.3	7158	7.2
2008	888 607	78.6	7586	7.6
2007	895 867	79.4	8200	8.1
2006	869 961	77.5	7826	7.7
2005	841 831	75.5	7930	7.8
2004	826 809	74.9	7615	7.5
2003	806 810	73.5	8024	8.0
2002	787 012	72.1	7875	7.9
2001	763 668	70.3	7903	8.0
2000	766 955	70.9	8116	8.3

Source: Office of National Statistics

(a) In which of these years were there the most conceptions for **Under 16s**?

Circle your answer.

[1 mark]

2000 2003 2007 2010

(b) Describe **two** features or patterns in the data for **all ages** from 2000 to 2016.

[2 marks]

1 _____

_____

2 _____

_____

(c) Bruno thinks the conception rate calculations for Under 16s are wrong.

He says,

> "In 2015 there were 3466 conceptions and the conception rate was 3.8 per thousand.
>
> In 2008, the conception rate was double at 7.6 per thousand but the number of conceptions was 7586
>
> This must be wrong as 7586 is much more than double 3466"

Give **two** reasons why the conception rate calculations are very unlikely to be wrong.

[2 marks]

Reason 1 _____

_____

_____

Reason 2 _____

_____

_____

2. June/2019/Paper_1H/No.2

A library opens every Monday, Wednesday and Friday.

The librarian records the number of books borrowed each day for a period of 4 weeks.

Day	M	W	F	M	W	F	M	W	F	M	W	F
Books borrowed	47	33	39	51	34	42	52	32	45	56	39	46

What type of moving average would be suitable for these data?

Circle your answer.

[1 mark]

3-point 4-point 5-point 7-point

3. June/2019/Paper_2F/No.11

The spreadsheet shows the number of people attending Accident and Emergency (A&E) for major hospitals and for all A&E hospitals from 2008 to 2016.

Year	Major hospitals	All A&E hospitals
2008	13 426 136	19 588 344
2009	13 618 300	20 511 908
2010	13 931 715	21 380 985
2011	14 013 922	21 481 402
2012	14 252 068	21 738 637
2013	14 213 148	21 778 657
2014	14 584 736	22 354 781
2015	14 960 805	22 920 435
2016	15 262 758	23 362 301

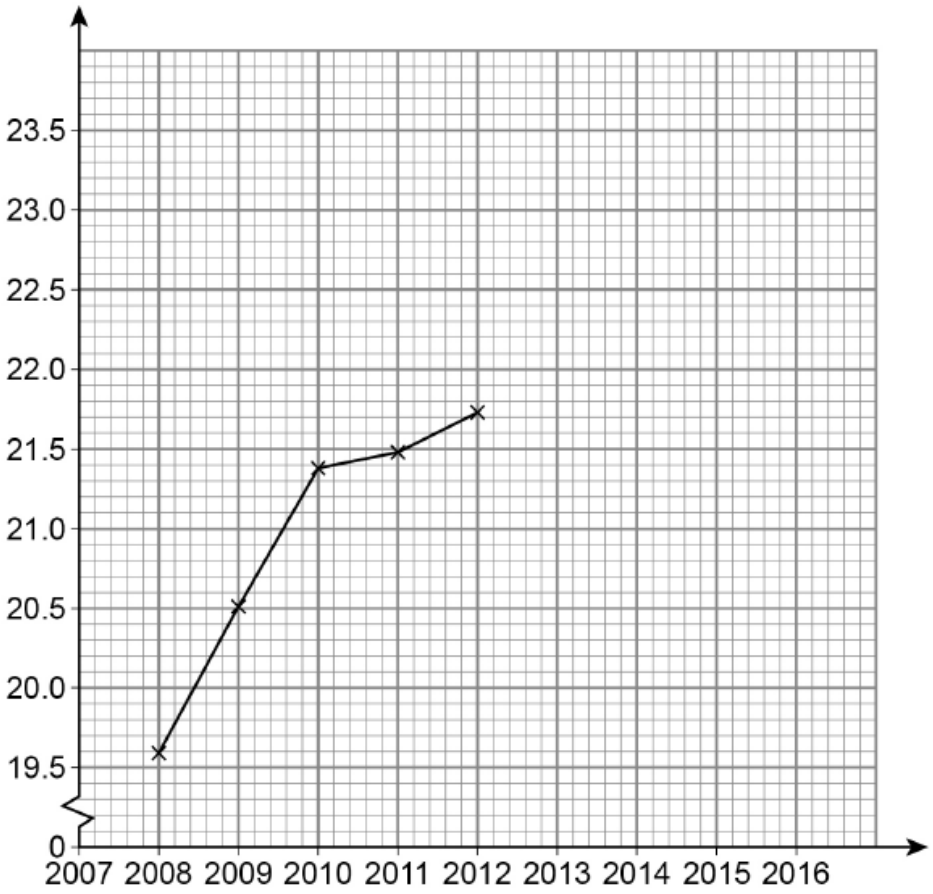
Source: www.england.nhs.uk

(a) Name the year when **Major hospitals** attendances fell.

[1 mark]

Answer _____

(b) Here is a partially completed time series graph showing the '**All A&E hospitals**' attendances.



Complete the time series graph including labelling axes.

[4 marks]

(c) There is a break in the vertical axis in the time series graph.

Write down **one** positive reason and **one** negative reason for using this break.

[2 marks]

Positive _____

_____

Negative _____

_____

(d) Dan said,

"As there are more people going to A&E, you must have to wait longer."

Give a reason why Dan's statement may **not** be true.

[1 mark]

4. June/2019/Paper_2H/No.5

The spreadsheet shows the number of people attending Accident and Emergency (A&E) for major hospitals and for all A&E hospitals from 2008 to 2016.

Year	Major hospitals	All A&E hospitals
2008	13 426 136	19 588 344
2009	13 618 300	20 511 908
2010	13 931 715	21 380 985
2011	14 013 922	21 481 402
2012	14 252 068	21 738 637
2013	14 213 148	21 778 657
2014	14 584 736	22 354 781
2015	14 960 805	22 920 435
2016	15 262 758	23 362 301

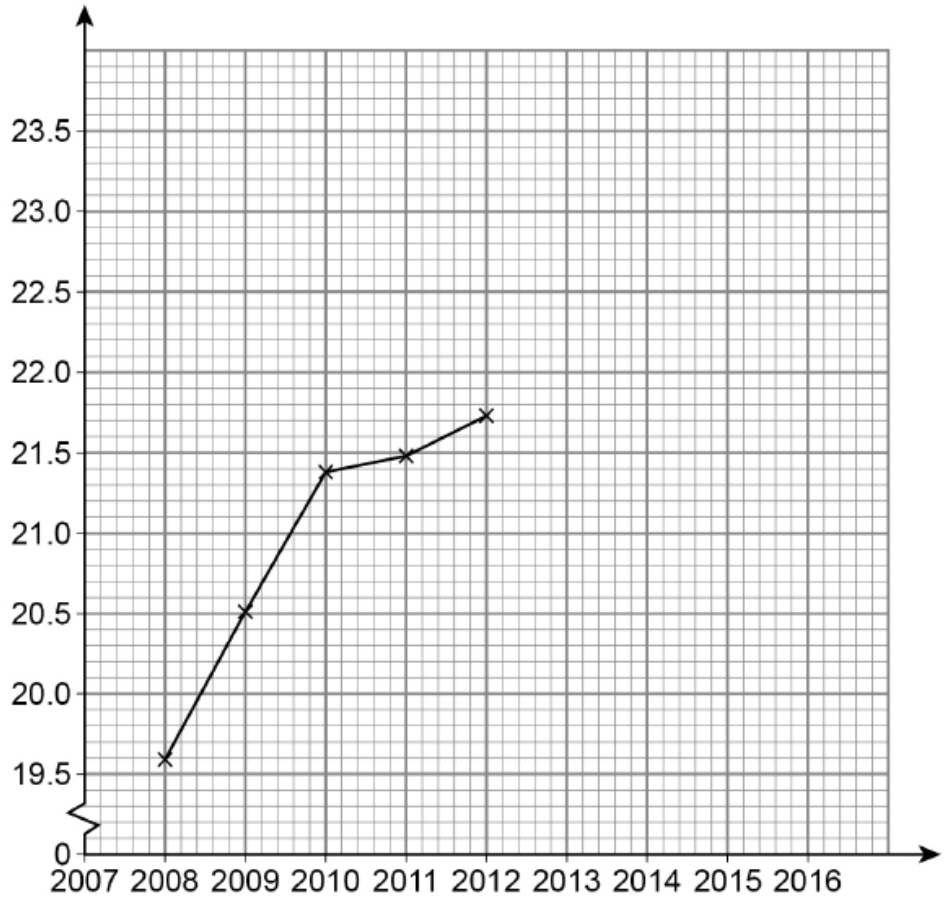
Source: www.england.nhs.uk

(a) Name the year when **Major hospitals** attendances fell.

[1 mark]

Answer _____

(b) Here is a partially completed time series graph showing the '**All A&E hospitals**' attendances.



Complete the time series graph including labelling axes.

[4 marks]

(c) There is a break in the vertical axis in the time series graph.

Write down **one** positive reason and **one** negative reason for using this break.

[2 marks]

Positive _____

_____

Negative _____

(d) Dan said,

"As there are more people going to A&E, you must have to wait longer."

Give a reason why Dan's statement may **not** be true.

[1 mark]