25SCHOOLS

FREE LEARNING NOTES FOR ZAMBIA

FORM 1

Mathematics

Collecting and presenting data

Lesson notes for learners · Competence-Based Curriculum

INSIDE

1. Collecting data
2. Kinds of data
3. Tally marks and frequency tables
4. Check yourself

Statistics helps us make sense of information. A shop owner in town decides what to stock by counting what customers buy, and a school decides how many desks to make by counting learners. Statistics is the branch of mathematics that deals with collecting, organising, analysing, interpreting and presenting data. In this note you learn how data is collected, the kinds of data there are, and how to put data into a frequency table.

AFTER THESE NOTES YOU SHOULD BE ABLE TO

- Collect data by observation, interviews and measurement
- Tell qualitative from quantitative data
- Tell discrete from continuous data
- Organise data using tally marks and a frequency table

KEY WORDS

data	information collected, such as heights, shoe sizes or favourite colours
qualitative data	data that describes qualities or features, such as colours
quantitative data	data that deals with numbers or amounts
discrete data	data that can only take specific values, such as a count of leaves
continuous data	data that can take any value in an interval, such as height
frequency	the number of times a value or item appears

1 Collecting data

Data can be collected in three main ways: observation, interviews and measurement. The method depends on the kind of information you need: numbers, opinions, behaviour or facts. For example, the favourite food of teachers can be found by interviewing them, the colours teachers wear by observing, and the length of desks by measuring.

2 Kinds of data

Data that only describes qualities or features is qualitative. The colours worn by teachers are qualitative. Data that deals with numbers or amounts is quantitative. The heights of learners in your class are quantitative.

Quantitative data can be discrete or continuous. Discrete data can only take specific values, for example the number of leaves on a plant. Continuous data can take any value in an interval, for example the height of the plant.

Kind	Meaning	Example
Qualitative	Describes qualities	Colours worn by teachers
Quantitative	Numbers or amounts	Heights of learners
Discrete	Only specific values	Number of leaves on a plant
Continuous	Any value in an interval	Height of a plant

Figure 1. Kinds of data with examples

3 Tally marks and frequency tables

To organise data, count how many times each item appears. Use tally marks while counting and bundle them in groups of five. The count for each item is its frequency. A table with the items, the tally and the frequency is a frequency table.

WORKED EXAMPLE

20 learners were asked how they travel to school: walk (W), bus (B) or cycle (C). The answers were W, B, W, C, W, B, W, W, B, W, C, W, B, W, W, W, B, C, W, W. Make a frequency table.

Count the learners who walk: 12

Count the learners who go by bus: 5

Count the learners who cycle: 3

Check the total: 12 + 5 + 3 = 20, which matches the 20 learners

Walk has tally of two groups of five and 2 more, frequency 12; bus has one group of five, frequency 5; cycle has 3 strokes, frequency 3

TRY THIS

Choose one of these and collect the data in your class: how learners travel to school, shoe sizes, the number of brothers and sisters, or the favourite food of teachers. Say which method you used (observation, interview or measurement), make a tally chart and a frequency table, and say whether the data is qualitative or quantitative.

REMEMBER

- Statistics deals with collecting, organising, analysing, interpreting and presenting data
- Data is collected by observation, interviews or measurement
- Qualitative data describes qualities; quantitative data is numbers or amounts
- Discrete data takes specific values; continuous data takes any value in an interval
- A frequency table shows items, tally marks and frequencies

? Check yourself

1. Name three ways of collecting data.
2. Is the colour of a bicycle qualitative or quantitative data?
3. Is the number of goals in a football match discrete or continuous?
4. Is the time taken to run a race discrete or continuous?
5. What does frequency mean?
6. A class at a school near Feira did a snack survey with these frequencies: vanilla biscuit 4, bread 7, lollipops 5, juice 8, popcorn 15. (a) How many learners were surveyed? (b) Which snack was most popular? (c) How many more learners chose popcorn than bread?
7. A group wants to find out the favourite football club of the teachers, the colours of their shirts, and the length of the staff-room desks. (a) Which method of collecting data is best for each? (b) Which of the three kinds of data is quantitative? (c) Say whether the desk length is discrete or conti

ANSWERS

1. Observation, interviews and measurement.
2. Qualitative.
3. Discrete, because it can only be a whole number.
4. Continuous, because it can take any value in an interval.
5. The number of times an item or value appears.
6. (a) 4 + 7 + 5 + 8 + 15 = 39 learners. (b) Popcorn. (c) 15 - 7 = 8 learners.
7. (a) Interview for the favourite club, observation for the colours, measurement for the desk length. (b) The desk length. (c) Continuous, because it can take any value in an interval.

Written by 25Schools to follow the Form 1 Mathematics syllabus of the Zambian competence-based curriculum. Free for learners to read, download and share. More notes and quizzes at 25schools.com.