

# KS3 Maths Lesson Plan



## How does copyright apply to the world of maths?

Lesson 1 of 2: Word problems and ratio

### Learning objectives

- To explore how copyright affects areas of mathematics.
- To solve word problems.
- To demonstrate an understanding of ratio to solve word problems.

### National Curriculum objectives

- Divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a ratio.
- Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction.

### Study skills

- Discussing and sharing ideas with others.
- Reasoning and explaining methods.

### Learning outcomes

- Students will demonstrate an understanding of how copyright applies to maths.
- Students will demonstrate an understanding of ratio when solving word problems.

### Resources required

- Lesson Presentation Lesson Presentation 1
- Ratio Word Problems activity sheet (or this activity can be done in books, using the slides in the Lesson Presentation)

## Introduction

Share the learning objectives in the Lesson Presentation to introduce the lesson.

As a brain warm-up starter activity, introduce 'DJ Tate' and allow students time to complete their answers to the word problems. When looking at the answers, ask students to feed back and discuss the methods used as a class.

## Main activities

Discuss what copyright is and read through the information about the Copyright, Designs and Patents Act.

Introduce Kira (DJ Tate's mathematician sister) and ask the students how copyright might impact her work. Go on to explain how formulae, problems, proofs and theorems cannot be copyrighted, but the context in which questions or formulae are written or explained can be – such as word problems in a maths exam question paper.

Work through the information on ratios on slides 9–11 if students are unfamiliar with ratio or need a recap. If this is an area students are confident with, skip to slide 12.

Give students a timed period to complete the ratio questions on slide 12. Devote time to discussing the answers and the methods students used to break down and work through the questions.

Ask students to create their own word problem for a maths exam paper on ratio. If time, they can swap questions with their partner and answer them.

**Who invented calculus first?** Share the information on and allow pair discussion on whether Copyright Law might have helped in this particular dispute, then feed back and share thoughts as a class.

## Plenary

Ask students to explain one concept or piece of information they have learned from today's lesson.

## Useful resources

This CLA video may also be helpful to share with students:

[What Does IP Mean to You?](#)

## Extension activities / home learning

- Students could be asked to find and watch a video online of someone explaining how to answer a maths question. Ask them to consider whether the video can be copyrighted by the person who made it and provide reasons for their responses. They can think about the content of the video, the maker of the video, what that video can be used for and who can use the video.
- Students could even record themselves explaining how to solve a word problem, then discuss the choices they then have as the creators as to what happens to that video – and the implications of those choices.

# KS3 Maths Lesson Plan



## How does copyright apply to the world of maths?

Lesson 2 of 2: Statistics and data

### Learning objectives

- To consider the issues of copyright on statistics and data.
- To solve word problems.

### National Curriculum objectives

- Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data.

### Study skills

- Gather and analyse evidence.
- Form opinions and reach informed conclusions.
- Presentation skills.

### Learning outcomes

- Students will demonstrate an understanding of how copyright applies to maths.
- Students will construct and interpret tables and graphs.

### Resources required

- Lesson Presentation
- Graph paper
- Interpreting Tables and Graphs activity sheet, if helpful to students who cannot work from the Lesson Presentation
- Rainfall Data, if helpful for students to have a copy

## Introduction

Share the learning objectives in the Lesson Presentation to recap the learning from the previous lesson and to introduce this lesson.

As a brain warm-up activity, ask students to answer the questions about the frequency table and the bar chart on slides 3 and 4.

## Main activities

**Do you think data and statistics can be subject to copyright?** Ask students to discuss this question in pairs or small groups, then come together for a class discussion. Encourage students to explain the reasoning behind their decisions.

Share and discuss the key facts.

Show students the rainfall data on slide 7, explaining where the data originally came from. Ask them to choose a way to present this data on graph paper. Support students with labelling their axes correctly and thinking about scale.

Ask students to consider what information can be extracted from their graphs. They should write a short paragraph to provide an interpretation of the information on their graph.

Explain to the students that their graph and their written interpretation of the information is their intellectual property, even though the data contained on the graphs didn't originally come from them.

**When it comes to research, sharing data is a good thing.** Ask students to consider the statement. Discuss the benefits of sharing data to speed up research, progression and discoveries. Explain that it also means that less wealthy research groups or countries can access useful data that they may not have been able to obtain themselves due to a lack of research funding. Ask students to consider if they feel it is fair for those who have worked to collect the data for that numerical data to then be shared.

## Plenary

Ask students to explain one concept or piece of information they have learned from today's lesson.

## Useful resources

The rainfall data was taken from Statista, where it can be viewed as a graph, showing total monthly rainfall in the UK from 2014 to 2023. Students can see how it has been presented and how the original source of data has been credited on the page.

### [What Does IP Mean to You?](#)

## Extension activities / home learning

- Students can develop work on data and statistics activities, choosing a set of data to work with and how to present that data. They should also write a short interpretation of the data. Compare students' data presentations and written interpretations to see how much variation and originality is evident.