Glastonbury Festival

The first Glastonbury Festival was held in 1970. Since then it has grown enormously. It is now the world's largest open-air festival.

Over the years, despite admission prices steadily increasing, audience figures have rocketed. Therefore, the festival organisers have had to plan for huge numbers of people. The organisers need to provide enough space for campers to set up tents in a safe environment. They have to make sure that food and drink, toilet facilities, water for drinking and washing and medical cover are available. They also need to cooperate with the local police. As well as all this, they also need to make sure that they can cover their costs.

Task 1

The table shows the admission prices to the Glastonbury Festival since 1970.

Year	Price (£)	Year	Price (£)	Year	Price (£)
1970	1	1987	21	2000	87
1971	free	1989	28	2002	97
1978	free	1990	38	2003	105
1979	5	1992	49	2004	112
1981	8	1993	58	2005	125
1982	8	1994	59	2006	133
1983	12	1995	65	2007	145
1984	13	1997	75	2008	155
1985	16	1998	80	2009	175
1986	17	1999	83		

1   What was the percentage increase in admission price from:

     a 1982 to 1983   **b** 1984 to 1985   **c** 1989 to 1990   **d** 2008 to 2009?

2   Investigate how the percentage increase in the admissions price has changed.

3   The ticket price for 2011 is £195. This is a 5.4% increase on the 2010 price.

     What was the price in 2010?

Task 2

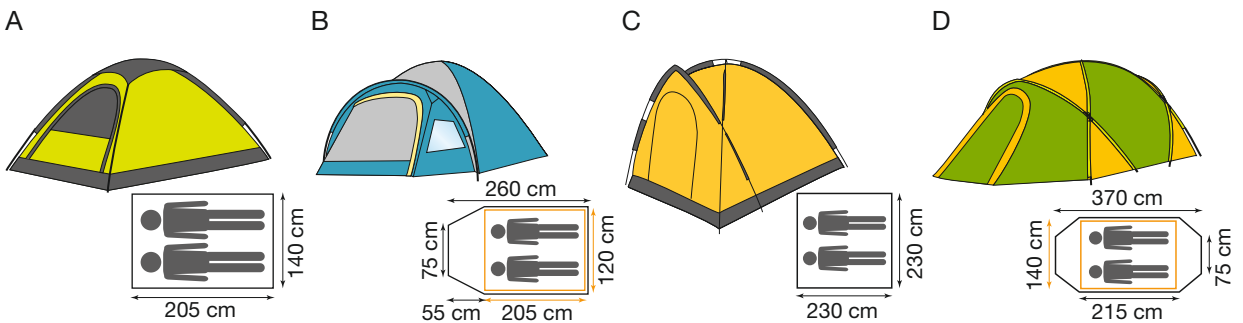Tickets for 85 000 tents are sold for the Glastonbury Festival.

The *Event Safety Guide* recommends a maximum of 430 two-person tents per hectare.

The camping area at Glastonbury is 285 acres.

$$1 \text{ acre} = 4047 \text{ m}^2$$
$$1 \text{ hectare} = 10\,000 \text{ m}^2$$

Below are details of four two-person tents. The floor dimensions are given in centimetres.

A   B   C   D

A: 140 cm × 205 cm

B: 260 cm, 75 cm, 120 cm, 55 cm, 205 cm

C: 230 cm × 230 cm

D: 370 cm, 140 cm, 75 cm, 215 cm

The tents at Glastonbury must be pitched so that they do not touch each other. People must be able to walk between them.

1   Estimate how much land area an average two-person tent will need and compare your answer to the allowance given by the *Event Safety Guide* and to the space allowed at Glastonbury.

2   What might make your calculations inaccurate?

★★★Advanced

Task 3 (extension)

1 Estimate how much standing area each person at the festival needs to view an act in safety.

2 The Pyramid Stage arena at Glastonbury can hold in excess of 90 000 people. How big an area do you think is needed for that number of people?

3 The shape of the viewing area makes a big difference to how well people can see the stage. Draw diagrams of different shaped viewing areas and add lines of sight for people standing at the corners and at the edges of the areas. What shape do you think provides the best view for most people?

Task 4

The following table shows the amount of rainfall, in millimetres (mm), in the Glastonbury area each June since the festival started.

| Year	Rainfall (mm)	Year	Rainfall (mm)	Year	Rainfall (mm)
1970	57.6	1984	30	1998	156
1971	130	1985	111.1	1999	83.2
1972	114.1	1986	70.2	2000	51.5
1973	48	1987	103.7	2001	42.6
1974	72.2	1988	45.2	2002	59.7
1975	12.4	1989	46.7	2003	64
1976	20.9	1990	94	2004	64.4
1977	79.5	1991	118.1	2005	78.7
1978	53	1992	34.8	2006	37.6
1979	39.1	1993	96.7	2007	146.7
1980	133.9	1994	41.1	2008	61.4
1981	54.6	1995	19.7	2009	63.4
1982	123.9	1996	37.6	2010	35.9
1983	46.6	1997	125.1		

Here is the same data shown on a graph.
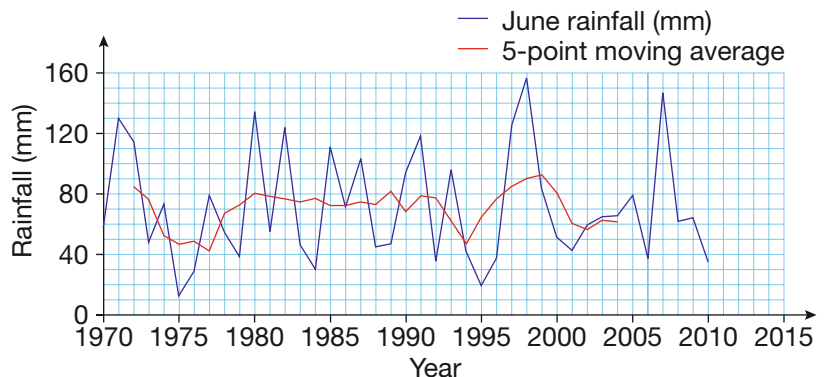
1 Calculate the five-point moving averages, starting with 2003 to 2007 and up to 2006 to 2010.

2 Plot those averages on the graph.

3 Why is a moving average useful?

4 Is there a trend developing in the amount of rainfall in June?

Task 5

Use the information from Tasks 1 and 2 to answer these questions.

1 Looking at increases in price, what might someone wanting a ticket to go to the Glastonbury festival in 2030 expect to pay?

2 The trend in tent design is towards tipi tents.

Use these dimensions to calculate the floor area of a tipi tent.

260 cm

260 cm
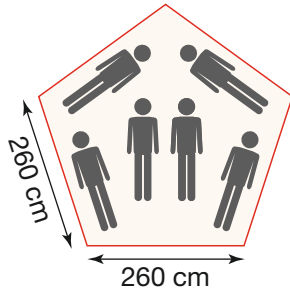
3 However, the average number of occupants amongst campers using tipi tents is five. The average tipi tent can accommodate six people.

a Compare the floor area and the number of campers of a standard tent from Task 2 to a tipi.

b If everyone camped in tipi tents by 2030, would there be room for more or fewer campers? What is the percentage increase or decrease?

HOW DID YOU FIND THESE TASKS?

- What did you find easy or difficult about these tasks?
- Did you work on your own, in pairs or in groups, and how did this help or hinder your approach and success with these tasks?
- What did you learn about how maths is used and applied in real-world situations?