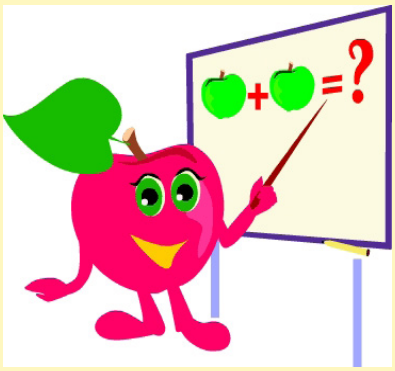
The Wilkie Way

Newsletter September 2026

www.wilkieway.co.nz

Basic Facts or Algebra?



Many teachers view primary mathematics as computation, learning the basic facts. Our new curriculum with its wording of memorising basic facts quite early in a students mathematical journey is adding weight to this view. The Ministry of Education are pushing the need to as turn out pupils who know their basic addition and subtraction facts and know their multiplication tables. The perception being that armed with these crucial mathematical skills children will be successful in secondary school mathematics. Parents also set this as an expectation on primary schools and most primary school assessments support this view of primary mathematics.
While knowledge of addition, subtraction, multiplication and division facts are essential to mathematical success they are only part of the story.

Recent results from the UK (who implemented a compulsory multiplication test at year 4 many year ago) have recorded the lowest pass rate at GCSE maths (year 11) since records began. Mathematical knowledge and looking good on narrow primary assessments does not guarantee success at later maths.

Consider the early addition experiences presented to young children.
I have three red teddies and two blue teddies. How many teddies altogether?
This will often be recorded as 3 and 2 makes 5 and 3 + 2 = 5. The use of signs at this stage implies a meaning on the equals sign as “makes”. Teachers in their teaching continue to develop the understanding of equals as “makes” by the language they use. They may use the word “makes” or “is” or even use the word “equals” or “is the same as”, however children will construct meaning from what they already know. Learners will construct the meaning of the equals sign to be “makes” from the context in which it is used. The focus of children’s learning is on the result of the combination of two or more numbers.
Some teachers introduce signs as a way of avoiding the issue of children being unable to read words and the signs are far easier for children to learn to write than words. By using signs children can be quickly propelled into carry out mathematical activities involving the use of worksheets and pencils which allows the teachers to keep children occupied on tasks independent of the teacher.

Some teachers may themselves believe in the importance of teaching equality and that the equal’s sign indicates a relationship between 3 + 2 and 5 in the equation 3 + 2 = 5. They will often use scales or a number beam balance to convey the idea of equality but while a number sentence is only portrayed as 3 + 2 = 5 the understanding of the meaning of the equals sign as “makes” seems to pervade children’s thinking for years to come.
Children’s first generalization regarding equations is constructed incorrectly with the assistance of their teachers. They practice pages of “sums” all reading “number + number = total” or “number – number = what’s left”. Occasionally they may be presented with the equation in reverse 5 = 3 + 2. For children who still write letters and numerals back to front this is just the same equation presented back to front, 3 and 2 still make 5. The focus is on the result of joining 3 and 2 and not on the relationship between 3 and 2 and 5. Their learned expectations of an equation result in children’s responses to equations presented as 4 + ___ = 7 as completing the missing number as 11 instead of 3. How often do you see this in a primary school classroom? Children see the + which tells them the operation is addition, they see two numbers, 4 and 7 and an equal’s sign which means what do these two numbers make?

Plenty of research exist identifying huge issues with children's understanding of the equals sign and even more importantly teachers lack of understanding regarding the children's misconceptions.
Research evidence would suggest delaying the introduction of the equals sign until it can be introduced in a way that encourages an understanding of a relationship between two quantities rather than as a signal to perform an operation. The equals sign should not be seen as "what's the answer".

However - our curriculum expects students to be using the addition and subtraction operational symbols and the equals symbol in their first year. (and multiplication and division symbols in year 2)
The junior teaching programme for mathematics needs to include a focus on the relationships and patterns inherent in numbers and through studying these relationships and patterns children will become competent in knowing their basic addition and subtraction facts and then their multiplication and division facts. Basic facts practice must also be included as children need time to learn these essential facts in order to use them as tools for working with higher mathematics relationships and patterns. Completing equations is not practice for recall.
Teachers need to transform their current arithmetic activities and word problems from problems with a single numerical answer to opportunities for discovering patterns and making conjectures or generalizations about mathematical facts and relationships and justifying them. (Blanton & Kaput 2003)

For example: A year one class working on facts to five. The basic facts they need to learn are 0 + 5, 1 + 4, 2 + 3, 3 + 2, 4 + 1 and 5 + 0. You may question whether 1 + 4 is the same or different to 4 + 1. To five year olds they are different as they will compare by direct observation of the numbers, they have not yet generalized that addition is commutative and the result is unchanged by reversing the numbers in the equation. Nor will they see the relationship between 4 + 1 and 3 + 2.
(The curriculum expects students to have memorised these facts by the end of 6 months - this does not mean recording the equations.)
When introducing this work I would start with looking at number five and begin with the partitioning rather than the joining of two sets. How many ways can you break up five objects into two groups? From this the children will discover there are only three ways, 5 and 0 or 0 and 5, 4 and 1 or 1 and 4, and 2 and 3 or 3 and 2. (There are many songs and poems around the number 5 that make good contexts)
Model the use of the addition sign and use the equals sign to record 4 + 1 = 1 + 4. In this way you are using the equals sign to show equality and promoting the mathematical property of addition being commutative. (Expected year 1 knowledge)

While learners seem to experience little difficulty with operational signs like addition or subtraction the equals sign needs to be used in a variety of contexts to promote the understanding of equality. Children can be presented with the equation 4 + 1 = 3 + 2. Questions to promote thinking about the relationship between the two sides of the equation need to be asked which focus the children on the changes that have occurred. These questions should also be supported by concrete evidence. A line of double sided counters showing four yellow and one red could be changed by turning one counter to red to show three yellow counters and two red counters. Ask the children if the number of counters altogether has changed. Emphasize 4 + 1 is equal to 3 + 2, supported by the recording. How have the numbers changed? The counters assist children to describe the change, four yellow counters is now one less, there are three yellow counters and the red counters have one more so one red counter is now two red counters. Initially children may not have the language to explain the change. Part of the teacher role is to develop the children's language to explain the changes. Language underpins all mathematical thinking.

Children must understand that equality is a relationship that expresses the idea that two mathematical expressions hold the same value. If they can use relationships in mathematics then mathematical reasoning involved in finding the result to 5 + 6 they can say " I don't know what 5 + 6 is but I know 5 + 5 is 10 and one more is 11." Using mathematical relationships will enable children to recall basic addition and subtraction facts. If the right answer is what children (and teachers) believe is the most important aspect of mathematics then methods employed will stay in the safe option. Counting will always give me the right answer, thinking about relationships is not required and therefore will not be used.
The relational patterns begun with numbers up to ten continue with all numbers. If children have been able to generalize the relationships with small numbers then using them with bigger numbers is not as difficult as trying to undo misconceptions learnt in their first year of school mathematics.

Maths Assessment Screens

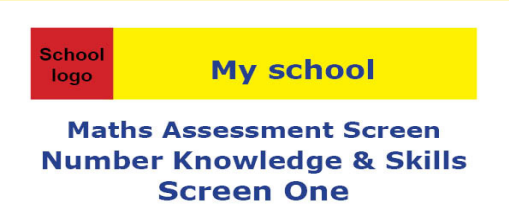
Would you like a proven school wide maths number knowledge and skills assessment to provide the next steps in learning, measures the progress a student has made over the year, works for the benefit of the student and provides data immediately for the classroom teacher with the added bonus of identifying any whole class strengths and weakness in the mathematics programme. Information collected is for teacher, student, school and parents only, so is LOW STAKES

NEW FOR 2027: The Wilkie Way Assessment screens are being offered as a school specific digital option. (A one off purchase)

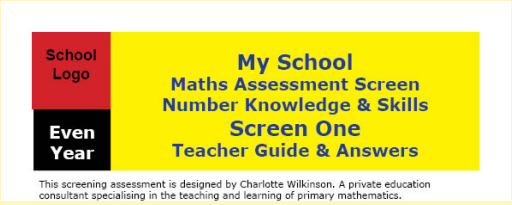
Both odd and even year student scripts and teacher guides are included in the deal as well as the Excel marking file.

How does it work?

1. Schools request the screens they require using the order form.
2. Schools supply their school logo to replace the Wilkie Way logo and their school name.
3. An invoice for the screens is sent to the school.
4. When payment is received all relevant files will be emailed to the school.
5. School places the master copies of the screens in a safe location. (Making a copy is a good idea)
6. Schools print as many copies of each file as they require when they need them.



View the screens and download an order form at the online store of wilkieway.co.nz



Reasons to purchase:

- Identifies achievement and gaps in individual student learning;
- Identifies gaps in classroom programme. (If many students have the same gaps at the end of the year);
- Screening at the beginning and end of each year provides student feedback on progress made;
- Aligned to the year group curriculum progressions (but use the screen most suited to the actual student's needs);
- Not timed – use for the benefit of the student
- Easy to administer – does not need to be completed in one session – work to the benefit of the student;
- Marks can be entered into an excel spreadsheet (one file per screen). Gives you individual profiles – showing achieved, gaps and where more practice is required. Gives a class overview (for all students using the same screen)
- A rough guide to the assessment progress descriptors has been made to assist teachers to consider if students are on track with curriculum expectations

What will it cost?

Screen 1 (Years 1 & 2 curriculum) Odd & Even Year versions + Excel file	$300 + GST
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Screen 1 (Years 1 & 2 curriculum) Odd & Even Year versions + Excel file	$300 + GST
All four screens, Odd and even versions + 4 excel files	$1000 + GST

Once you have purchased the screens there is no further cost - copyright prevents you from sharing with other schools.

Wilkie Way Membership - annual subscriptions

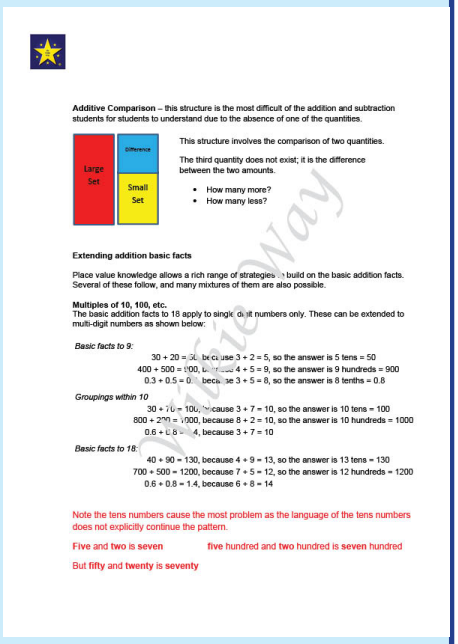
School membership - via invoice
Under 30 students $65 + GST
31 to 100 students $180+GST
101 - 300 students $290 + GST
301- 500 students $400 +GST
501 - 700 students $520 + GST
701+ students $630 + GST
Non NZ School $750 - paid via paypal

Individual Membership
$60.00
payable via Paypal

Recently uploaded resources

Understanding & Memory for Addition & Subtraction

Advice and suggestions for assisting your students to memorise the addition and subtraction facts
(find under Addition & Subtraction heading in the directory (Dark Blue)


Additive Comparison – this structure is the most difficult of the addition and subtraction students for students to understand due to the absence of one of the quantities.

Large Set | Difference | Small Set

This structure involves the comparison of two quantities.

The third quantity does not exist; it is the difference between the two amounts.

- How many more?
- How many less?

Extending addition basic facts

Place value knowledge allows a rich range of strategies to build on the basic addition facts. Several of these follow, and many mixtures of them are also possible.

Multiples of 10, 100, etc.
The basic addition facts to 18 apply to single digit numbers only. These can be extended to multi-digit numbers as shown below:

Basic facts to 9:
30 + 20 = 50, because 3 + 2 = 5, so the answer is 5 tens = 50
400 + 500 = 900, because 4 + 5 = 9, so the answer is 9 hundreds = 900
0.3 + 0.5 = 0.8, because 3 + 5 = 8, so the answer is 8 tenths = 0.8

Groupings within 10
30 + 70 = 100, because 3 + 7 = 10, so the answer is 10 tens = 100
800 + 200 = 1000, because 8 + 2 = 10, so the answer is 10 hundreds = 1000
0.6 + 0.4 = 1, because 3 + 7 = 10

Basic facts to 18:
40 + 90 = 130, because 4 + 9 = 13, so the answer is 13 tens = 130
700 + 500 = 1200, because 7 + 5 = 12, so the answer is 12 hundreds = 1200
0.6 + 0.8 = 1.4, because 6 + 8 = 14

Note the tens numbers cause the most problem as the language of the tens numbers does not explicitly continue the pattern.

Five and two is seven five hundred and two hundred is seven hundred

But fifty and twenty is seventy

Wilkie Way Dice & Counter Games

These printed and laminated games are no longer available for purchase at the Wilkie Way online store.
However they are all available for downloading from the membership area: print A4 or A3

Beginning numbers: **11 games**
Addition & Subtraction to 10: **14 games**
Addition & Subtraction to 20: **11 games**
Place Value: **5 games**
Skip Counting: **9 games**
Fractions: **12 games**
Multipication & Division Phase 1: **19 games**
Multiplication & Division Phase 2: **53 games**
Ngā Tākaro Poutama Tau: **60 games**

Playing games is a proven method of building recall of knowledge. These games are ideal for:

- follow up practice;
- in class odd moments;
- wet playtimes;
- sending home for caregiver involvement (non threatening).