



Developing Proportional Reasoning with a focus on Fractions in Years 4, 5 and 6

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Research indicates that reasoning is a key factor in a pupil's success in mathematics (Nunes, 2009). It is critical that opportunities to develop mathematic reasoning skills are integrated fully into the curriculum. Such skills support deep and sustainable learning and enable pupils to make connections in mathematics.

Fractions is an area of maths that is rich and complex: teachers can find it challenging to teach and pupils tend to have procedural understanding, finding it difficult to draw on and make connections between big ideas.

This project intends to develop mastery level proportional for KS2 pupils, through an in depth focus on the teaching of fractions and development of reasoning through the use of models and resources and research informed tasks and problems. The project aims to develop teachers' pedagogical approaches to develop reasoning in their classrooms, which can be applied elsewhere in the maths curriculum. The course will also support teachers in developing their subject knowledge so that they have confidence in planning, teaching and assessing for mastery of fractions.

What does the project involve?

The project will involve **three days of training via Zoom and a final twilight sharing session**. As a result of this twilight we will produce a PowerPoint for teachers to disseminate the outcomes of the project with the whole school. The project is designed for teachers in years 4-6. **We would ideally like one teacher from each of these year groups to attend the training from each school in order to guarantee sustained impact.** These teachers in year 4-6 will disseminate to their parallel class teacher and also to year 3 teachers after each CPD session. The sessions will focus on development of reasoning, use of key resources and models and associated practical and engaging tasks related to Year 3-6 fractions content. The sessions will support teachers in developing their own subject knowledge for teaching fractions. Pupils will undertake a very short and easy to administer pre-post test in order to assess impact.

Following each of the training days, participants will trial the activities, resources and teaching approaches explored in sessions. It is a project requirement that the identified Year 4, 5 and 6 attend ALL the sessions and should be prepared to disseminate to relevant teachers after each session and also to disseminate to the whole school once the project is completed.

The project's aims involve supporting teachers to:

- Develop knowledge, understanding and experience of reasoning in relation to big ideas for fractions
- To understand progression in big ideas and how to assess for mastery level understanding of these ideas
- Develop the teaching approaches required to increase pupils' experience of proportional reasoning, language and problem solving
- Develop increased understanding of how to use resources and contexts to develop conceptual understanding around fractions

Schools should ideally send three teachers (one from each year in years 4,5 and 6). All selected teachers are expected to attend all days. The project is suitable for both experienced teachers and NQTs. All training will be on line, live via Zoom. Ideally, throughout the course, teachers from the same school will attend the course together in the same room to allow for opportunities to collaborate and plan. Teachers should bring physical resources to the sessions but we will also make use of the Mathsbot Manipulatives site which provides an opportunity to explore with virtual resources for Cuisenaire, fraction walls and pattern blocks. Dates are designed to coincide with when teachers are likely to be planning and teaching fractions

Dates for Work Group delivery via Zoom:

Session 1: 28/01/21 10-3pm

Planning, teaching and evaluating and pre-test for pupils

Session 2: 11/2/21 10-3pm

Planning, teaching and evaluating

Session 3: 25/02/21 10-3pm

Planning and teaching and evaluating and post-test for pupils

Twilight: 11/03/21 2:00pm-4:00pm

In order to apply to be a part of this project, you will need to fill out an Expression of Interest Form. The deadline to fill this out is: Monday 14th December 2020

Contact: admin@lcwmathshub.co.uk

*The London Central and West Maths Hub reserves the right to charge a £75 fee for non-attendance to the sessions or for cancellations to any of the sessions with less than 1 weeks' notice.