

# TRIAL MATERIAL WORK IN PROGRESS

## Differentiated plans for Years 5 & 6 for Whole Numbers

Ian Lowe, MAV Professional Officer, 2007

IF YOU USE ANY OF THIS  
PLEASE PROVIDE FEEDBACK TO IAN AT  
[ilowe@mav.vic.edu.au](mailto:ilowe@mav.vic.edu.au)

THIS WILL QUALIFY YOU  
FOR AN IMPROVED VERSION  
WHEN AVAILABLE

Materials are recommendations only; suitable substitutions may be made.

MAV materials may be bought from [www.mav.vic.edu.au/shop](http://www.mav.vic.edu.au/shop)

Download the Curriculum Corporation catalogue from

[http://www.curriculum.edu.au/catalogue/downloads/pc2007\\_pages39-54.pdf](http://www.curriculum.edu.au/catalogue/downloads/pc2007_pages39-54.pdf)

and look at pages 48 and 49.

For Learning Federation materials (Learning Objects),

check out 'Digital Learning Resources' on your laptop, or download them from the new education website  
[www.education.vic.gov.au/studentlearning/teachingresources/elearning/digilearn.htm](http://www.education.vic.gov.au/studentlearning/teachingresources/elearning/digilearn.htm).

# Differentiated plans for Years 5 & 6

## Whole numbers and integers

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Whole number concepts and skills are the basis of most other mathematical ideas. They are a major focus for VELS Standard 1 to 4 -- primary school for the average child. Ideas of integers are introduced and calculations with negatives begin in Standard 5. So extra effort is required to create a rich learning environment that can help children to understand and to achieve at their own level. This topic can only be given 3 weeks in Years 5 and 6, because of the demand for time from Fractions, decimals, percentage and ratio and associated ideas.

This set of units – one per semester for Years 5 & 6 – could achieve this goal. It matches the specifications for VELS, but recognises that there will be a wide spread of achievement in each class. So children are differentiated into working groups by need, for some of the time only. There may be more than one group at any Standard, or some Standards may need to be combined. Plan a stimulating set of activities for homework review, such as Interactive Learning spreadsheets.

It also balances the *toolbox* requirements – concepts and skills – with the need to learn to apply those tools in *problem solving* situations. Hence there are whole class lessons (often from Maths300 or RIME) punctuating the toolbox development, at regular intervals. These are on the same topic, but do not attempt to mesh with the work done by each 'standard' group. They ensure that *Working Mathematically* is always part of the learning process, integrated into each dimension.

The mix of activities will provide a stimulating and rich learning environment, with students learning from and helping one another. Connections between topics will be made and reinforced, and the variety of learning styles will accommodate learners with different needs.

### How does it work?

In Years 5 and 6 it is assumed that children will be working anywhere from Standard 2 to Standard 5. Probably most will be working on Standards 3 or 4. At regular intervals whole class lessons are taught to 'mixed ability' groups. Between these are cycles of a fixed pattern of lessons. In Years 5 and 6, the cycle has three parts: teaching, worksheet or games, computer use. In Years 7 and 8, the cycle has four parts: teaching, worksheet or games, problem solving (choice from a set of tasks) and computer use (a variety).

On any day all are taking place in the same classroom, so only a fraction of the resources are needed. But the cycle also works for the students: they follow the pattern – teaching, worksheet, (problem solving) and computer. As a consequence, teaching is to a different group each day in a regular pattern. Teaching will be for a concentrated 20 minutes or so, and then the teacher will supervise the rest of the class. Instructions on the board will inform the other groups of what they are to do. Encourage students to help each other.

### What resources are needed?

Access to 4 or 5 computers daily is expected. Computer pods or laptop trolleys might be the best solution. Membership of Maths300 is a requirement; many schools have membership – here is how to use it.

The pages in the resources are listed for each day's lesson, but are summarised here. Sources are: MAV (Mathematical Association of Victoria), CC (Curriculum Corporation), LF (Learning Federation).

- *Teaching*: Guidelines in Number (MAV), Maths Continuum (DE&T), People count (MAV)
- *Worksheets & games*: Active Learning 1 (Number & Algebra), Active Learning 2 (N&A), Card Capers, Dice Dazzlers, Tackling tables (all MAV)
- Active Learning 2 (all 3 books) contains 'Quickmaths', very useful for homework and review
- *Computer*: Interactive Learning (MAV), Learning Objects (LF),
- *Problem solving*: Problem Solving Task Centre (CC), Maths300 (CC), RIME (MAV), RIME 5&6 (MAV)

### How could it be adapted to different situations?

If your class does not have the range predicted, or you cannot manage three or four groups, you should adapt by ignoring columns. You may substitute other learning tasks at any time. If you run out of time, leave stuff out. In this rich environment you will be surprised how much is learned outside the 'planned' activities.

### How do I assess the learning?

At the end of the tables are sets of questions based on *understanding* at each VELS standard that will allow you to place children into groups and monitor progress at selected times. However your observations, digital photographs and copies of children's work will be more useful than any external 'test'.

**Year 5 Semester 1 Whole numbers**

<b>Day</b>	<b>Yr 5 sem 1: Towards Std 3</b>	<b>Towards Std 4</b>	<b>Towards Std 5</b>
<b>1</b>	<b>Maths300 #26 Highest number</b>		
<b>2</b>	<b>Teach</b> <b>Place value to 1000</b> Guidelines in Number p53-58 People count #3	<b>Worksheet</b> <b>Active Learning 1 (N&amp;A)</b> N2 Building the greatest <b>Active Learning 2 (N&amp;A)</b> Quickmaths Sets 1-3, N1 Sum games <b>Card Capers, Dice Dazzlers</b>	<b>Computer</b> <b>Interactive Learning</b> Aliquot, Bob's buttons, Lockers, Mirror products, Sticky numbers, Billiard ball paths
<b>3</b>	<b>Worksheet/games</b> <b>Active Learning 1 (N&amp;A)</b> N2 Building the greatest Games 1, 2 <b>Active Learning 2 (N&amp;A)</b> Quickmaths Set 1 <b>Card Capers (J)</b> <b>Dice Dazzlers</b>	<b>Computer</b> <b>Interactive Learning</b> Money by 10 or 100, 10 or 100 times what? Reading a scale, Powers of 10(x), Powers of 10 (÷) <b>Learning Objects</b> Decimaster, Wishball	<b>Teach</b> <b>Factors, common factors and HCF</b> People count #8
<b>4</b>	<b>Maths300 #35 Nine and over</b>		
<b>5</b>	<b>Computer</b> <b>Interactive Learning</b> Adding to 20, Adding single digits, Subtract from 20, Skip count to 9999, Skip count to 140 <b>Learning Objects</b> Wishball, Decimaster	<b>Teach</b> <b>Place value to a million</b> <b>Guidelines in Number</b> p51-58, 147-148, 153-156 <b>People count #9</b>	<b>Worksheet/games</b> <b>Active Learning 1 (N&amp;A)</b> N12 Divisibility <b>Active Learning 2 (N&amp;A)</b> Quickmaths Sets 1-3, N3 Multiply & divide, N6 Dividing, N11 Mixed bag, N12 Remainders
<b>6</b>	<b>Maths300 #71 Eureka</b>		
<b>7</b>	<b>Teach</b> <b>Multiplication and division of whole numbers by 10</b> People count #9 <b>Number boards: middle primary</b> p29	<b>Worksheet/games</b> <b>Active Learning 1 (N&amp;A)</b> N3 Number sentences <b>Active Learning 2 (N&amp;A)</b> Quickmaths Sets 4-6 <b>Card Capers (J or M)</b> <b>Dice Dazzlers</b>	<b>Computer</b> <b>Interactive Learning</b> Aliquot, Bob's buttons, Lockers, Mirror products, Sticky numbers, Billiard ball paths,
<b>8</b>	<b>Worksheet/games</b> <b>Active Learning 1 (N&amp;A)</b> N2 Building the greatest Games 3, 4 <b>Active Learning 2 (N&amp;A)</b> Quickmaths Set 2 <b>Card Capers (J or M)</b> <b>Dice Dazzlers</b>	<b>Computer</b> See Std 4 Lesson 3	<b>Teach</b> <b>Prime numbers</b> People count #8 <b>RIME N9 or MCTP p441</b> Licorice factory
<b>9</b>	<b>Maths300 #14 The Farmer's puzzle</b>		
<b>10</b>	<b>Computer</b> See Std 3 Day 5	<b>Teach</b> <b>Addition, inc associative and commutative</b> <b>Guidelines in Number</b> p63, 70, 86, 124-128 <b>People count #5</b>	<b>Worksheet/games</b> <b>Active Learning 1 (N&amp;A)</b> N14 Investigating primes <b>Active Learning 2 (N&amp;A)</b> Quickmaths Sets 4-6