Summer Task 1: Core Maths

1. Below is a table showing the numbers of students in year 12 on Maths courses at Poole High School.

Course	Further Maths	A-level Maths	Core Maths	**Total**
Number of students	8	24	48	80

Mrs Bareham wants to do a survey for all new year 12 students doing Mathematics courses. She decides to do a stratified survey of 20 students.

Show that she should ask 12 Core Maths students.
How many Further Maths students should she ask?

2. Mrs Green manages to buy 25 bunches of bananas for £17.20. She sells 18 bunches for £0.90, 4 bunches for £0.50 and the rest she has to throw away.
What was her profit/loss?

3. Mrs Gutierrez invests in some shares; buying 2000 shares at £1.40 each. A month later, she sold all of these shares getting £3180 back. What was her percentage profit?

4. Mrs Macken is shopping for trainers and sees a nice pair in a 20% off sale. When she finally orders them online she realises that there is a further 15% off for being a first-time buyer so she only pays £44. What was their original price?

5. Mrs Atkinson invests £2700 into a savings account with the bank. The COMPOUND interest rate is 3% per annum (per year). How much will be in the account in 2 years' time? What is the total interest she will get?

6. The table below gives information about the heights of 43 Sociology lecturers.

Height (h cm)	Frequency
160 < h ≤ 170	3
170 < h ≤ 180	16
180 < h ≤ 190	22
190 < h ≤ 200	2

a) Write down the modal class interval:
b) In which interval can we find the median?
c) The information in the table **cannot** be used to calculate the exact value of the mean height. Explain why not.
d) Calculate an estimate for the mean height. Give your answer to 1 decimal place.

7. 60 people were asked if they prefer to go on holiday in Britain or in Spain or in Italy.

   38 of the people were male.

   11 of the 32 people who said Britain were female.

   8 males said Italy.

   12 people said Spain.

   One of the females is chosen at random.

   What is the probability that this female said Spain?

8. One in 18 mugs produced by a company has a defect.

   In a random sample of 360 mugs produced by the same company, how many would you expect to have a defect?