Your notes

GCSE Statistics: revision notes

Index numbers and rates

Contents

1. Simple index numbers
2. Chain base and weighted index numbers
3. Rates
4. Key terms
5. Quick questions
6. What to do next

Simple index numbers

- An **index number** shows how a value has changed compared with a base value, which has index 100.
- **Index number** = value ÷ base value × 100. If a price was £40 in the **base year** and is £46 now, the index is 46 ÷ 40 × 100 = 115.
- An index of 115 means a 15% increase since the **base year**; an index of 90 means a 10% decrease.

Chain base and weighted index numbers

- A **chain base index** compares each year with the year before. A **chain base index** of 105 means a 5% rise on the previous year.
- A **weighted index number** combines several items, giving each a weight for its importance. Weighted index = Σ(index × weight) ÷ Σweights. Indexes of 110 (weight 3) and 120 (weight 1) give (330 + 120) ÷ 4 = 112.5.
- The Consumer Prices Index (CPI) is a weighted index measuring inflation, using a basket of goods.

Rates

- A **crude rate** compares an event with the population size, usually per 1,000. Crude birth rate = births ÷ population × 1,000. With 600 births in a population of 50,000, the rate is 12 per 1,000.
- **Crude rates** can mislead when areas have different age structures: a seaside town with many older people has a higher crude death rate.
- A **standardised rate** adjusts for age using a standard population. Multiply each age group's rate by the proportion of the standard population in that group, then add. For example, 0.8 × 2 + 0.2 × 30 = 7.6 per 1,000.

Key terms

Index number	A value compared with a base value set at 100.
Base year	The year used for comparison, with index 100.
Chain base index	An index comparing each period with the one before.
Weighted index number	An index combining items according to their importance.
Crude rate	The number of events per 1,000 of the population.
Standardised rate	A rate adjusted for the age structure of the population.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What index does the base year have?
2. A price was £40 in the base year and is £46 now. What is the index number?
3. An index number is 90. What does this show?
4. What does a chain base index compare?
5. 600 births in a population of 50,000. What is the crude birth rate per 1,000?
6. Why can crude death rates be misleading?
7. Indexes 110 (weight 3) and 120 (weight 1). What is the weighted index?
8. What does the CPI measure?

Answers

1. 100
2. 115
3. A 10% decrease since the base year
4. Each year with the year before
5. 12
6. Areas have different age structures
7. 112.5
8. Inflation, using a weighted basket of goods

What to do next

Practise 10 questions on this topic

Try 3 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

Your notes