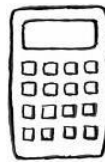| Name:	Teacher Assessment		

Section A **Data Collection** **Grade D / C**

1. The manager of Cost-U-Less supermarket wants to carry out a survey of her customers.
She asks customers to complete a questionnaire.

(a) Here is one of the questions she asks:

"Don't you agree that Cost-U-Less is the best supermarket?"

Write down **one** criticism of this question.

....

....

....

(1)

(b) Here is another part of her questionnaire.

Question How much do you spend at Cost-U-Less?			
Response (tick one box)			
Under £10	Under £20	Under £50	Under £100
☐	☐	☐	☐

Write down **one** criticism of the question and **one** criticism of the response section.

Criticism of question ....

....

....

Criticism of response section ....

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....

(2)

(c) The manager collects her data by asking 100 shoppers who visit the supermarket on
Friday evening. Explain why this sample may not be representative of all the shoppers
who use this supermarket.

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(1)(Total 4 marks)

2. Joe carries out a survey about fast foods.
This is one of his questions.

> Do you agree that eating fast foods is unhealthy?

(a) Explain why this question is **not** suitable.

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……………………………………………………………………………………………………

(1)

(b) Rewrite the question so that it is suitable. Include response boxes.

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(2)
(Total 3 marks)

3. The manager of a cinema wants to find out how often teenagers attend the cinema.

He uses a questionnaire.

(a) Here is one part of the questionnaire.

> **Question**   How often do you attend the cinema?
> **Response**
> ☐ Sometimes   ☐ Occasionally   ☐ Regularly

Write down two criticisms of his response section.

Criticism 1 ....

....

....

....

Criticism 2 ....

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(2)

(b) Explain how the manager could distribute 50 questionnaires randomly to pupils from a school of 1000 pupils.

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(1)
(Total 3 marks)

4. Mandip is doing a survey on "Healthy Eating" in the town where he lives.

(a) Give **one** reason why he should **not** do the survey outside the sports centre.

....

....

(1)

(b) One of the questions he asks is

"Do you eat fruit or sweets?"

Explain why this is a poorly worded question.

....

....

(1)

(c) There are 2000 people in the town where Mandip lives.
He interviews 15 people for his survey.

Explain why his survey may not be representative of the people in the town.

....

....

(1)
(Total 3 marks)

5.   Chandni wants to survey pupils in her school about their reading habits.

(a)   Write a question that would help Chandni to investigate how often pupils in her school read for pleasure.

Include a response section.

....

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(2)

(b)   There are 1000 pupils in Chandni's school.

Chandni samples 50 pupils at random and asks them to complete her survey.
She finds that 16 of the pupils in the sample read comics.
Estimate the number of pupils in the school who read comics.

....

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Answer ....

(2)
(Total 4 marks)

6.   A survey is to be carried out to investigate the shopping habits of the population of a town.

(a)   Give **two** reasons why the survey should **not** be carried out between 9am and 5pm on a Wednesday.

Reason 1 ....

....

....

Reason 2 ....

....

....

(2)

(b)   Write **two** suitable questions that could be asked in the survey.
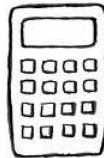
Question 1 ....

....

....

Question 2 ....

....

....

(2)
(Total 4 marks)

Success:	Target:

Teacher Assessment

Section B   Two Way Tables   Grade D / C

1. Karin is collecting data about the number of brothers and the number of sisters of the people in her class. Karin's results are given in the two-way table.

Number of brothers

		0	1	2	3
Number of sisters	**0**	6	7	1	2
	1	4	3	0	1
	2	1	2	1	0
	3	1	1	0	0

(a) How many people have one brother?

Answer ....

(2)

(b) How many people have more brothers than sisters?

....

Answer ....

(2)(Total 4 marks)

2. The two-way table shows the age and sex of a sample of 20 pupils at a school.

Age (years)

	12	13	14	15
Number of boys	4	3	3	2
Number of girls	2	2	1	3

There are 1000 pupils in the school altogether.

(a) Use the values in the table to estimate the number of boys in the school.

....

Answer ....

(3)

(b) How could a better estimate be obtained?

....

....

(1)
(Total 4 marks)

3. Jane conducts a survey of the favourite colours of the students in her class.
She records the results.

Male	Red		Female	Yellow
Male	Yellow		Female	Red
Male	Red		Female	Green
Female	Green		Female	Green
Female	Red		Male	Red
Male	Green		Male	Yellow
Male	Green			

Record the results in a two-way table.

(Total 3 marks)

4. Emma reads in a magazine that there is a link between the number of children and the number of pets in a family.

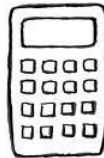(a) Design a two-way table to record the number of pets and the number of children in a sample of families.

(3)

(b) Complete your two-way table by inventing data for eight families.

(1)(Total 4 marks)

Success:

Target:

Teacher
Assessment

| Section C | Random and Stratified Sampling | Grade C → A |

1. An inspector visits a large company to check their vehicles.
    The company has 4 large-load vehicles, 136 light vans and 21 cars.
    The inspector decides to sample 10% of the vehicles.
    Each type of vehicle is to be represented in the sample.

    (a) What is this kind of sampling procedure called?

    Answer ....

    (1)

    (b) How many of each type of vehicle should be inspected?

    …………………..........…………………………………...…………………………………………

    …………………..........…………………………………...…………………………………………

    …………………..........…………………………………...…………………………………………

    …………………..........…………………………………...…………………………………………

    Answer .... large-load

    .... light vans

    .... cars

    (3)
    (Total 4 marks)

2. (a) Explain how you could distribute 50 questionnaires randomly to pupils from a school of 1000 pupils.

    ....

    ....

    ....

    (1)

    (b) Jane stood outside the school library and collected the views of 50 pupils.
    Explain why her method of obtaining data will **not** give a random sample.

    ....

    ....

    ....

    (1)

(c)   Sahima decides to take a stratified sample, of 50 pupils, by year group from the 1000 pupils in the school. The table shows the number of pupils in each year group at the school.

Year	7	8	9	10	11
Number of pupils	167	200	230	210	193

Calculate the number of pupils that Sahima should choose from each year group.
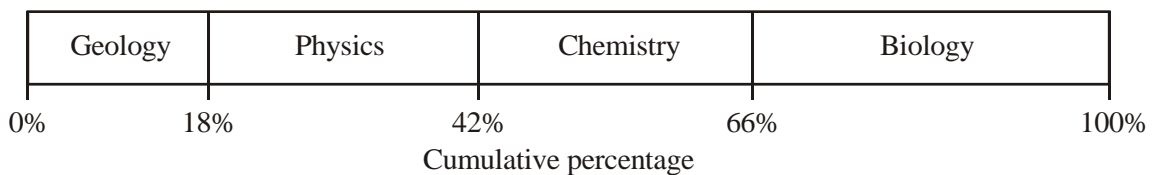
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Answer   Year 7 ....…............   Year 8 ....…...........   Year 9 ....…............

                              Year 10 ....…............   Year 11 ....…............

(4)(Total 6 marks)

3.   The government wants to survey students studying science at university about their views on becoming teachers. They decide to survey science students at Surrey University.
2371 students do science at Surrey University.

The cumulative percentage table of students doing each science is

Geology	Physics	Chemistry	Biology

0%   18%   42%   66%   100%
Cumulative percentage

(a)   The government decide to do a 10% stratified sample.
Write down the numbers from each category that they should sample.

....

....

....

Geology	Physics	Chemistry	Biology

(3)

(b)   Give one other factor they should take into account when selecting the sample to ensure an unbiased sample.

....

....

....

(1)(Total 4 marks)

4. (a) State **two** conditions that must be satisfied when collecting data for a stratified sample.

Condition 1 ....……...

....

(1)

Condition 2 ....……...

....

(1)

(b) A small village has a population of 400.
The population is classified by age as shown in the table below.

Age (years)	0-12	13-24	25-40	41-60	61+
Number of people	35	58	125	103	79

A stratified sample of 50 is planned.
Calculate the number of people that should be sampled from each age group.

....

....

....

....

....

Answer   0 – 12 years ....   13 – 24 years ....

25 – 40 years ....   41 – 60 years ....   61 + years ....

(3)(Total 5 marks)

5. The table shows the number of students in years 7 and 8 of a school.
A sample of 100 of these students take part in a survey on sport.
The students are part of a stratified random sample.

Year	Boys	Girls
7	127	101
8	138	133

(a) How many boys from year 7 are included in the sample?

....

....

Answer .... boys

(2)

(b) What is the advantage of choosing a stratified random sample rather than a simple random sample for this survey?

....

....

(1)(Total 3 marks)

6. The owner of a health club wants to find out how often the members use the club.
He first collects data about the age and gender of the 1000 members.

	Under 25	**25 - 40**	**41 - 50**	**Over 50**
Men	162	265	134	49
Women	178	110	70	32

(a) Give **one** reason why a stratified sample may be better than a random sample in this situation.

....

....

....

(1)

(b) The owner decides to take a stratified sample of size 50 by age and gender.

(i) Calculate how many men aged 25-40 he should choose.

....

....

....

Answer ....

(2)

(ii) Calculate how many members of each gender he should choose.

....

....

....

Answer   Men ....

Women ....

(2)
(Total 5 marks)

7. Each day 65 trains pass through Bristol. Of these, 23 go North, 21 go South, 13 go East and 8 go West.

For a survey, Paul decides to take a 20% sample of these trains. He plans to choose every fifth train that passes.

(a) Explain why the sample obtained may not represent the different routes fairly.

......................…………………………………………………………………………………

......................……………………………………………………………………………

(1)

(b) Paul decides to take a 20% stratified sample.
Calculate the number of trains going each way that he should choose.

......................……………………………………………………………………………

......................……………………………………………………………………………

......................……………………………………………………………………………

......................……………………………………………………………………………

North: ………,   South: ………,   East: ………,   West:………

(4)
(Total 5 marks)

Success:	Target: