



The Wilkie Way

Newsletter August 2022

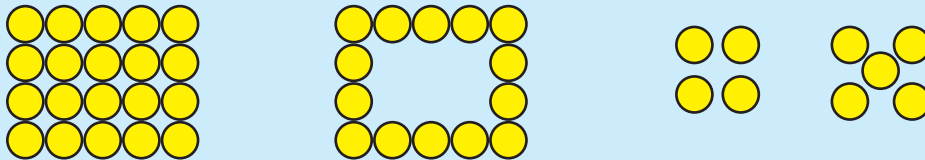
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The Progression of Materials

Seeing students at work and the delight of witnessing the lightbulb moments when something makes sense makes teaching such a rewarding occupation.

Working with small groups recently I have again been reminded of the importance of the progression of materials used to model concepts. Just like thinking - it starts with counting so counters are the first material.

For example when modelling multiplication as an array, start with counters and students build the array very quickly you can see students who show 4×5 as:



When students understand an array represents multiplication then focus on students use of symbols to write the expressions represented by an array.

Students need to connect the repeated addition expressions with multiplication expressions:

$$4 + 4 + 4 + 4 = 5 + 5 + 5 + 5 = 4 \times 5 = 5 \times 4$$

(equivalent expressions can be connected with an = symbol)

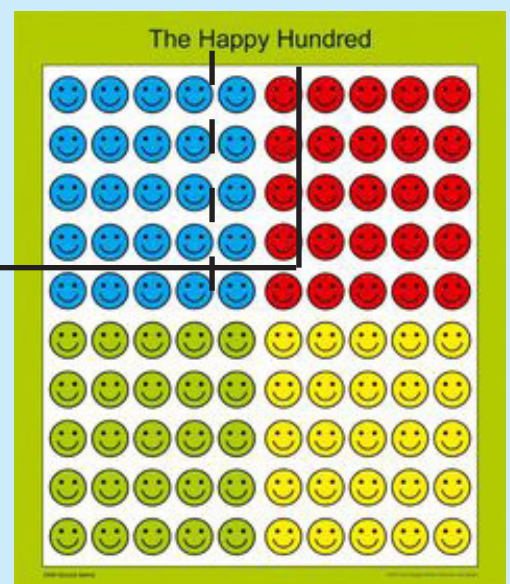
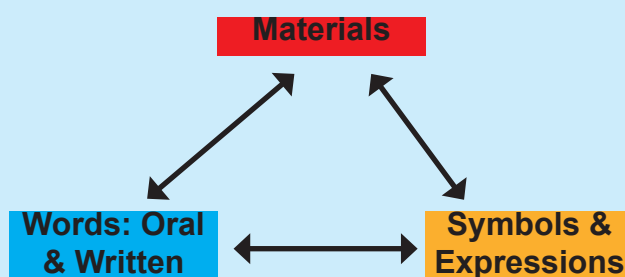
All too often their understanding of = is limited to mean "give the answer". Teachers must ensure they use correct mathematical language and know the difference between an expression and an equation.

Once students can build an array and understand it represents multiplication then fixed arrays can be used like Happy Hundreds boards.

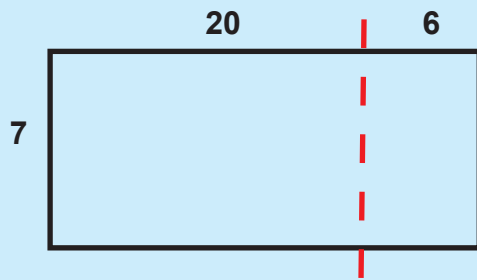
Repeated addition expressions are no longer useful. Students should be using equivalent multiplication expressions and recording would look like:

$$4 \times 7 = 4 \times 5 + 2 \times 5 = 20 + 8 = 28$$

Recording assists thinking and students need assistance to communicate their thinking.



A diagram can replace the materials - for example the empty array (also formula for area):



$$26 \times 7 = 20 \times 7 + 6 \times 7 = 140 + 42 = 182$$

Teachers must focus their thinking at a conceptual level and assist students through use of appropriate materials, words, (oral and written) and symbols and expressions. Making sure you assist students to make the connections between them.

Tell students - they may remember but are more likely to forget

Make students think - students construct their own understanding and are more likely to remember

Wilkie Way Membership Area

The directory for the Wilkie Way membership resources has been redesigned as the increase in headings meant too much scrolling. Each item is a link to a range of resources coming under the general heading. As many could sit under more than one heading I have put items under more than one heading. So which ever way you look for a resource you are likely to find it. (Sorry a search function was not possible).

Numeracy Games

Learning about Numbers Te Reo Maori Versions to 10
 Addition & Subtraction to 10 Addition & Subtraction to 20
 Counting in 2s, 5s & 10s Multiplication & Division

Maths Aotearoa Workbooks

Level 1a Level 1b
 Level 2a Level 2b
 Level 3a Level 3b
 Level 4a Level 4b
 Learning Outcomes

Teacher Handbook Resources

Arithmetic Operations
 Fractions, Decimals, & Percentages
 Numbers & the Number System
(Handbooks available from online store)

Foundation Resources

Cardinal Number Ordinal Number
 Sorting & Matching Join & Partition
 Number Charts 1 - 10 Writing Numerals
 Creating Number Stories Equality
 Visual Memory Teacher PLD

Student Resources

Problem Based
 Concept Word Graduated problems on a theme
 Problems Rich Learning Tasks
 Challenges Special Occasions
 Maths from Stories

Topic Based
 Addition & Subtraction Place Value
 Multiplication & Division Algebra
 Fractions, Decimals & % Financial Literacy
 Geometry Measurement

Teacher Professional Resources

Planning Assessment
 Moderation Curriculum Knowledge
 Learning Progressions Professional Practice
 Professional Readings

Learning Support

Maths Gym

Learning Multiplication Tables

Context of Money

Addition & Subtraction Concepts

Multiplication & Division Concepts

Equipment Resources

Video Lessons

Geometric Thinking

Want to know what is behind each of the headings on the directory?

Come and have a look for yourself at the PMA Seminar Day in Auckland August 20th 2022 at Ormiston Junior College - not registered yet then go to:

<https://pma.org.nz/the-famous-pma-seminar-day/>

Resources for Wilkie Way Members

Subscriptions purchased at the online store at www.wilkieway.co.nz
 Individual \$45 - paid via paypal
 NZ School paid via invoice - complete form at online store
 Up to 100 students \$150+GST
 101 - 300 students \$250 + GST
 300+ students \$350 + GST
 Non NZ School \$400 - paid via paypal



New Resources uploaded during July

The Wilkie Way Practice Workbook 5

Base 10 Number System

Name _____
Class _____

Extra practice to support:
Maths Aotearoa Book 4a
Unit 2
Chapter 7

The Wilkie Way

Money Workbook 1

Name _____
Class _____

The Wilkie Way

Workbook 6

Learning opportunity for:

- Reading mathematical word problems
- Solve multi choice type problem
- Additive Thinking
- Spending money
- Receiving money

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Teacher Notes Money Workbooks 1 - 3

Learning opportunities for:

Students working in learning progressions:

- Additive thinking Signpost 3
- Multiplicative thinking Signpost 3 - 4
- Using symbols & expressions Signpost 3

Answers to Workbooks 1 - 3

Further Resources in Wilkie Way Members Area

Maths Aotearoa Workbooks

- Level 2a Practice Workbook 3 Money
- Level 2b Practice Workbook 17 Working with Money

Financial Literacy

- NZ Currency
- Games
- Level 1 - 2 Activity cards
- Level 1 - 2 Worksheets

Other resources by Charlotte Wilkinson

- Maths Aotearoa Textbook 2a Chapter 5 - Money
- Maths Aotearoa Textbook 2b Chapter 5 - Addition & Subtraction with Money

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Maths Aotearoa Workbooks

Level 4a

1. Addition & Subtraction
2. Multiplication & Division
3. Fractions Decimals & Percentages
4. Decimal Addition & Subtraction
5. Base 10 Number system
6. Equations & Expressions

Level 4b workbooks coming soon

Level 4 Maths Aotearoa due for publication later this year by Edify

Student resources Financial Literacy

Six Money Workbooks for students in years 3 - 6 (approximately)

Teacher notes (and answers) for workbooks 1 - 3

Teacher notes (and answers) for workbooks 4 - 6

Folder of activities for getting to know New Zealand Currency

New Zealand Coins

You will need one of each of the coins.
 Look carefully at both sides of each coin.
 Whose head is on each coin?
 What are the pictures on the other side of each coin?
 Can you find any different pictures for any of the coins?
 Make some coin rubbings.
 Create a pattern with your coin rubbings.

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New Zealand Money Notes

Look carefully at both sides of the \$5 note.
 Who is the person on a \$5 note?
 What is in the bird on the other side?
 Find out something about the person on the \$5 note.
 Find out something about the bird on the \$5 note.

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Learning Support Context of Money

Addition & Subtraction Concept Problems
 Multiplication & Division Concept Problems



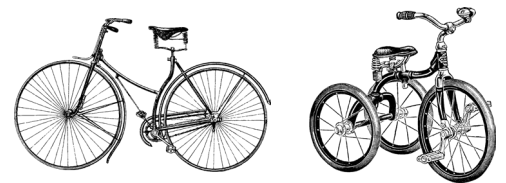
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Problems with Bikes

14 children rode their bikes to school.
How many wheels are parked outside the classroom?



The bike factory makes bicycles and tricycles.
How many bicycles and tricycles could they make using 25 wheels.
(Find all four possibilities)



4 people took place in a bike race relay.
They completed the race in 12 minutes.
No one took more than 4 minutes. No one took less than 2.5 minutes.
No one took exactly the same time.

How long could each person have taken on their leg of the race?



Mike rode his bike over a distance of 39km in 90 minutes.
What was his average speed in kilometres per hour?



If he managed an average speed of 30km per hour how many minutes would it have taken him to cycle 39km