To Be Numerate .....

Parent Information Evening

Tauhoa School

Bangers And Maths Night

Outline

- Problem Solving Activities
- How is Mathematics taught now?
  The New Zealand Numeracy Framework
- Number Knowledge: Do I know it?
  ALiM: no not a new medical condition
- Role model of group working together

OR/And

- Maths games play together.

Time to Think!!!

Number Strategies Subtraction

There are 53 people on the bus.

29 people get off.

How many people are now on the bus?

Solution 53 – 29 =

- How did you work it out?
- What happened in your head?

Share your different strategies with the people around you

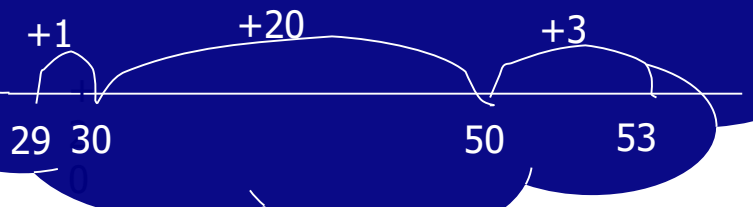
Make sense of these strategies

I use place value
"53 – 20 = 33. Minus another 9. Split the 9 into 3 and 6.
33- 3 = 30 – 6 = 24

"I use tidy numbers:
53 – 30 = 23 plus 1 = 24

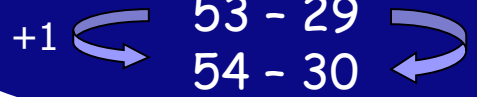
53 – 29 =

"I use an open number line!"



"I think of
53
-29
3 – 9 I can't do so I borrow a ten. 13 – 9 = 4.
4 tens – 2 tens = 2.
It's 24

I use balancing.



=
= 24

Number Strategies Addition

- There are 47 children in the hall. 28 more children arrive. How many are in the school hall now?

Solution 47 + 28 =

- How did you work it out?
- What happened in your head?

Share your different strategies with the people around you.

- Can you think of any other ways to solve the problem?

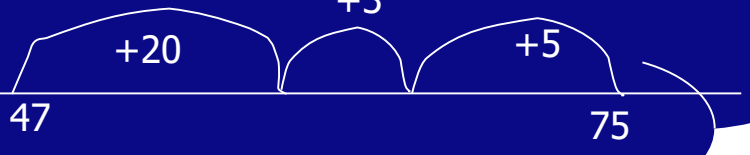
Make sense of these Strategies

"Four rows of ten is 40 and two rows of ten is 20, so 40 + 20 = 60 with 7 and 8 left !
double 7 = 14 plus 1 =15
so there are 75 children"

"I use tidy numbers:
50 + 28 = 78
78 - 3 = 75".

47 + 28 =

"I use an open number line!"



"I think of
47
+28
7 plus 8 is 15, so that's 5 and carry one. 4 plus 2 is 6 plus one more ten is 7. so the answer is 75"

"I know that 50 plus 30 is 80 and 3 plus 2 is 5,
so 80 - 5 is 75 "

Number Strategies Multiplication

There are 4 packets of biscuits with 24 cookies in each pack.

How many cookies are there altogether?

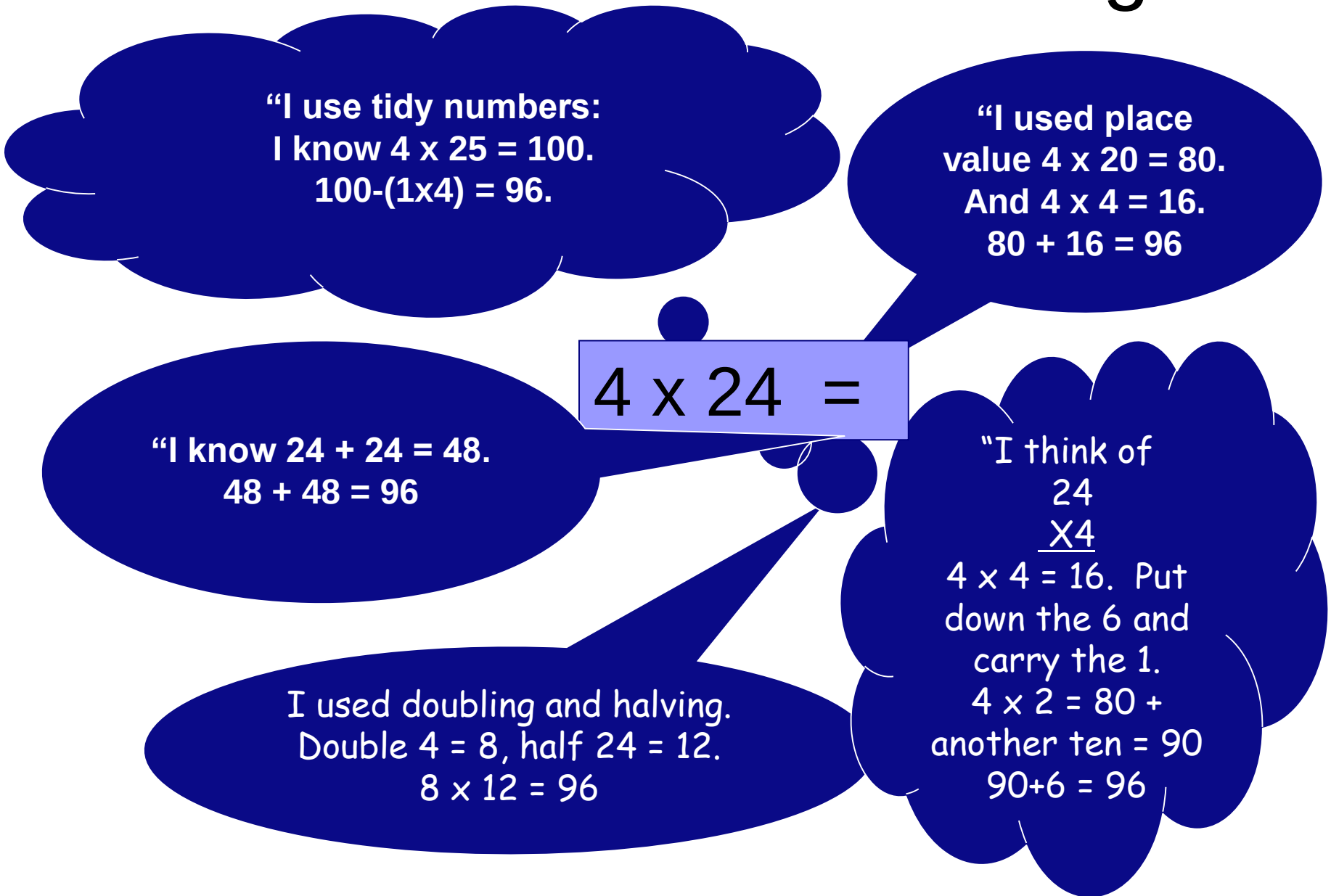
Solution 4 x 24 =

- How did you work it out?
- What happened in your head?

Share your different strategies with the people around you.

- How else could this problem be solved?

Make sense of these Strategies.



Numeracy Project Goal

"to be numerate is to have the ability and inclination to use mathematics effectively – at home, at work and in the community"

Published in Curriculum Update 45:

Goals cont.

- developing *multiple flexible* thinking strategies
- mental and oral *before* written standard vertical forms
- Make decisions about the smartest strategy to use on any given problem.
- Challenge children to achieve and develop a positive attitude towards learning mathematics.

Developmental Stage Progression

The New Zealand Number Framework

Numeracy Stages

- Emergent
- One to One Counting
- Count from one on Materials
- Count from one by Imaging
- Advanced Counting
- Early Additive Part-Whole
- Advanced Additive Part-Whole
- Advanced Multiplicative
- Advanced Proportional

Counting Strategies

Non Counting Strategies

Emergent

Can you get me 7 counters from the pile please?

1,2,3,5, 8...?

The child can not consistently count a collection of objects.

One to One Counting

Can you get me 7 counters from the pile please?

1,2,3,4,
5,6,7,8.

The child can count a set of objects up to ten but can't join and separate sets like 4 + 3 =

Count From One on Materials

There are 4 counters and another 3 counters. How many are there altogether?

1,2,3,4,
5,6,7.

The child solves the problem by using their fingers or other materials and counts from one.

Count From One By Imaging

There are 4 counters and another 3 counters. How many are there altogether?

Counts in head

1,2,3,4,5,6

,7,8.

The child counts all the objects from one by imaging visual patterns of the objects in their mind.

Advanced Counting

There are 9 counters under there and another 4 counters under there. How many are there altogether?

Counts on 9, 10, 11, 12, 13.

The child counts on from the largest number

Early Part-Whole

There are 9 counters under there and another 6 counters under there. How many are there altogether?

"I know that
If I take one off
the 6 and put it
on the 9 it =10.
10 + 5 = 15"

The child uses simple strategies to solve addition and subtraction problems mentally

Advanced Part-Whole

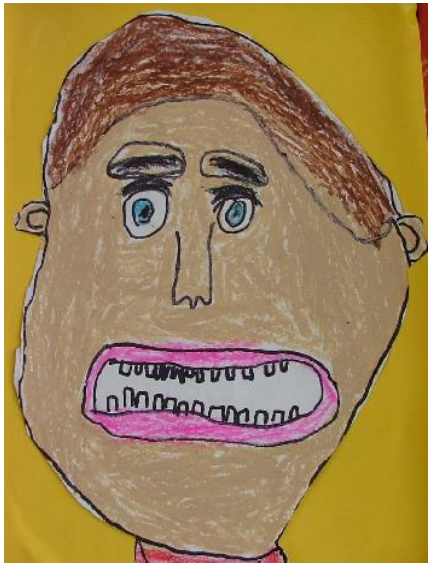
63 people are on the bus and 39 people get off the bus. How many people are left on the bus?

I think tidy numbers would be smartest.
63 – 40 = 23
23 + 1 = 24

The child can select from a wide range of strategies to solve various addition and subtraction problems mentally

Advanced Multiplicative

There are 28 fruit trees in each aisle of the orchard. There are 6 aisles. How many trees are there altogether?

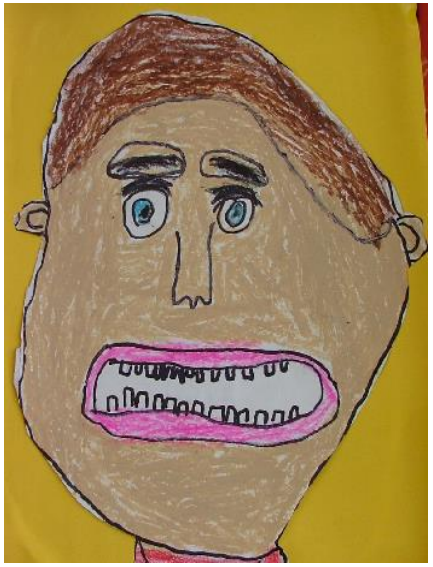


Tidy Numbers would be a smart strategy. 30 x 6 = 180
180 – (2 x 6) = 168

The child can select from a wide range of strategies to solve various multiplication and division problems mentally.

Advanced Proportional

You can make 9 mittens from 15 balls of wool. How many mittens can you make from 10 balls of wool?

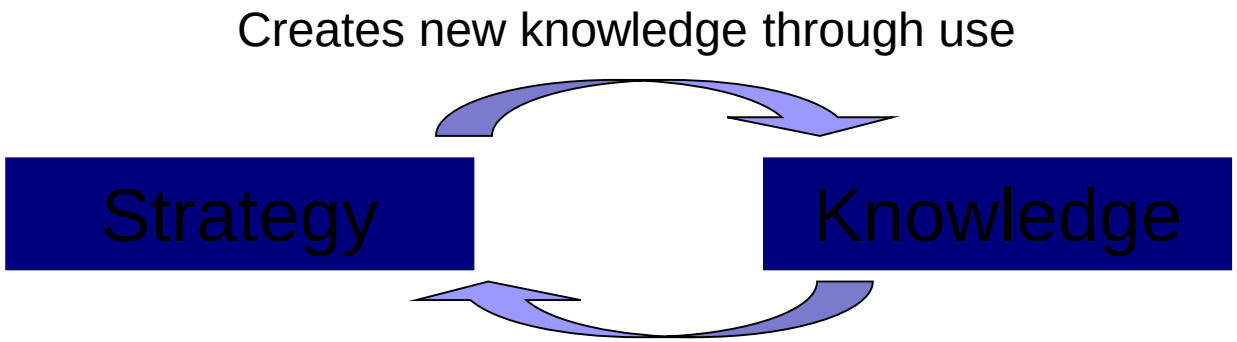


I can see that 9:15 are both multiples of 3. I can simplify by ÷3 and get a ratio of 3:5 ?:10 = 6

The child can select from a wide range of strategies to solve challenging problems involving, decimals, fraction percentages and ratios.

The NZ Numeracy Framework

- Each Numeracy Stage highlights key knowledge and strategy that a child should know.
- Strong knowledge is essential for students to broaden their strategies across a full range of numbers.



Knowledge and Strategy

- Knowledge – Number Identification, Number sequence and order, Grouping and place value, basic facts
- Strategy – Addition and Subtraction, Multiplication and Division, Fraction and Proportions

How do I know that I have learnt something?

- Learning is an increase in knowledge.
- Learning is about acquiring information.
- Learning is about memorizing and storing that information.
- Learning is being able to relate different ideas and skills to each other.

- I have leant that, so I can draw what I know together and make a response or answer a question, with ease and at speed.
- In Math's knowing means that you can draw on your mental recall and not use materials to solve place value and other number knowledge questions.
- IKaN test is a test that needs instant recall of a students knowledge.
- TRY this test: IKAN TEST

How is maths taught differently now?

Assessing what children know.

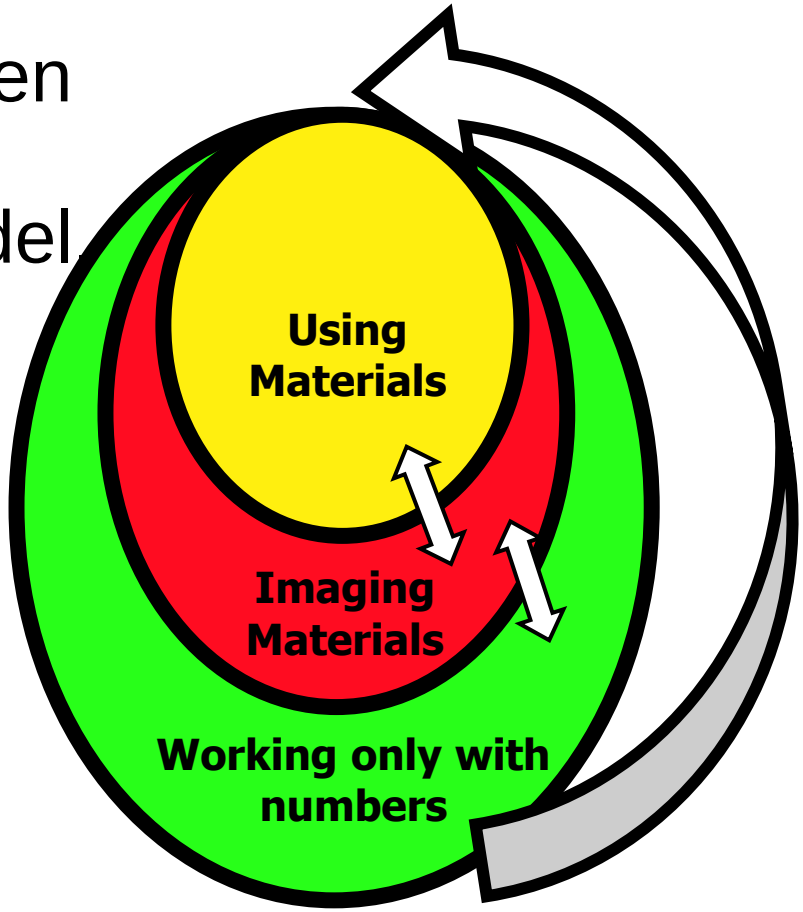
- Assess - where each child is at through oral interviewing and questioning
- Group according to a Childs strategy stage using the New Zealand Number Framework
- Encourage children to self assess (reflect) know and own their next learning steps.

Teaching

- Model and support children understanding using a researched teaching model.

  Using materials
  Thinking about what would happen on the materials
  Working only on numbers

- Teach to achieve next learning steps.



How can parents help?

- Developing a child's knowledge is a key to their success and development in mathematics.

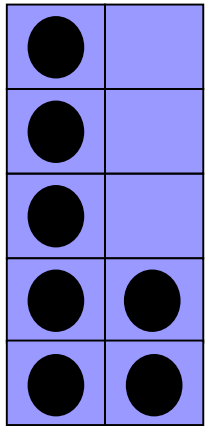
Knowledge Building

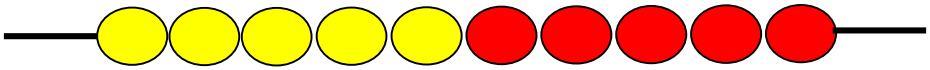
- Counting
  (cars, shells on beach, pegs, run around the house, how many steps you walk, count backwards, start from different numbers)
- Numbers before and after
  (Letter boxes, say a number, use a numberline, use number cards, write a number down, ladder game, keyboard numbers, using dice)
- Identifying numbers
  (Letter boxes, number plates, speed signs, how many km to go, number cards, combine numbers)
- Ordering numbers
  (Number cards, write some numbers down)

Knowledge Building

- Knowing groups to ten
  (Using ten frames, using fingers, quinary sticks)
- Basic addition facts to ten
  (Buttons, ten frames, quinary sticks, fingers)
- Recalling Doubles
  (ten frames, fingers, quinary sticks)

Ten frames





Quinary Sticks

The Reality?

To become a Part-Whole thinker children need automatic recall of …

- Facts to Ten
- Doubles Facts
- Ten and ….10 + 6 = 16

To Become a Multiplicative thinker children need to be able to recall the x tables

When should students know which basic facts?

- Year 3 all addition basic facts to 20 and most subtraction facts.
- Year 4 as above plus all subtraction facts and x2 x10 x5 times tables
- Year 5 all of above plus all times tables.
- Year 6 all of the above and division basic facts.
- Year 7 able to all of above and be able to add decimals, add and multiply equivalent fractions.
- Year 8 able to all of the above plus add integers

Mathematics Targets for 2014

- *To have all identified students currently below the National Standard for their year level (16), at the National Standard for their year level or have made accelerated progress towards it by the end of 2014.*
- *To have all students who identified as Maori that are below the National Standard for their Year level, (10) make an accelerated progress towards meeting the National Standard for Mathematics.*
- Part of our Learning Change Network plan

What's ALiM?

- Accelerated Learning in Mathematics
- Key Elements:
  - Uses problem solving and real contexts to help push those students who may be just below reach the required level for their year group… Or push students further towards that goal.
  - Small groups given extra time in mathematics
  - Very similar to what is expected and what we do already at Tauhoa School