

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 week, a newsagent stocks 5 copies of the magazine *Statistics Weekly*.

The number of copies sold in a week, X , has the probability distribution shown in the table, where probabilities are stated correct to three decimal places.

x	1	2	3	4	5
$P(X=x)$	0.135	0.271	0.271	a	0.143

(a) Find the value of a [2 marks]

(b) Find the expected number of books sold each week [2 marks]

(c) The newsagent makes a profit of £1 on each copy of *Statistics Weekly* that is sold and loses 50p on each copy that is not sold. Find the mean weekly profit for the newsagent from sales of this magazine. [2 marks]

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

(a) Calculate Molly's taxable income. [3 marks]

(b) Calculate the total amount of income tax which Molly paid in the year. [5 marks]

3) Lauren has decided to have a new carpet in one room at her house.

The work involved has been divided into a number of tasks, as shown in the table. The minimum time required to complete each task is also shown.

Activity	Immediate predecessor	Duration (mins)
A: Remove lino	–	30
B: Remove doors	–	15
C: Fit grippers	A, B	20
D: Lay underlay	C	20
E: Lay carpet	D	30
F: Plane doors	B	25
G: Fit doors	E, F	20
H: Fit doorplates	G	10
I: Clean	H	10

(a) Construct an activity network for the project. [2 marks]

(b) Find the earliest start time and latest finish time for each activity. [2 marks]

(c) List the non-critical activities and their float times. [2 marks]

(d) On the grid on page 5, draw a cascade (Gantt) diagram for the project. [3 marks]

(e) Given that each task requires one worker, state the minimum number of workers required to complete the work in the minimum time. [1 mark]

(f) Given that Lauren is in fact having a new carpet in two identical rooms, give a possible reason why the total time to complete the work might not be double the time to complete the work in one room. [1 mark]

4) An amount is increased by 20%

40% of the new amount is 288

Work out the original amount.

[3 marks]

5) Bag A and Bag B each contain only white tickets and pink tickets.
One ticket is picked at random from each bag.

- (a) Complete the tree diagram.
- (b) Work out the probability of one ticket of each colour being picked.

[4 marks]

[1 mark]

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.

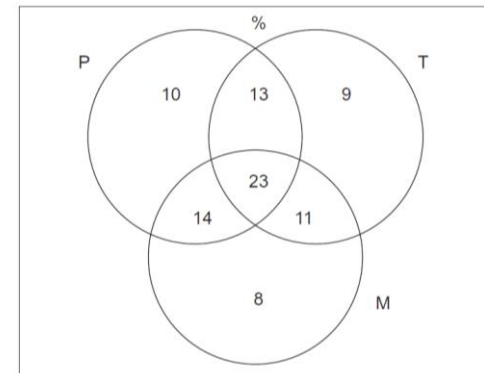
Calculate the amount of each repayment.

[4 marks]

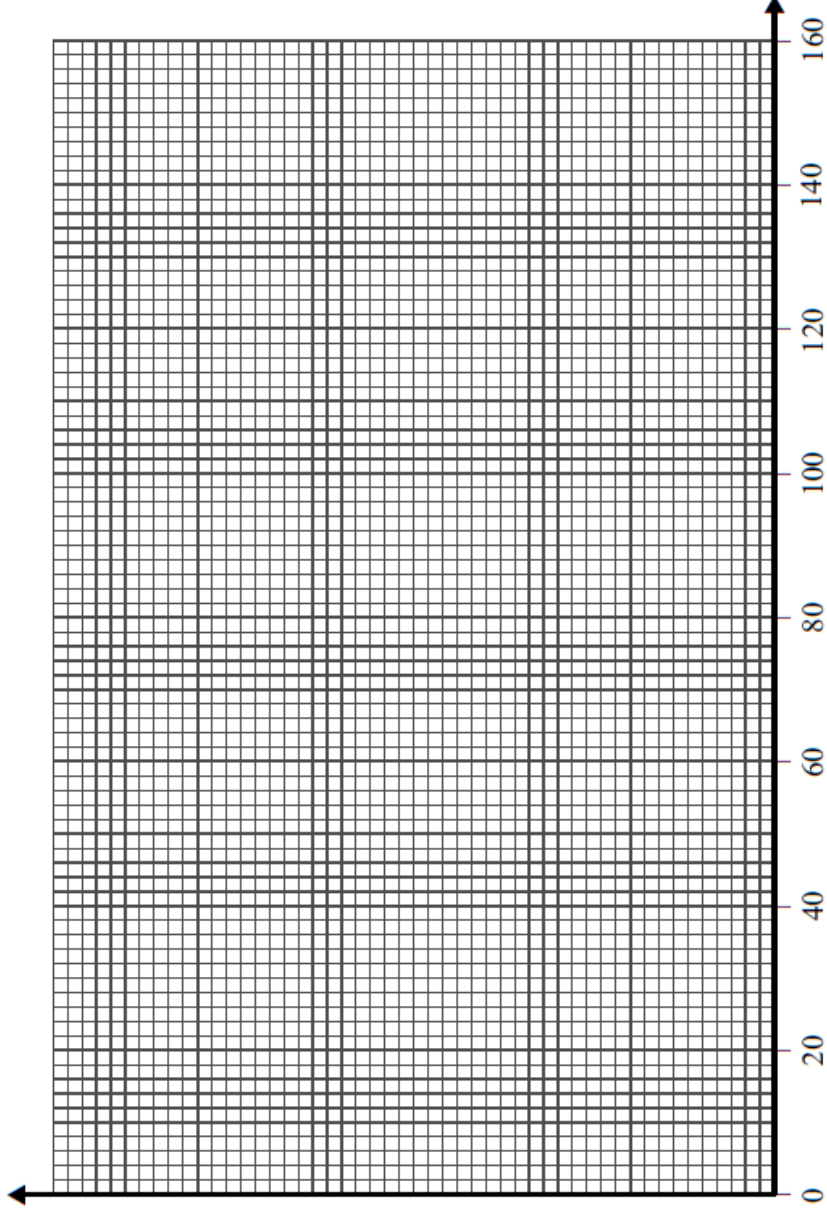
8) Eva works in Spain for a travel company.
Her job is to help tourists on holiday.
The Venn diagram shows the **percentages** of tourists she has helped over the years who have lost passports (P), tickets (T), money (M) or a combination of these.
She also helped people for other reasons.

- (a) Explain what the 23 in the diagram represents.
- (b) Work out the percentage of people Eva helped who had **not** lost their passports, tickets or money.
- (c) One person helped by Eva is chosen at random.
 - (c) (i) What is the probability that this person lost their passport but **not** their tickets or money?
 - (c) (ii) What is the probability that this person lost their tickets and money but had **not** lost their passport?
- (d) In 2010 Eva helped 4100 people.

Estimate the number who had lost their passport and money but had **not** lost their tickets.



3)



6)

