

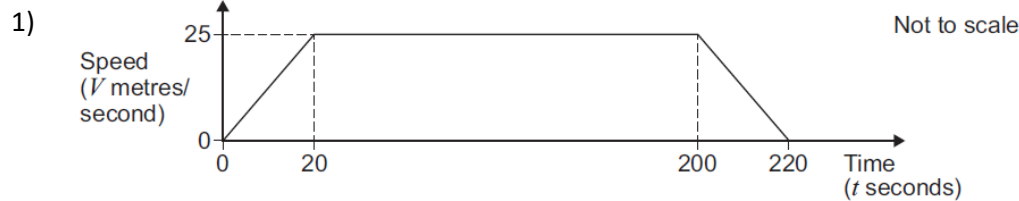
You have one week to complete this. What you hand in should be your best work, and you must attempt every question.

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](#):



The coach leaves at time $t = 0$

It accelerates steadily for 20 seconds to a speed of 25 metres/second. It continues at this speed for another 180 seconds, then decelerates steadily for 20 seconds until it stops.

Work out the acceleration of the coach in the first 20 seconds.

[2 marks]

2) Molly had a tax-free allowance of £10 600 and earned £4629 per month.

- (a) Calculate Molly's taxable income.
- (b) Calculate the total amount of income tax which Molly paid in the year.

[3 marks]

[5 marks]

3) The total oil production in the world, y billion barrels, can be modelled by the equation

$$y = \frac{-11}{1922}(t - 62)^2 + 30$$

where t is the number of years since 1960.

- (b) Complete the table of values on the page opposite. **(2 marks)**
- (c) On the grid on the page opposite, complete the graph of

$$y = \frac{-11}{1922}(t - 62)^2 + 30 \quad \text{for } 0 \leq t \leq 120$$
 (2 marks)

- (d) Use your graph to find:
- (i) the years in which the model predicts $y = 25$; **(2 marks)**
- (ii) the gradient of the curve when $t = 30$. **(2 marks)**
- (e) Interpret your answer to (d)(ii) in terms of the context of the question. **(2 marks)**

4) An amount is increased by 20%
40% of the new amount is 288
Work out the original amount.

[3 marks]

5) Mel has to drive 70 miles to a wedding.
The wedding starts at 2 pm
She wants to arrive 30 minutes before the start.

What time should she leave if she expects to drive at an average speed of 40 mph?
You **must** show your working.

[4 marks]

6)

Average life expectancy			
European countries		African countries	
Country	Age	Country	Age
Belarus	71	Angola	39
France	81	Egypt	73
Germany	80	Kenya	59
Italy	82	Niger	53
Latvia	73	Nigeria	48
Moldova	71	South Africa	49
Poland	76	Tanzania	53
Russia	66	Togo	63
Spain	81	Tunisia	75
Sweden	81	Uganda	53
United Kingdom	80	Zimbabwe	50

- (a) Show the data on an ordered back-to-back stem and leaf diagram.
 (b) Use one measure of location and one measure of spread to compare average life expectancy in these European and African countries.

Comment on your results.

7)

When buying a camera costing £520, Ben considers two different lenders.

- (a) The first lender requires Ben to pay a single lump sum of £720 at the end of three years.

Calculate the APR charged by this lender.

Give the value of the APR as a percentage.

[4 marks]

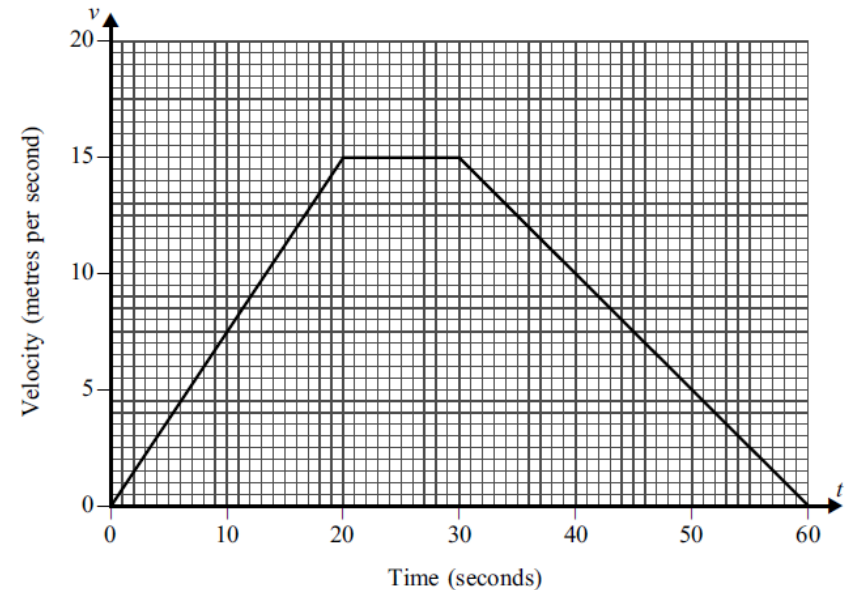
- (b) The second lender states that it charges an APR of 9% and requires three equal repayments: one repayment at the end of the first year; the second repayment at the end of the second year; and the final, third, repayment at the end of the third year.

Calculate the amount of each repayment.

[4 marks]

8)

The diagram shows the velocity–time graph of an underground train between two stations.



- (a) Describe what the train is doing between $t = 20$ and $t = 30$.
 (b) What is represented by the gradient of the velocity–time graph?

9)

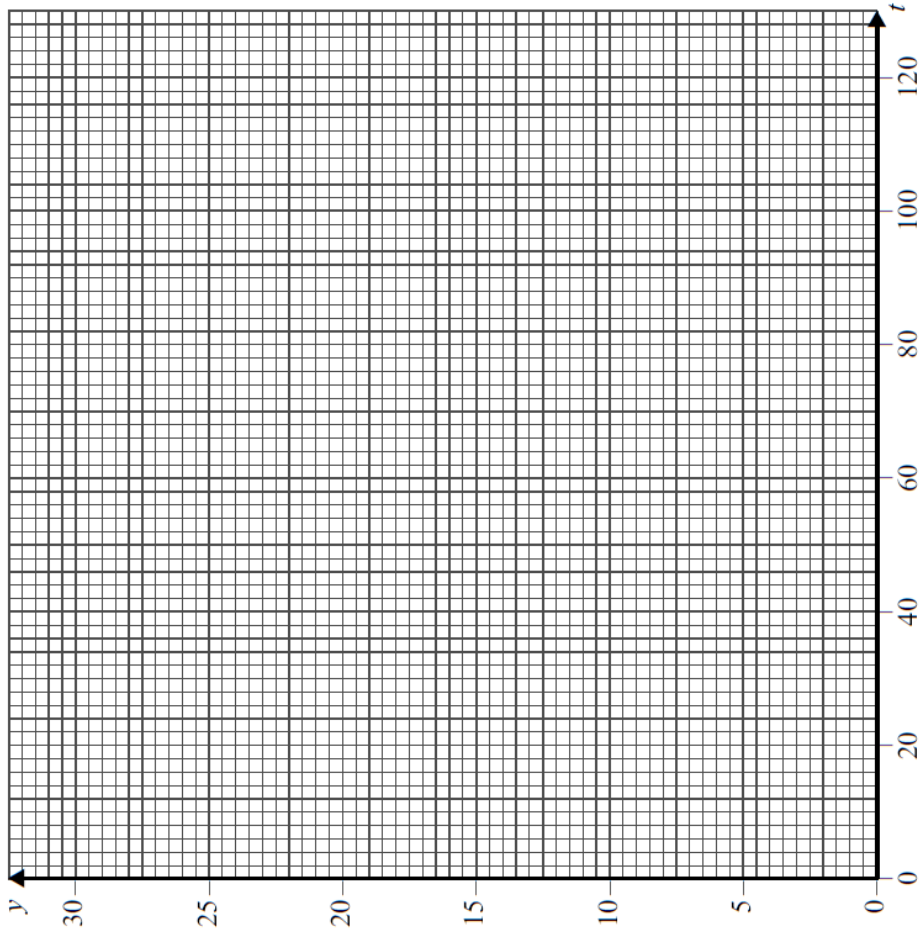
A retailer orders x books from a wholesaler and pays a total of £ y for each order.

- (a) Use the data in the table below to plot y against x on the grid. (1 mark)
 (b) Draw a line through the points and find its equation. (3 marks)

x	5	10	15	20	25	30
y	4.00	5.80	7.60	9.40	11.20	13.00

3)

t	0	20	40	60	80	100	120
y	8.0	19.9	27.2				



9)

x	5	10	15	20	25	30
y	4.00	5.80	7.60	9.40	11.20	13.00

