

## Defence Against the Dark Arts – Third Level Statistics

### Learning Checkpoint A

Name: \_\_\_\_\_

#### Question 1

Draw a line to match each term with its definition:

Sample

When a sample does not represent a population.

Outlier

A data point that is significantly different from others in the dataset.

Categorical Data

Part of a population that is used to represent the whole group.

Bias

Data that can be divided into distinct groups, for example year group or gender

## Question 2

Select the best answer for the following:

Explain how to reduce bias in a sample:

- a) Only sample people who look friendly
  - b) Avoid taking a random sample
  - c) Take a large sample
  - d) Choose either "Male" or "Female" and sample that group
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Emily wishes to present some numerical data. She could use:

- a) A dot plot
  - b) A pie chart
  - c) A pictogram
  - d) An outlier
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Which statement is correct:

- a) A graph will always display factually correct information.
  - b) Sometimes data is presented in a way to try and influence the readers' opinions.
  - c) Graphs are not useful because they could always have been changed to be misleading.
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### Question 3

The school prom committee needed to decide which venue to choose for their prom. The choice was between 'Lux Hotel' and the Golf Club.

The prom committee made the following social media post:



How was the data sourced by the committee?

Why might the sample used not represent the population?

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Explain why the bar chart could be misleading.

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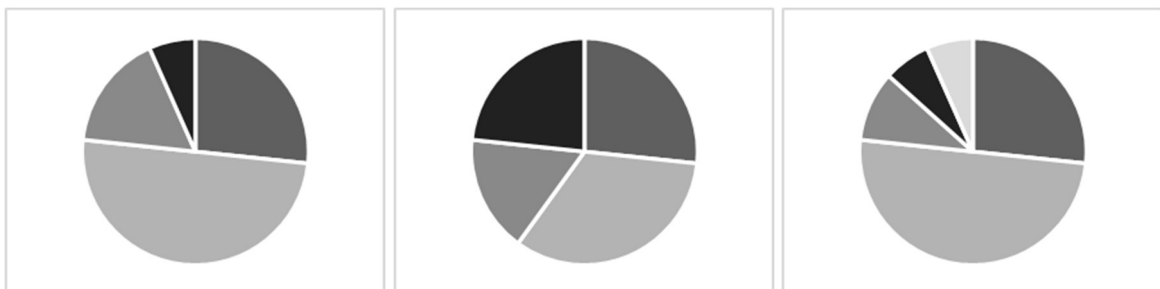
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#### Question 4

Meeya asks some students about their pets. She records her data in a table:

Animal	Frequency
Cat	8
Dog	15
Fish	5
Bird	2

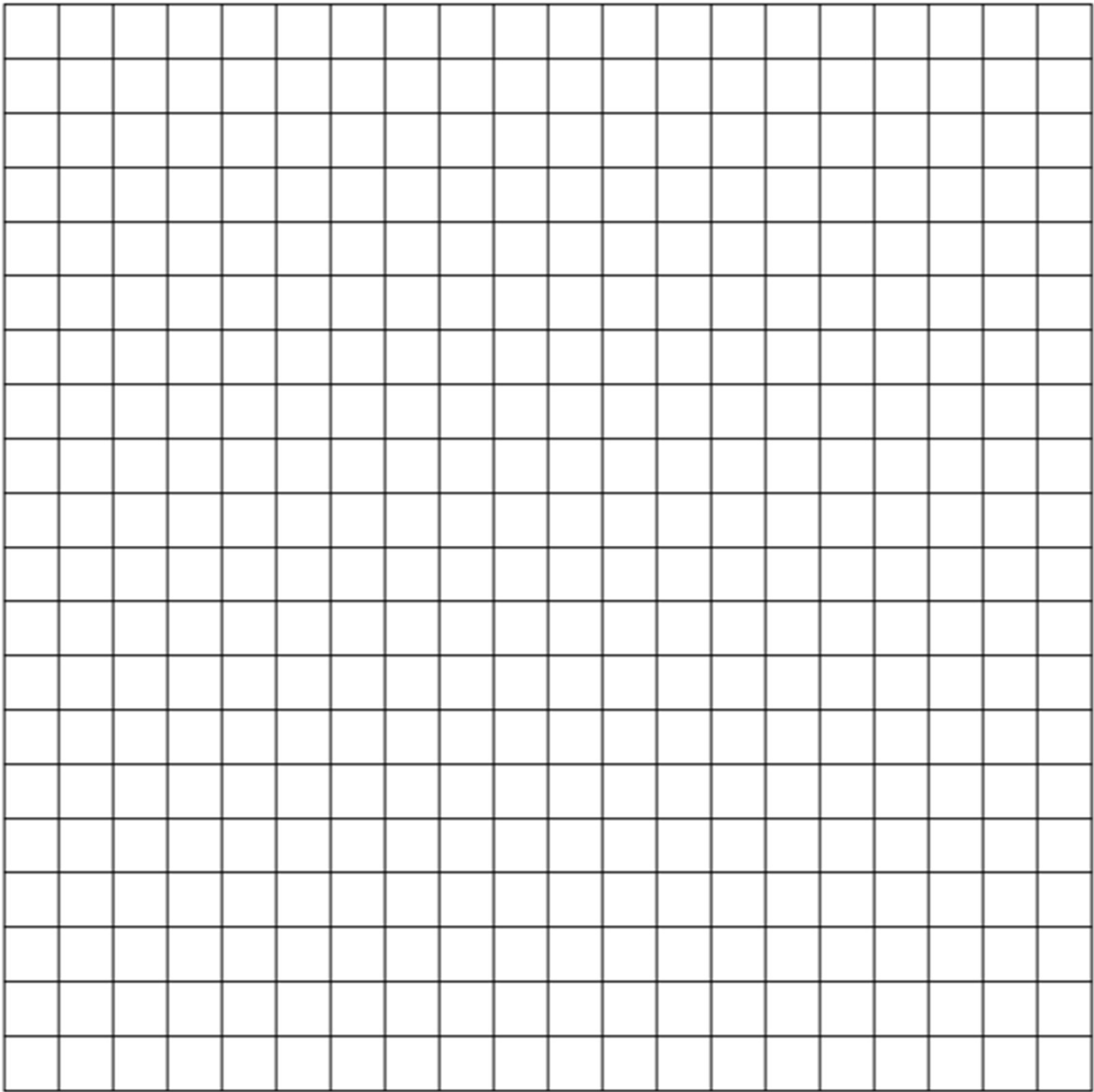
Which of the following pie charts represents this data?



**Question 5**

Produce a bar chart to display the information in Meeya’s table. Use the grid paper below.

Animal	Frequency
Cat	8
Dog	15
Fish	5
Bird	2



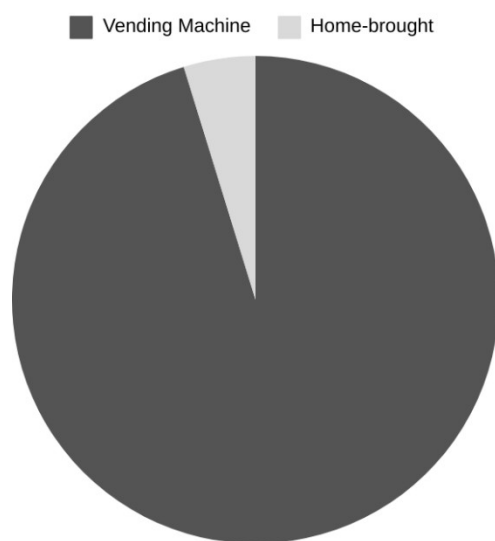
## Question 6

Look at this news snippet:

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### "School Vending Machines: Heroes or Villains?"

A recent survey by the Health First Council shows an interesting trend: 80% of Scottish students prefer using school vending machines over bringing snacks from home. From a sample of 50 students in one Scottish school, this study highlights how vending machines may contribute to better student satisfaction and convenience.



**Note:** Health First Council is a lobby group funded by major vending machine companies, advocating for the convenience and benefits of their products in schools.

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Discuss whether you believe the source of this data is robust **and** explain why the graph might be misleading.

Aim to write around 150 words.