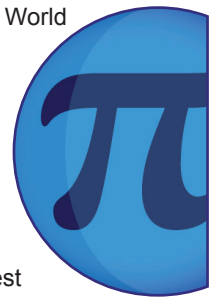
Hyperinflation: 1920s Germany

Key Learning Content

This film tells the story of how hyperinflation affected the German economy in the 1920s. After the First World War, the German government resorted to printing money in order to pay war reparations. This led to hyperinflation, with prices in 1923 rising at a rate of 900% per month. The effect of this on prices over a three-month period is shown on screen. Inflation is defined and an example given using a decimal multiplier. Hyperinflation is defined and examples of everyday goods costing millions, if not billions, of marks are shown on screen.



Knowledge of index notation would be useful prior to watching the film. It will also be of particular interest to those studying economics.

Core Outcomes

Learning Points

- Be able to use and apply number in everyday personal, domestic or community life.
- Be able to understand the multiplicative nature of percentages as operators, e.g. 15% of 120 = 0.15 x 120.
- Be able to use decimal multipliers and index notation to calculate the effect of a constant percentage change over multiple periods.

Suggested Activities

- Find the effect of increasing a number by a given percentage by multiplying by an appropriate decimal.
- Raise decimal multipliers to appropriate powers to work out the effect of repeated percentage change.
- Work out the prices in money-of-the-day of goods bought by students when they first started school.

Extension Outcomes

Learning Points

- Be able to use decimal multipliers and index notation to calculate equivalent percentage changes for different periods of time, e.g. +10% per month is equivalent to +214% over one year, and vice versa.
- Be able to solve equations involving compound percentage change, with multipliers raised to an unknown power.
- Be able to recognise and solve reverse percentage problems.

Suggested Activities

- Convert between daily, weekly, monthly and annual inflation rates.
- Work out the annual percentage change necessary to double a quantity over a set number of years, e.g. prices double every 14 years at about 5% inflation.
- Work out what goods used to cost given today's price and the historic inflation rate.

Related Films

To use before the lesson plan:

The Most Populous Country	This film suggests a way to express mathematically the relationship between large and larger.
Could You Owe More Than America?	This film looks at how a small loan and a very high short-term interest rate can lead to enormous debts in just a few years.

To use after the lesson plan:

The Emperor's Chess Board	This film tells the tale of how a simple reward spiralled out of control when it was doubled for every square on a chess board.

Guide Lesson Plan

Introduction

Ask students if they know what inflation is. Ask them to give examples of inflation, e.g. a loaf of bread costs £1 today and £1.10 next year. Discuss what level of inflation is typical in their home country. Stress that the inflation figures given in the news in almost always an annual inflation rate. Ask if they know of any extreme cases of inflation. Summarise the discussion in bullet point form.

Show Film

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Main Activity

Foundation

Show how to model a percentage increase as a decimal multiplier (so adding 20% is equivalent to multiplying by 1.2), and use this method to find the annual effect on prices of different annual inflation rates. Work through a two-year example and show that the answer can be found by raising the decimal multiplier to the power two, e.g. price x 1.2^2. Set exercises to test the method.

Advanced

Show how to raise a number to a given power, including fractional powers, on a calculator. Go over the decimal multiplier method described above and then use it to convert between daily, weekly, monthly and annual inflation rates, e.g. what is the annual inflation rate equivalent to a 10% monthly inflation rate? What is the daily inflation rate equivalent to a 50% annual inflation rate? Set exercises to test the method.

Extension Activity

Find out how long ago the students first started school and estimate the average annual inflation rate since then. Use this to work out the prices in money-of-the-day of goods bought by students when they first started school, e.g. if a bar of chocolate costs £1 today and inflation has been running at 3% for 10 years, then the same bar 10 years ago would have cost:

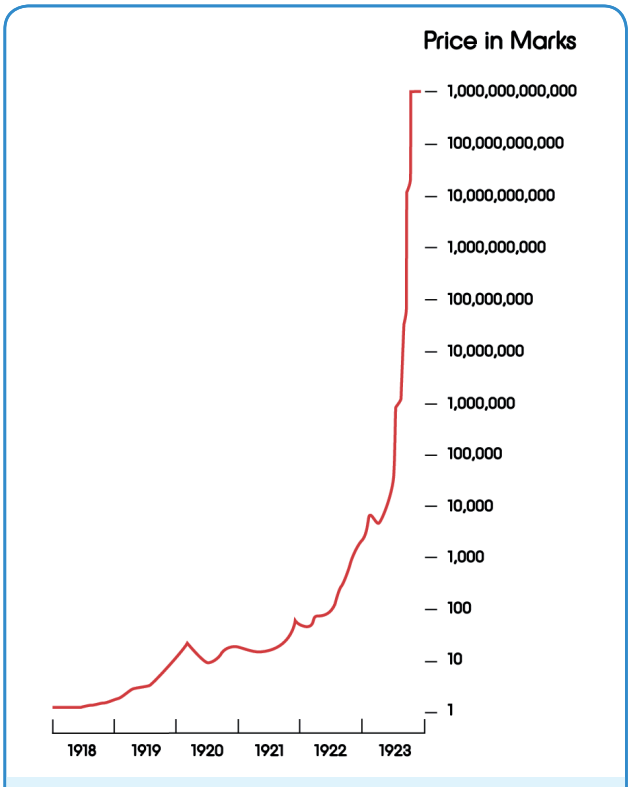
$$1 \div (1.03)^{10} = £0.74$$

Then repeat the calculation for prices 100 years ago, around the time of the First World War. Model the effects of much higher rates of inflation over the period.

Optional Extra

1920s Germany is a classic example of hyperinflation, but have there been others? Get students to research other countries that have suffered from periods of hyperinflation. What happened to them, what did they do, and what are their inflation rates now?

At the height of hyperinflation in Germany after the First World War, $1 was worth a trillion marks.



This graph shows the value of one gold mark against paper marks. By 1923, German inflation reached a staggering 900% per month.