

Name: _____

Exam Style Questions

Random Sampling



Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

Video 282



1. Parker wants to take a random sample of people who live in his street.

(a) Explain what is meant by a random sample.

A sample where each element has an equal chance of ~~all~~ being selected.

(1)

(b) Describe a method Parker could use to take his random sample.

Assign each person who lives on the street a number & use a random number generator to pick people at random.

(1)

2. Gianluca is a farmer.
He has 480 cows.

Gianluca wants to take a random sample of 20 cows.

Describe a method that Gianluca could use

Assign each cow a number & use a random number table/generator to pick 20 different numbers between 1 & 480.

(1)

3. A call centre has 800 workers.
The building has 20 floors.
Each floor has 40 workers.

Describe a method that could be used to obtain a random sample of 120 workers from the call centre.

Assign each member of staff a number 1-800
and use a random number generator to pick 120
different numbers between 1-800.

(1)

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4. (a) Explain how you could interview 10 employees randomly from a company of 600 employees.

List all employees alphabetically and assign each a
number 1-600. Then use a random number generator
to pick 10 different employees.

(1)

- (b) Paul stood inside the company canteen on a Friday lunchtime and interviewed 10 employees.

Explain why his method will not give a random sample.

Not all employees had an equal chance of
being selected - some people may not
eat in the canteen / work on a Friday etc.

(1)

5. A school has 2000 students.
Explain how you could obtain a random sample of 35 students from this school.

Assign each student a number 1-2000
Pick 35 at random using a random number generator

(1)

6. Explain how you could obtain a random sample of 100 people from a town.

Assign each person who live in a town a number 1-n
Pick 100 different random numbers (1-n) using a
random number generator.

(1)

7. Describe a method of choosing a random sample of 20 students from a primary school of 141 students.

Assign each student a number 1-141
Pick 20 numbers at random using a random
number generator (1-141)

(1)

8. (a) Explain what is meant by a random sample.

A sample where each element has an equal chance of selection.

(1)

Here is an extract from a table of random numbers

20	¹ 17	² 42	³ 01	^x 72	⁴ 33	^x 94	^x 55	^x 89	^x 65	^x 58	^x 17
^x 33	^x 74	⁵ 49	⁶ 04	⁷ 27	^x 56	⁸ 11	^x 63	^x 77	^x 79	^x 90	⁹ 31
¹⁰ 22	¹¹ 15	^x 78	¹² 49	¹³ 05	^x 74	^x 98	^x 97	^x 58	¹⁴ 47	¹⁵ 10	40
32	70	17	05	79	58	50	26	54	30	01	88
03	64	59	55	85	63	49	46	61	89	33	79

(b) Starting from the first line and second column of the table with the number 17 and reading across the table select and write down 15 random numbers between 01 and 50 from the table.

17, 42, 1, 33, 49, 4, 27, 11, 31, 22, 15, 49, 5, 47, 10

(2)

(c) Explain how you could use these random numbers to choose 15 people from from 50 people.

Assign each person a number 1-50
Pick the 17th, 42nd, 1st etc.

(2)

9. A music shop owner receives 60 applicants for a job. He decides to take a random sample of 20% of the applicants to find out how many have a degree.

(a) Describe how this sample could be chosen.

Number applicants 1-60
Use a random number table to pick 12 random numbers
between 1 - 60.

(2)

The shop owner finds 4 applicants in his sample have a degree.

(b) Use this information to estimate how many of the 60 applicants have a degree

$$\frac{4}{12} = \frac{1}{3}$$

$$\frac{20}{\dots}$$

(1)

$$\frac{1}{3} \text{ of } 60 = 20$$