Reasoning with Number K – 6

This course is aimed at primary school teachers and leaders and focuses on the teaching and learning of fractions, place value and decimals for real understanding.

The four sessions in the course will be presented by Dr Peter Gould. Peter is a dedicated learner and teacher. He has worked with students from Preschool age to adults in helping them make sense of Mathematics. Peter acknowledges that his students and colleagues have taught him many useful things over the years. He has also had the good fortune to learn from teachers and students in New Zealand, Papua New Guinea, Thailand, Japan and the USA. He has a strong interest in research-based knowledge being used to improve, and be improved by, teaching practice.

Peter is currently working for the NSW Department of Education, designing and providing strategic support in developing early numeracy in schools under the Early Action for Success strategy.

Time: 4:30 pm to 6:30 pm (Registration and tea/coffee from 4.15pm)

Dates:

<table>
<thead>
<tr>
<th>Date</th>
<th>Session 1</th>
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<tr>
<td>Thursday 28 April 2016</td>
<td>Fractions 1 – Understanding the models</td>
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<tr>
<td>Thursday 5 May 2016</td>
<td>Fractions 2 – Using the models</td>
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<tr>
<td>Thursday 12 May 2016</td>
<td>Understanding place value</td>
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<td>Thursday 19 May 2016</td>
<td>Understanding decimals</td>
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Venue: Campbelltown Public School  
31 Lithgow Street  
Campbelltown NSW 2560

Cost: $187 (incl GST) for MANSW members  
$272 (incl GST) for non-members

Closing Date: Mon 21 April 2016

Session 1: Fractions 1 - Understanding the models

This first session focuses on the teaching and learning of fractions for real understanding and will examine the different models used to explain the concept of fractions. After examining the current research findings, participants will be provided with ideas for introducing fractions at the relevant Stage.
Participants will examine the key features of each model and develop strategies that will help provide students with a deeper understanding of the model. They will also explore the links between these models and how fractions are talked about and recorded to assist their students to gain confidence in applying their numeracy skills.

**Session 2: Fractions 2 - Using the models**

This second session looks at understanding equivalent fractions and the way the relationship with a whole defines a fraction as a relational number which is the basis of operating with abstract fractions. In this workshop we will represent equivalent fractions using linear and area models to explain how addition and subtraction of fractions work. In particular, we will investigate strategies to solve problems involving addition and subtraction of fractions with the same or related denominators.

**Session 3: Understanding place value**

This third session explores how the base-10 place value system enables us to work efficiently with numbers. Starting from the syllabus expectations of Stage 1, this workshop will investigate how students think about tens within numbers. In particular, how students decode numerals into multiples of ten or multiply and divide numbers by powers of ten. The regularity of the base-10 place value system is the origin of many of the number patterns explored in patterns and algebra. We will also investigate how to analyse number patterns to develop a richer appreciation of the base-10 place value.

**Session 4: Understanding decimals**

This fourth session looks at how Australian research has confirmed some persistent misconceptions in students’ understanding of decimals. Even amongst those students who can correctly calculate with decimals, not all understand the comparative size of the numbers involved. Did you know that many students think that the longer a decimal is, the greater its size? For example, some students consistently interpret long decimals such as 0.425 or 0.125 as larger numbers than short decimals such as 0.5. Some students think of decimals as two whole numbers separated by a decimal point. Many believe that 0.75 is bigger than 0.8. This workshop will look at some of the common misconceptions students form in working with decimals and offer practical ways to increase the number of students who are proficient users of decimals.

Completing *Reasoning with Number K-6* will contribute 8 hours of QTC Registered PD addressing 1.2.2, 2.5.2, 6.2.2, 6.4.2 from the Australian Professional Standards for Teachers towards maintaining Proficient Teacher Accreditation in NSW.