

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 Early one evening, a sports news team hears of the resignation of Mr Sapphire, a football manager. The team wishes this item to be the headline in the sports section of that evening's 10.00pm news. The work involved in preparing this news item is 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 (minutes)
A: Interview Mr Sapphire	–	15
B: Film football ground	–	10
C: Get fans' reaction	A	15
D: Get experts' reaction	A	20
E: Review career of Mr Sapphire	A	25
F: Review possible replacements	A	20
G: Prepare film	B, C, D, E, F	25
H: Edit film	G	15
I: Brief presenters	B, C, D, E, F	10
J: Broadcast item	H, I	5

(a) Construct an activity network for the work involved.

[3 marks]

(b) Find the earliest start time for each activity.

[2 marks]

(c) Find the latest finish time for each activity.

[2 marks]

(d) List the critical activities.

[1 mark]

(e) Using the answer sheet, construct a Gantt (cascade) diagram for the work involved.

[3 marks]

2) The personnel department at a company wants to find out the views of staff on certain issues. It decides to carry out a survey on a sample of staff.

(a) Give **one** advantage of doing the survey on a sample of staff rather than doing a census.

[1 mark]

(b) Write down a possible sample frame that the personnel department could use when picking the sample.

[1 mark]

(c) The personnel department decides to choose a sample of 160 staff, stratified by job title and gender.

Work out the number of male managers that it should choose.

[3 marks]

3) The answer sheet shows an activity diagram for a project. Each activity requires one worker. The duration required for each activity is given in hours.

(a) Find the earliest start time and the latest finish time for each activity and insert these values on **Figure 1**.

[4 marks]

(b) (i) Find the critical path.

[1 mark]

(ii) Find the float time of activity *F*.

[1 mark]

(c) Using **Figure 2** draw a Gantt chart to illustrate how the project can be completed in the minimum time, assuming that each activity is to start as early as possible.

[3 marks]

4) The table shows how much the BBC spent on its television channels in 2012.

Which formula would give the value in cell **B10**?

	A	B
1	Channel	Amount spent (£ millions)
2	BBC 1	1337.6
3	BBC 2	537.1
4	BBC 3	112.9
5	BBC 4	67.8
6	BBC News	57.5
7	CBBC	107.4
8	CBeebies	42.4
9	Other	72.3
10	Total	

5) The first UK pop chart was in November 1952

The first year that there was a pop chart every week was 1953

In 1953 there were 15 different number 1 singles.

The table gives the number of weeks each of these singles was number 1 in the pop chart in 1953

Single	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Number of weeks at number 1	1	1	1	5	4	1	1	18	1	1	6	2	2	2	6

(a) Which word describes this type of data?

[1 mark]

Continuous Discrete Qualitative Grouped

(b) One average is to be chosen to represent the data.

(b) (i) Why is the **mean** not the best average to use for this data? Give **one** reason.

[1 mark]

(b) (ii) Why is the **mode** not the best average to use for this data? Give **one** reason.

[1 mark]

(c) What percentage of these singles were at the number 1 position for exactly 2 weeks in 1953?

[2 marks]

(d) A number 1 single from 1953 is chosen at random.

What is the probability that it was at the number 1 position for **less** than 3 weeks? Give your answer as a fraction in its simplest form.

[2 marks]

6) (a) If you invested £2000 in the **Sainsbury's Internet Saver** account, with an AER of 3.50%, how much would be in this account after 3 years, assuming that the interest rate remained constant throughout the period? (2 marks)

(b) Find the nominal interest rate for the **ING Savings** account. (4 marks)

Provider	Interest rate (AER)	Access	Interest	Minimum balance (£)
Alliance & Leicester eSaver Issue 2	6.30%	Instant	Monthly	1
Abbey eSaver Direct	6.00%	Instant	Annually	1
ING Savings account	6.00%	Instant	Monthly	1

7) Between January and March 2010, 4.4 million holidaymakers visited the eight most popular European holiday destinations.

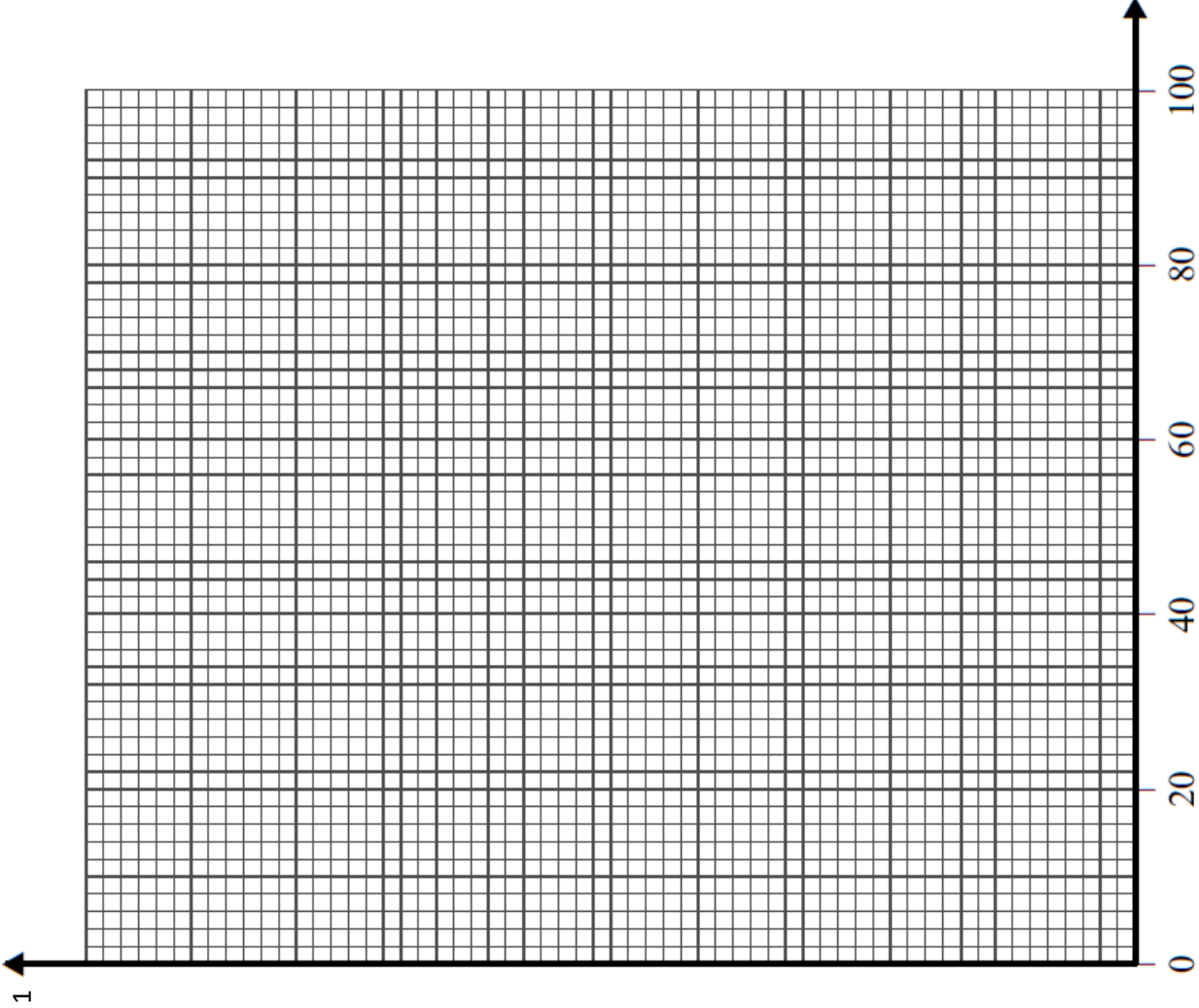
Of the 4.4 million holidaymakers, 35% visited Spain.

(a) How many holidaymakers visited Spain?

(b) The table below shows, correct to the nearest thousand, the number of holidaymakers who visited each of the eight most popular European holiday destinations between July and September 2010.

Destination	Number of holidaymakers
Spain	3 973 000
France	2 845 000
Greece	984 000
Italy	895 000
Germany	717 000
Netherlands	443 000
Belgium	273 000
Austria	167 000
Total	10 297 000

(b) (i) What percentage of the 10 297 000 holidaymakers visited the Netherlands, Belgium or Austria?



3) **Figure 1**

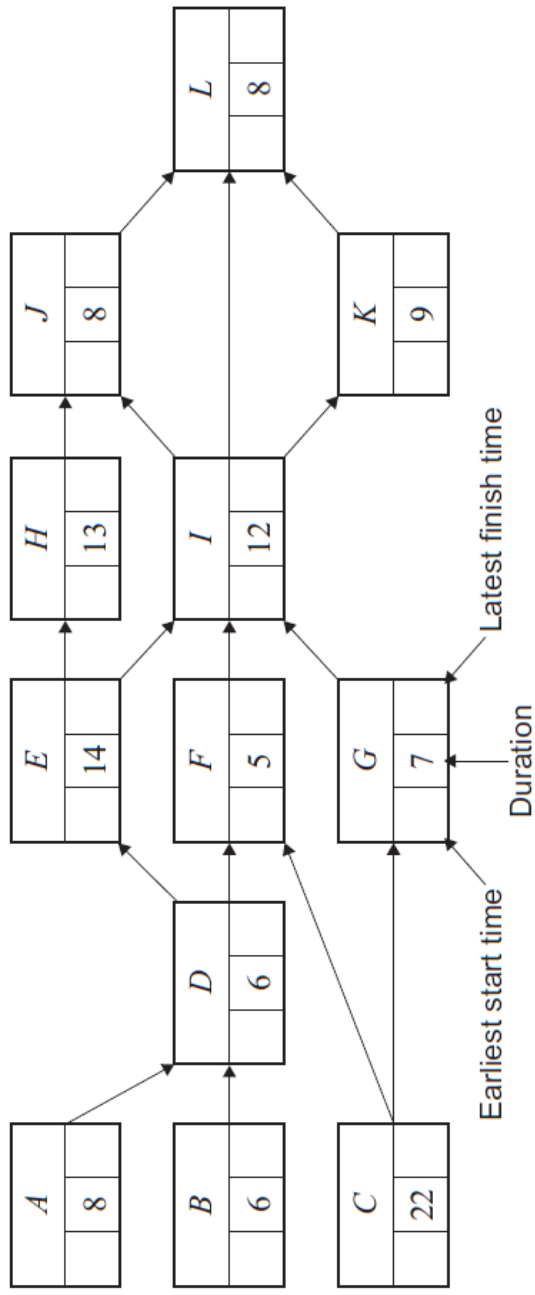


Figure 2

