

You have one week to complete this. What you hand in should be your best work, and you must attempt every question.

If you are stuck then please either consult notes or textbooks, attend a workshop, or ask your teacher.

You may need to refer to the formula book, found [here](#):



or financial information, found [here](#):



1) Each of the equations below can be represented by one of the graphs on the Data Sheet.

Equation 1 $y = 2200 - 0.5x$

Equation 2 $y = 340e^{0.012x}$

Equation 3 $y = 4.9x^2$

Write the letter corresponding to the correct graph for each equation in the spaces

2) On the answer sheet, sketch the following graphs:

- a) $y = x^3$
- b) $y = -x^2$
- c) $y = x$
- d) $y = a^x$

- 3) Jasmin wants to borrow £150 from a lender offering loans at an APR of 25% if she pays back the loan in two equal repayments, the first at the end of one year and the second at the end of two years.
- (a) Find the amount of each repayment. (3 marks)
 - (b) A different lender offers the loan for a single payment of £200 at the end of two years. What is the APR in this case? (4 marks)

4) Ryan works in quality control at a biscuit factory. He checks the weights of 50 packets of biscuits.

Weight, g (grams)	Frequency
$230 \leq g < 234$	1
$234 \leq g < 238$	6
$238 \leq g < 242$	23
$242 \leq g < 246$	17
$246 \leq g < 250$	3

- (a) Work out an estimate of the mean weight of biscuits in these packets. [4 marks]
- (b) The biscuit manufacturer claims that the average weight of a packet of these biscuits is 240 grams.

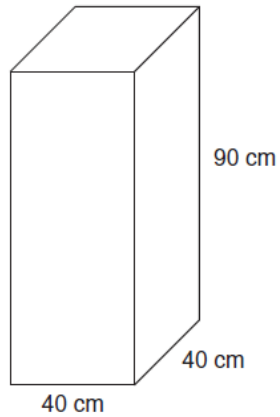
Does this seem a reasonable claim?
Give a reason for your answer.

[1 mark]

- 5) I increase a number by 24%
The answer is 6014.

What number did I start with?

- 6) The diagram shows a water tank in the shape of a cuboid.



The tank is full of water.

$$1 \text{ litre} = 1000 \text{ cm}^3$$

How many gallons of water are in the tank?

[3 marks]

- 7) The weights, in grams, of 15 turnips were as follows.

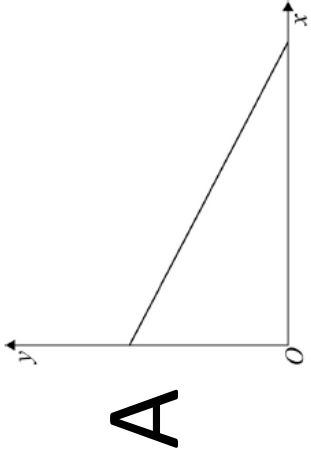
115	455	550	590	585	230	450	480
370	110	445	370	575	425	550	

For these 15 weights:

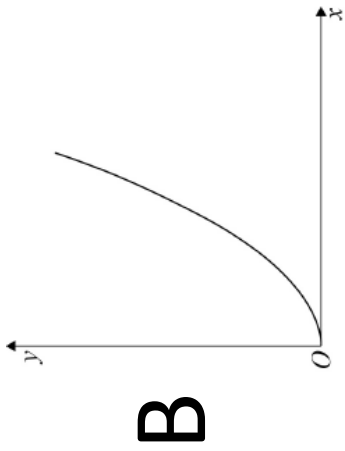
- (a) find the range, and state why the mode is **not** a suitable numerical measure; [2 marks]
- (b) find the median and calculate the interquartile range; [3 marks]
- (c) calculate the mean and the standard deviation. [2 marks]
- 8) a) Estimate how many people could fit into a lift. (you do not need to take into account weight)
- b) Is this realistic?
- c) How would changing one of your assumptions affect your answer

[4 marks]

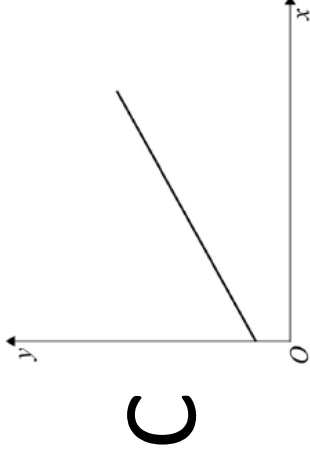
1)



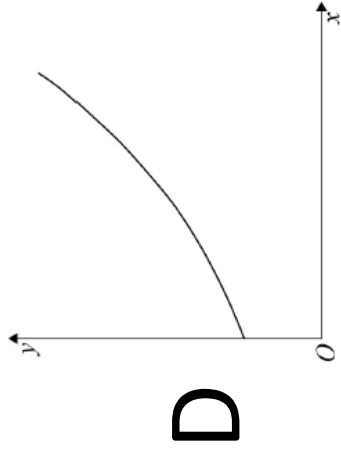
$\pounds x$ = price
 y = number of items sold



x seconds = time
 y metres = distance fallen



x miles = distance driven
 $\pounds y$ = taxi fare



x hours = time
 y = number of bacteria

Equation 1

Graph

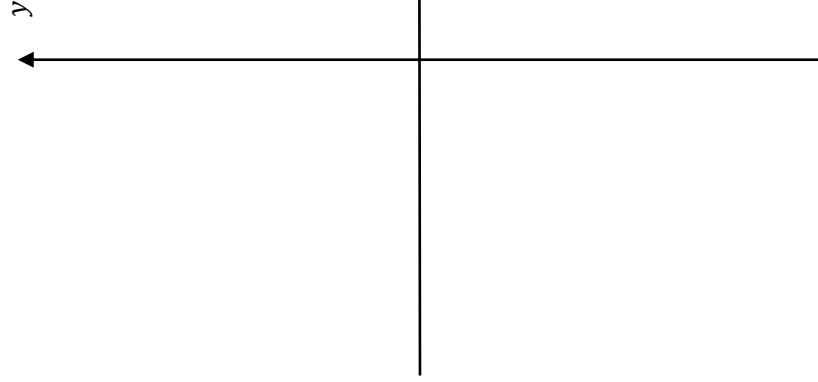
Equation 2

Graph

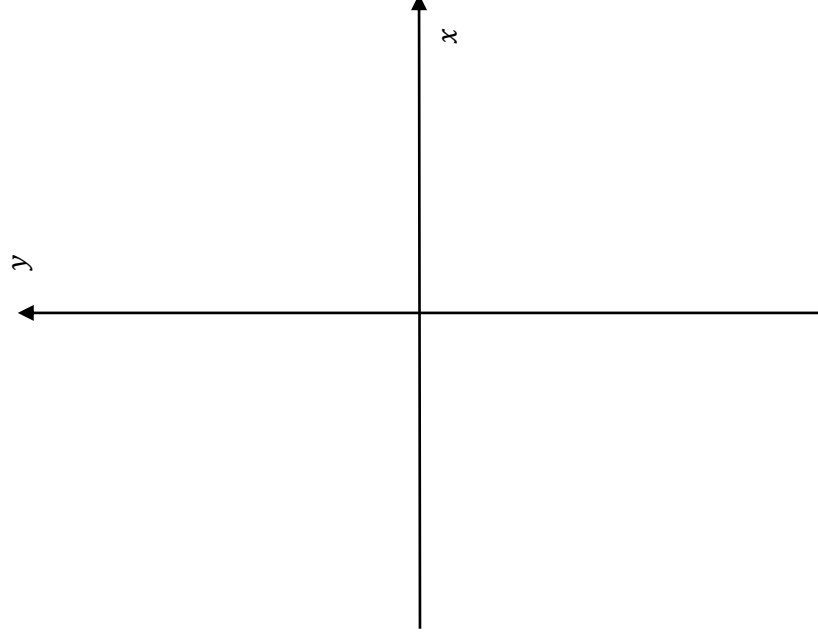
Equation 3

Graph

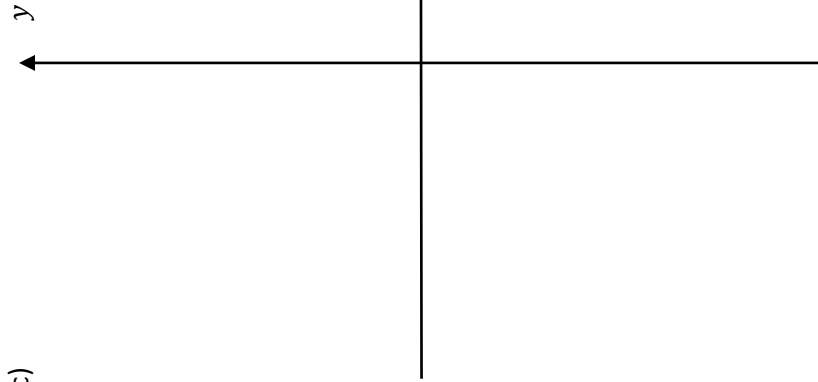
2) a)



b)



c)



d)

