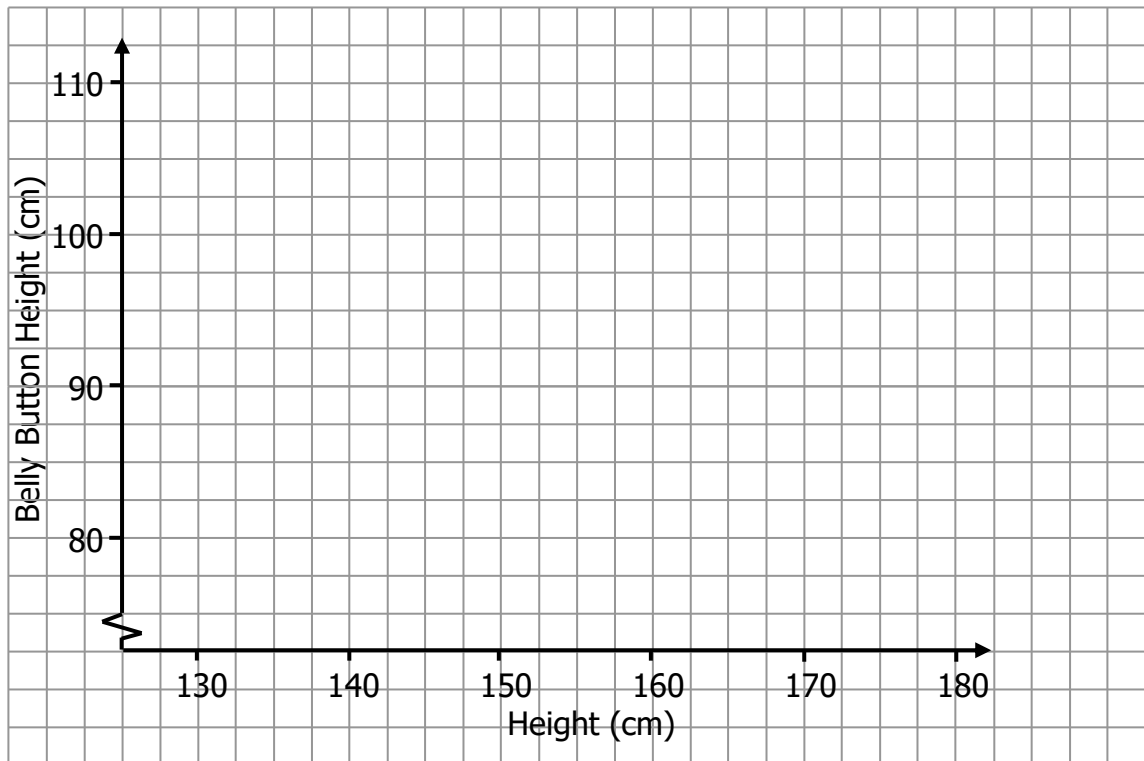# National 4 Applications of Maths – AVU Part 2 Revision

1. As part of a statistics project, a class of pupils are asked to measure their height and the height of their belly buttons.

Pupil	A	B	C	D	E	F	G	H	I	J
Height (cm)	130	140	145	145	150	150	155	165	165	170
Height of Belly Button (cm)	80	85	90	95	90	95	95	100	105	105

(*a*)   Use the information in the table to draw a scatter graph.

(*b*)   Draw a line of best fit on your scattergraph.

(*c*)   Using this line, how high would you expect the belly button to be of someone who is 165 cm tall?

2. A school organises a disco to raise money for charity.

- 120 tickets were sold at £2·50 each
- A stall selling crisps and drinks raised £150

Expenses	
Drinks	5 cases at £10·25 each
Crisps	£38·75
DJ	£100
Decorations	£25·50

Items bought for the disco are listed.

(*a*) Use the above information about income and expenditure to complete the Financial Statement below:

INCOME		EXPENDITURE	
Item	**Amount (£)**	**Item**	**Amount (£)**
Total Income		**Total Expenditure**	

(*b*) Overall, did the disco raise money for charity? Justify your answer.

3. Andrew works in a petrol station. His basic pay is £6 per hour.
Any overtime that he works is paid at time and a half.

(*a*) Last week Andrew worked 5 hours overtime. How much was he paid for this?

(*b*) Complete his pay slip below by calculating his gross pay, total deductions and net pay.

Mr. A. Wilson	*Employee#: 182*	*NI#: AM936425A*	*Week: 41*
Basic Pay: £220·50	**Overtime**: _____	Bonus: £0·00	**Gross Pay:** _____
National Insurance: £30·90	Tax: £13·98	Pension: £0·00	**Total Deductions:** _____
			Net Pay: _____

4. Megan's brother is in working in Africa during a gap year. She wants to send a parcel to him for his birthday. She decides to send the following things.
- 3 chocolate bars, 47 g each
- photographs 105 g
- T-shirt, 228 g

The box that she puts the things into weighs an additional 180 g.

The price to send the parcel can be worked out from the table below.

Prices for letters and small parcels over 100g			
Weight	Europe	Asia, Africa, N&S America	Australasia
Up to 250 g	£3·60	£4·60	£4·80
Up to 500 g	£5·05	£7·30	£7·65
Up to 750 g	£6·50	£10·00	£10·50
Up to 1 kg	£7·95	£12·70	£13·35
Up to 1·25 kg	£9·40	£15·40	£16·20
Up to 1·5 kg	£10·85	£18·10	£19·05
Up to 1·75 kg	£12·30	£20·80	£21·90
Up to 2 kg	£13·75	£23·50	£24·75

(*a*)   Calculate the total weight of the parcel and its contents.

(*b*)   Use the table to find the cost of sending the parcel.

5. Angus is going to Spain on holiday. He has £300 to change into Euros.

At his local Post Office they tell him that he will be able to buy €330.

At his local travel agent they charge a £10 fee and will offer an exchange rate of €1·17 to the pound.

(*a*)   Calculate how many Euros Angus will receive if he uses the travel agent.

(*b*)   Give a reason why Angus does not get the same amount at both places.

6. At a cinema they follow a strict schedule to ensure each screen is cleaned before the next movie performance.
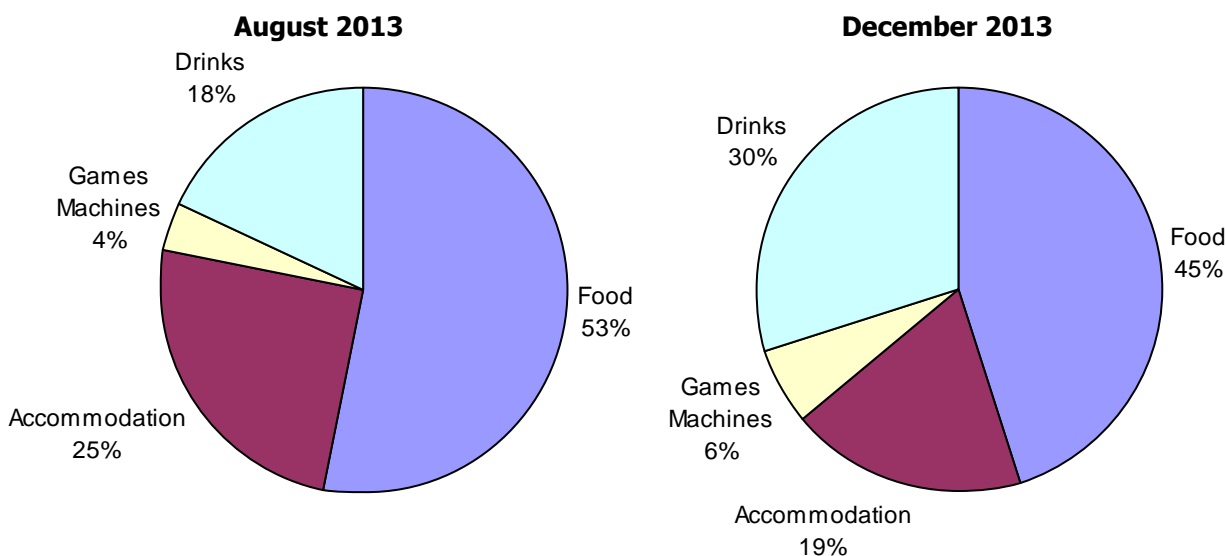
For a particular movie the times are as follows:

Clean auditorium	20 minutes
Audience allowed in	10 minutes
Adverts and trailers	27 minutes
Movie including credits	98 minutes

(*a*) How long, in hours and minutes, is it from starting to clean the auditorium to the end of the movie?

(*b*) A showing of the movie finishes at 2240. A late showing of the movie follows. At what time will the late showing end?

7. A pub's income over two months is shown in the pie charts below.

August 2013

Drinks 18%
Games Machines 4%
Accommodation 25%
Food 53%

December 2013

Drinks 30%
Food 45%
Games Machines 6%
Accommodation 19%

(*a*) In August the income from accommodation was £3600.
What was pub's total income in August?

(*b*) In December the pub's total income was £13000. In which month did the pub make more money on drinks? **Justify your answer by calculation.**