



Peak School



# Peak School

Parent Presentation - Maths  
Year 1 and 2 - Tuesday 23rd September, 2014

Mark Evans & Bill Garnett

# Introduction

## Purpose

To share with parents the teaching and learning of Maths at Peak School (with a particular focus on place value)

## Success Criteria

- Parents will have a deeper understanding of how maths is planned, taught and assessed
- To have the opportunity to experience a differentiated classroom environment

# What the PYP believes about learning Mathematics

*"The power of mathematics for describing and analysing the world around us is such that it has become a highly effective tool for solving problems..."*

*"In the PYP mathematics is also viewed as vehicle to support inquiry, providing a global language through which we make sense of the world around us.*

*IB Mathematics scope and sequence.*

# What we believe about learning Mathematics

*At Peak School we make Mathematics a priority. This is reflected in our daily Mathematics lessons and focus on explicitly teaching number knowledge and skills whilst also looking for meaningful transdisciplinary links to our Units of Inquiry. The children are actively involved in their Mathematics learning and are familiar with reflecting on outcomes and setting targets.*

# Mathematics in a transdisciplinary programme.

Number is taught as a standalone unit

- place value
- four operations
- pattern and function

Number flows through all mathematics and students will still apply strategies in units of work when they are needed

Teaching practice based on how we believe children learn best.

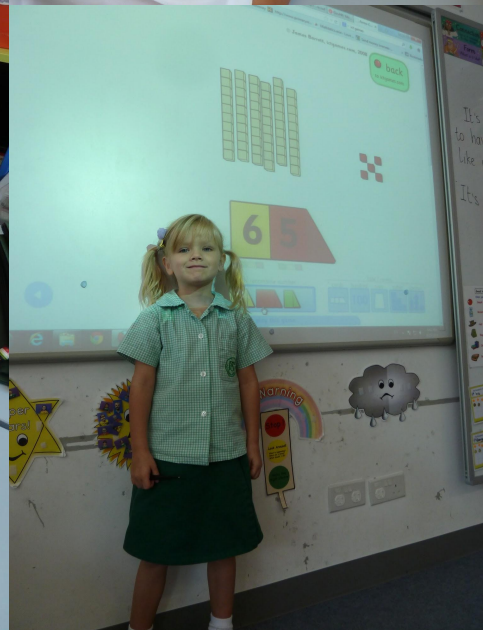
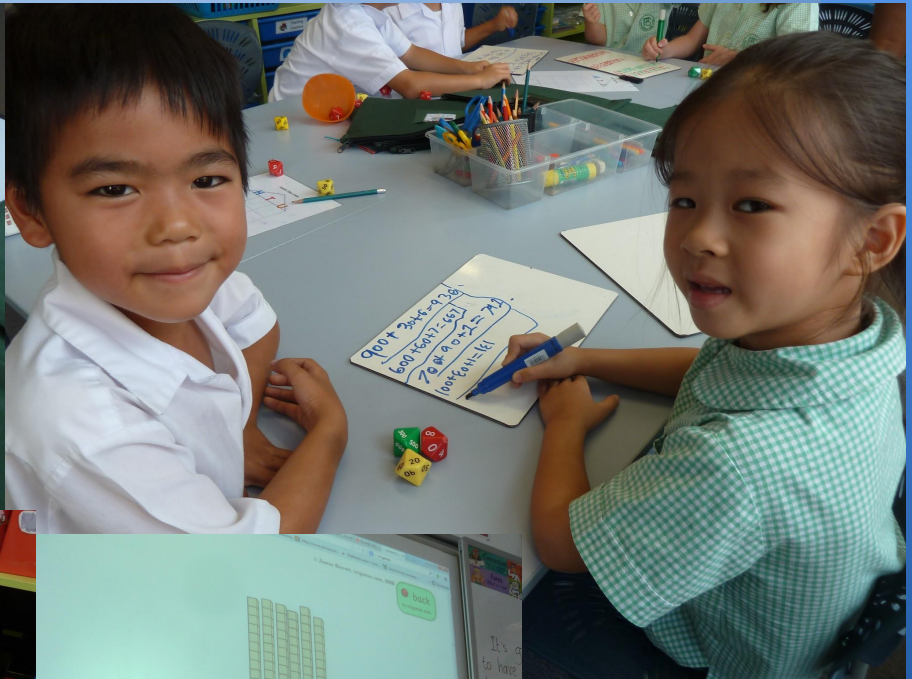
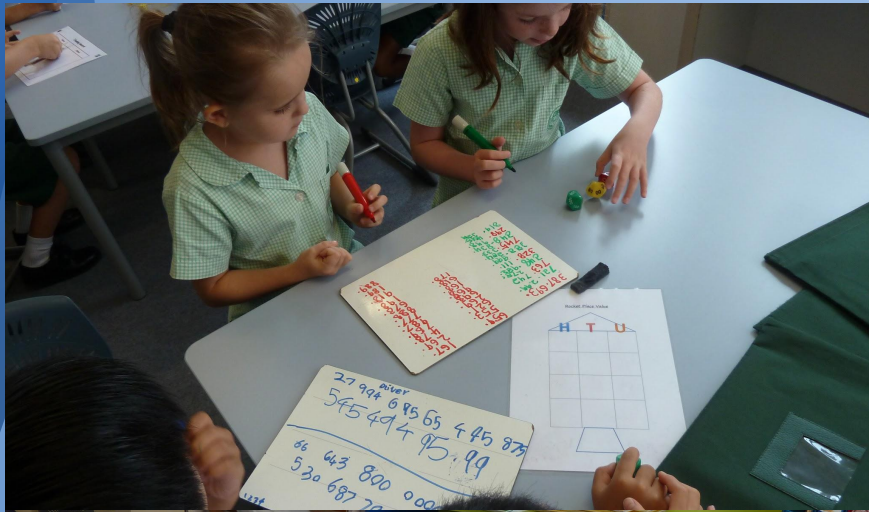
“I hear and I forget.  
I see and I remember.  
I do and I understand.”

Confucius

“Mathematical learning occurs when there is activity with dialogue.”

George Booker

# What do Maths lessons look like?



# Mathematical literacy

To solve real life problems students need to know the vocabulary of maths.

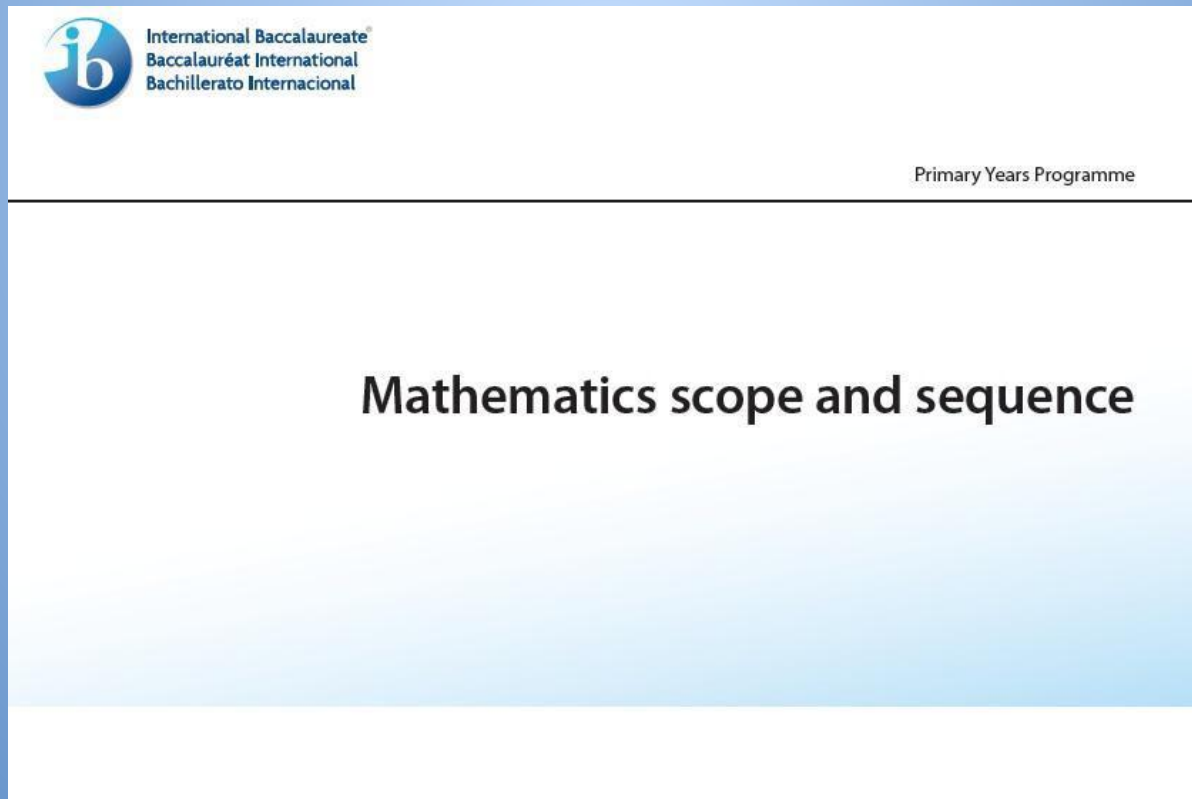
add, subtract, all together, total, equal, difference between, take away, minus, plus, greater than, less than.

To promote this teachers use picture books to reinforce concepts. They also are used for engagement and to make authentic links.



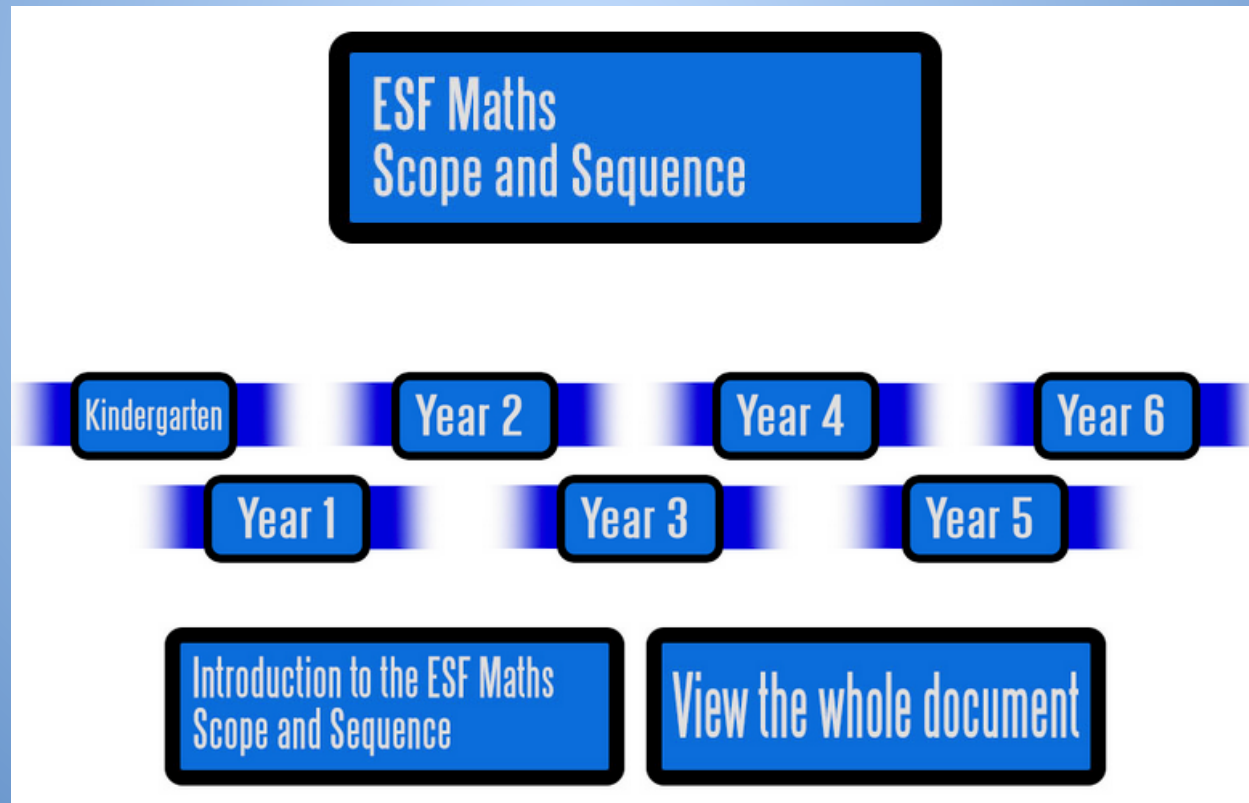
# Written Curriculum - What we teach

The starting point is the IB Maths scope and sequence document.



# Written Curriculum - What we teach

The IB document was referenced (plus other documents from around the world) to develop an ESF Maths scope and sequence document which was introduced last year.



# Five Strands

- Number
- Pattern and Function
- Data Handling
- Measurement
- Shape and Space

# Written Curriculum - What we teach. Place value continuum

K1

K2

Year 1

Year 2

Year 3

Year 4

Year 5

Year 6

Place Value Outcomes

Count by naming numbers in sequence, initially to and from 10	Count by naming numbers in sequence to and from 20	Count by naming numbers in sequences, to 100, moving from any starting point	Count by naming numbers in sequences, to and back from 1000, moving from any starting point				
Apply one to one-correspondence when counting up to 10 objects.	Apply one to one-correspondence when counting up to 20 objects	Apply place value to partition and rename two-digit numbers	Apply place value to partition and rename three-digit numbers	Apply place value to partition and rename four-digit numbers	Apply place value to partition and rename five-digit numbers	Apply place value to partition and rename numbers to tenths and hundredths.	Apply place value to partition and rename numbers to thousandths
		Skip count in tens starting from zero	Skip count by twos, fives and tens starting from zero	Skip count by twos, fives, tens and hundreds starting from a number other than zero			
Recognise, model, read, and order numbers to at least 10	Recognise, model, read, and order numbers to at least 20, write numbers to 10	Recognise, model, read, write and order two-digit numbers	Recognise, model, read, write and order three-digit numbers	Recognise, model, represent and order four-digit numbers	Recognise, represent and order five-digit numbers	Recognise and order numbers to millions or beyond	Recognise, and order integers (including negative integers)
Use the language of Mathematics to compare quantities, for example, more, less.	Use mathematical language for example more, less (cardinal) first, second (ordinal)	Use mathematical language for example more, less (cardinal) first, second (ordinal)				Recognise, model and order decimal fractions to hundredths or beyond.	Recognise, model and order decimal fractions to thousandths or beyond.
			Round numbers to the nearest 10	Round numbers to the nearest 10 or 100	Round numbers to the nearest 10, 100, 1000	Round decimal fractions to the nearest whole number	Round decimal fractions to the nearest tenth or whole number

# Written Curriculum - What we teach

## Year 2 : Place value

Working Towards

Working At  
Year 2

Working Beyond

### Learning Outcomes

Place value

Count by naming numbers in sequences, to and back from 1000, moving from any starting point

Apply place value to partition and rename, numbers to at least 1000

Skip count by twos, fives and tens starting from zero

Recognise, model, read, write and order 3 digit numbers

Round numbers to the nearest 10

Estimate up to 20 objects

# Written Curriculum - What we teach : Y1 Place Value Rubric



## Place Value Rubrics

Hong Kong Schools,  
a world of opportunity  
匯聚英才 匯通世界

### Year 1

The rubrics have been developed in three columns. The column 'beginning' aligns with the year level below and 'exceeds expectations' aligns with the year level above. The middle column combines 'consolidating' and 'meets expectations' which are both indicators of year level expectations. 'Consolidating' indicates that student learning is at year level expectations but is not fully consistent or independently achieved.

The outcomes are written in bold text. The indicators listed under each outcome are there to support understanding of the outcome. These are not in place as an exhaustive list, or exclusively the only indicators. Staff are strongly encouraged to use these indicators as a starting point for discussion and clarification.

#### Key for Levels of Achievement

B = Beginning	C = Consolidating	ME = Meets Expectations	EE = Exceeds Expectation
The student has begun to demonstrate some evidence of achieving learning outcomes; however applies limited knowledge, skills and understandings. The student's learning is below year level expectations at this time.	The student has demonstrated evidence of the learning outcomes. The student is <b>practising</b> skills and is developing knowledge and understandings. Learning is at year level expectations but is not fully consistent or independent	The student has demonstrated knowledge of the learning outcomes and is applying knowledge, skills and understandings consistently and independently. Learning is at year level expectations.	The student has demonstrated evidence exceeding the learning outcomes in a variety of ways and applies higher level knowledge, skills and understandings consistently. Learning exceeds year level expectations.

Beginning	Consolidating / Meets Expectations	Exceeds Expectations
<p><b>Apply one to one-correspondence when counting up to 20 objects</b></p> <ul style="list-style-type: none"> <li>Understands one to one correspondence</li> <li>Understands that for a set of objects, the number name is from the last object counted</li> <li>Count on and back using manipulatives.</li> <li>Regroup/trade 10 ones for ten</li> </ul> <p><b>Count by naming numbers in sequence</b></p>	<p><b>Count by naming numbers in sequences, to 100, moving from any starting point</b></p> <ul style="list-style-type: none"> <li>Connect number names and numerals to the quantities they represent up to 100</li> <li>Count on and back to 100, moving from any starting point</li> <li>Count in sequence of one (cardinal: 1,2,3)</li> <li>Order in sequence of one (ordinal: first, second, third)</li> <li>Can state 1 more, 1 less than a</li> </ul>	<p><b>Count by naming numbers in sequences, to and back from 1000, moving from any starting point</b></p> <ul style="list-style-type: none"> <li>Connect number names and numerals to the quantities they represent up to 1000</li> <li>Count on and back to 1000, moving from any starting point</li> </ul>

1. What is our purpose? To inquire into the following:

Paak HONG KONG  
Maths Addendum

UoI: Who we Are, Year 1

Strands	
Number	
Pattern and Function	
Data Handling	
Measurement	
Shape and Space	

4. How best might we learn?  
What are the learning experiences and address the driving question

**Constructing Meaning (Finding out)**

Children can:  
Washing line, Sets of manipulative Dice and Dominos, Blocks and sort 100 day chain (inquiry into the number point) flash cards, one minute

**Transferring meaning (...into syn)**

Children can  
Match objects to words, digits  
Children draw different pictures  
Take photos of children made  
Take photos of numbers around  
Write your own number story  
Numbers on a table with groups

**Applying with understanding (Getting)**

Children can  
Snakes and ladders – simple game  
Design a game  
Estimation  
Make a class book  
Using numbers within a bar graph  
Sole play  
Problem solving question in the  
Make your own number line

**What opportunities will occur for and the attitudes?**

Children will develop **thinking** :

Children will become **knowledgeable** :

Children will become **confident** :

**Constructing**

understand that attributes (CM picture) understand the (phase 2) understand the (phase 2)

Comparing similar physical features pictographs e.g.e

**Transferring**

represent information (TM phase 1) –

Compare the length standard units. (height)

Estimate and measure

**Applying with**

create pictographs create living graph (phase 1) –

**I can ...**

Use the vocabulary of measurement – heavier, lighter, more than, same as, longer, shorter, empty, full, half,  
I can use non-standard units to measure an object.  
I can use standard units to measure accurately  
I can estimate if it is more than, less than or the same as

Who we are	Literacy	Number	Inquiry
wk 1 10/9	<p>Word awareness, rhyming, syllable awareness</p> <p>Humpty Dumpty, Hickory Dickory Dock</p> <ol style="list-style-type: none"> <li>humpty dumpty focus - counting words and syllables, rhyme</li> <li>matching rhyming pictures /across the river</li> <li>rhyming game online</li> <li>pass the ball rhyming - rhyming string</li> <li>counting syllables in name</li> <li>rhyming soup - I'm making lots of silly soup</li> </ol> <p>Im making soup thats silly Im going to cook it in the fridge to make it nice and chilly in goes a fox...box etc</p> <p><a href="http://www.sproutonline.com/games/elm">http://www.sproutonline.com/games/elm</a></p>	<p>Monday - 1.</p> <p><a href="http://www.iboard.co.uk/iwb/Bee-Counting-409">http://www.iboard.co.uk/iwb/Bee-Counting-409</a> counting bees game</p> <ol style="list-style-type: none"> <li>number hunt</li> <li>rolling dice and counting 1 to 1 - chocolate bar game</li> <li>order cards 0-10 or 0-20 and scribe in book.</li> </ol> <p>Thursday look at number photos - numbers around. What do they mean- numbers 0-10. How do we count etc.</p> <ol style="list-style-type: none"> <li>match objects to number room</li> <li>chocolate bar</li> <li>dominoes practise writing 1 - 9</li> </ol>	<p>Intro to central idea and lines of inquiry. Rotation 1. Focus on vocab - similar / different.</p> <ol style="list-style-type: none"> <li>sorting pictures of <u>class mates</u> - cut and stick</li> <li>sort the animals, bugs, bears - practical with ipads</li> <li><u>tes iboard</u> sorting</li> <li>spot the difference</li> </ol> <p>Our similarities/differences</p> <p>Whole class - I think that the most popular eye colour is....</p> <p>Rotation 2-</p> <ol style="list-style-type: none"> <li>portrait comparison of friend</li> <li>guess who with classmates</li> <li><u>tes iboard</u> body parts</li> <li>make humpty dumpty town.</li> </ol>

what?  
? (legies)

within this inquiry?

**Connection**

understand that are connected to around them

real idea?

ction)

if the objects?  
around? Does the acts / pictures to help int ways do you know the bigger number?

numbers (in English creating, patterns,

me? How do we use

als, role play, extend mbers through

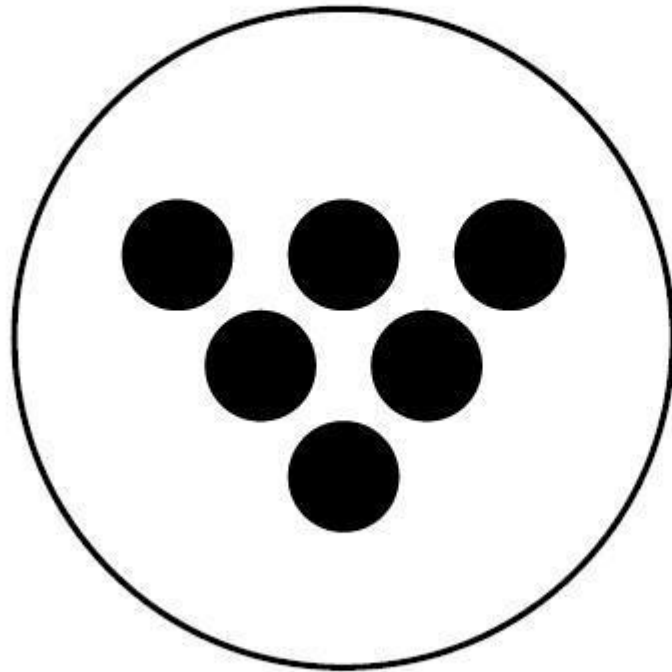
**Taught (How)**

**Year One and Two.**



Year 1 Outcome - Estimate and subitise groups of up to 10 objects.

**What is Subitising?**





**Year 2 Outcome - Skip count by  
2's, 5's and 10's starting from  
zero**

**What is skip counting?**

2, 4, 6, 8.....

**Year 1 Outcome - Use mathematical language for example more or less (cardinal), first, second (ordinal)**

**What is cardinal counting?  
What is ordinal?**

less than, greater than, more than, before  
and after, next.....

Cardinal is 'How many?'

12 balls

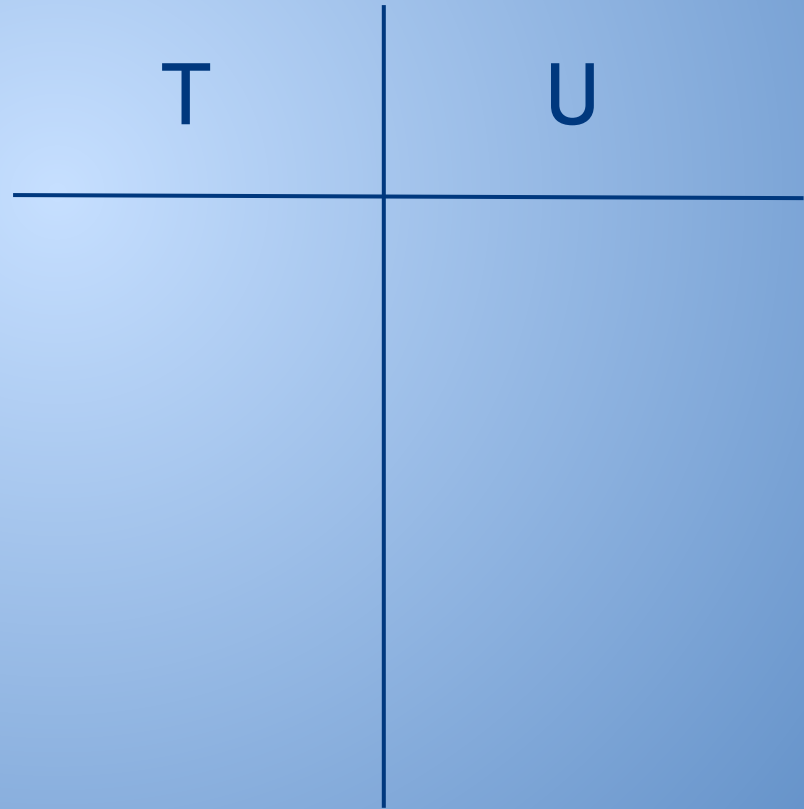
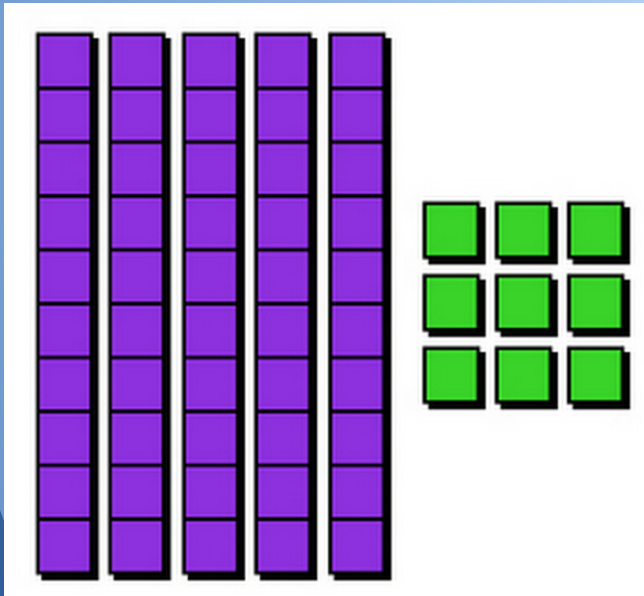
Ordinal tells you position eg 2nd place

**Year 2 Outcome - recognise,  
model, read, write and order 3  
digit numbers**

**What is modeling 2 and 3 digit  
numbers?**

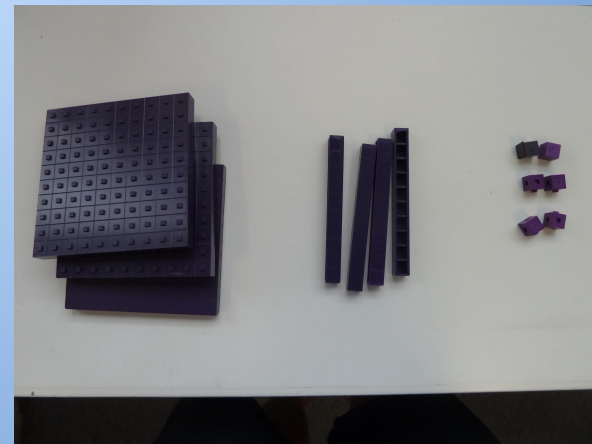
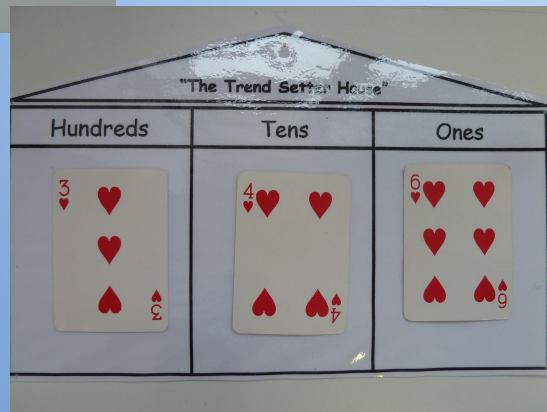
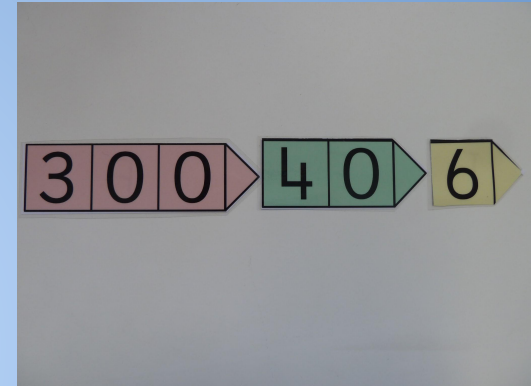


Examples here:



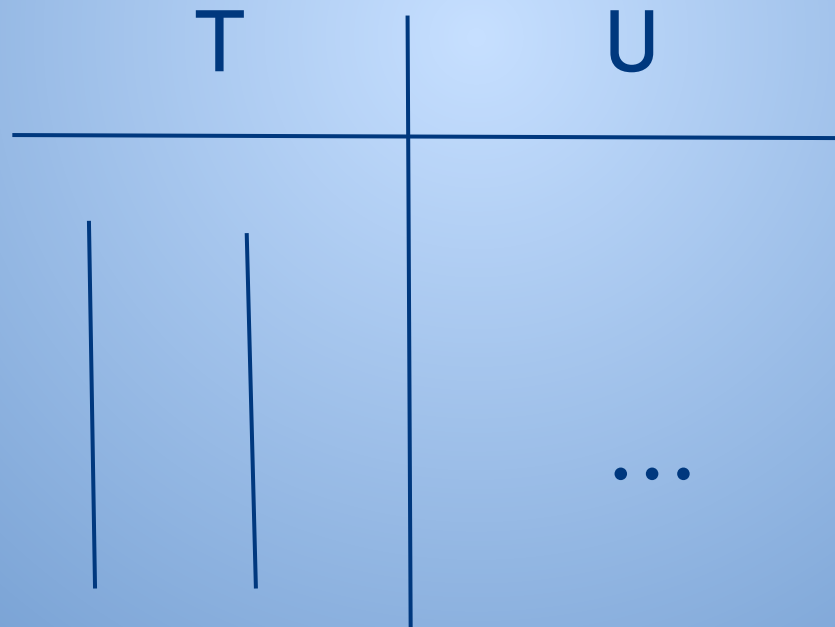
Year 2 Outcome - Can apply place value to partition numbers up to 1000

## What is partitioning?



Examples here:

23 = 2 tens and 3 ones = 20 and 3



# Counting Growth points

(Early Years Numeracy Research Project  
Assessment Framework,  
Feb, 2001)

- 0 - **Not apparent** - *Not yet able to state the sequence of number names*
- 1 - **Rote Counting** - *Rote counts to 20, but is unable to reliably count a collection of that size*
- 2 - **Counting collections** - *Confidently counts a collection of around 20 objects*
- 3 - **Counting by 1's** - *Counts forwards and backwards from various starting points between 1 and 100; knows numbers before and after a given number*

- 4 - **Counting from 0 by 2's, 5's and 10's** - *Can count from 0 by 2,5, and 10 to a given target*
- 5 - **Counting from 'x' (where 'x' is greater than 0) by 2's, 5's and 10's to a given target**
- 6 - **Extending and applying counting skills** - *Can count from a non-zero starting point by any single digit number, and can apply counting skills in practical tasks.*

# **ASSESSMENT AND DIFFERENTIATION**

# Why Assess?

To establish prior knowledge

To inform and differentiate future teaching and learning

To find out how children are feeling about their learning

To find out how students learn (learning styles)

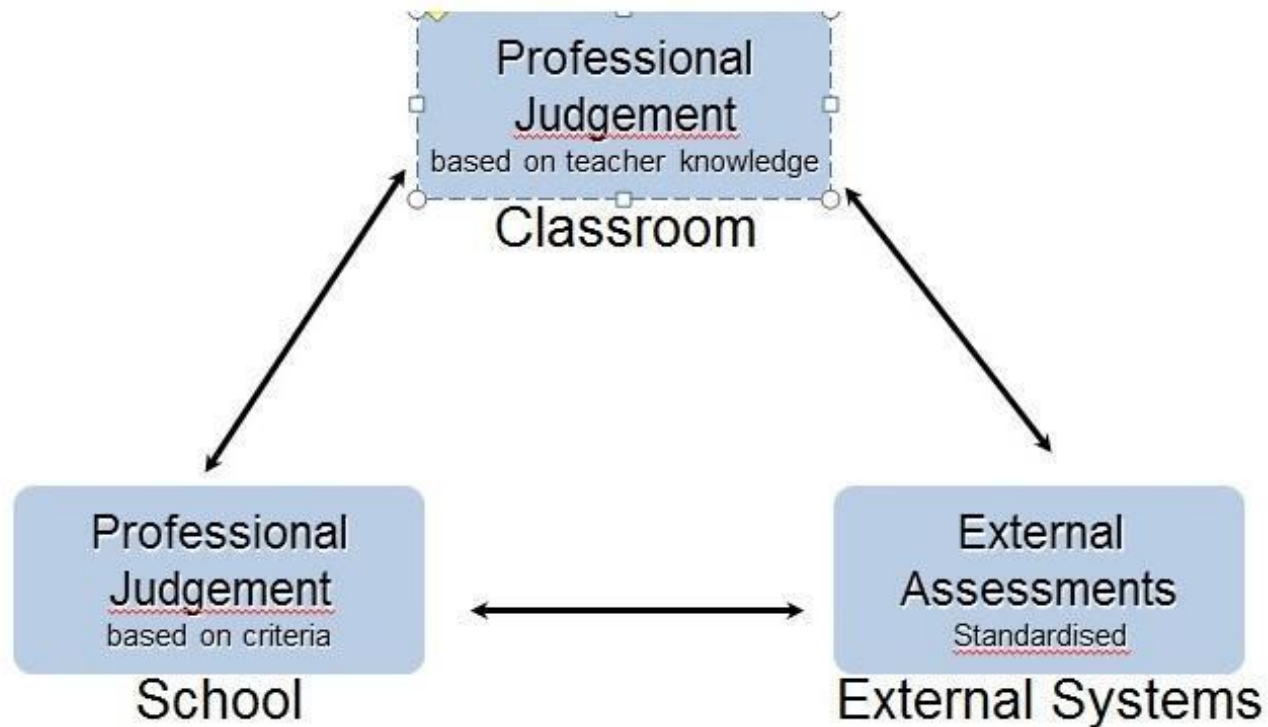
To provide feedback to students/parents/stakeholders

To set goals for future learning (feedforward)

To tell us if our teaching is effective



# Assessing - How do we discover what students know and have learned?



# Three forms of Assessment

**Diagnostic**- pre assessment of students to see what they know before teaching the unit.

**Formative**- assessing students' strengths and weaknesses, and providing feedback during the unit.

**Summative**- Testing the student's knowledge at the end of teaching a unit .

# Formative and Summative Assessment

Formative and summative assessment are **interactive**.

They support one another and should be used together.

Most formative assessment is **informal**. The feedback and response involves both teacher and student.

Formative assessment has the **greatest** impact on learning and achievement.

# The plant analogy: Diagnostic

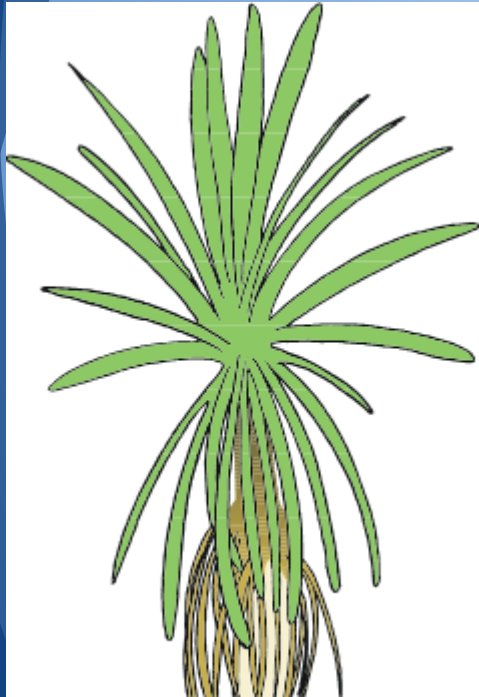
Takes place prior to the growing. You can diagnose the plants strengths and weaknesses.

You can identify what it needs to be bigger and stronger.



# The garden analogy: **Formative**

Formative assessment is the ongoing analysis of a plant's needs - we must recognize when it needs to be fed, watered, and provided with sunlight in order for it to grow.

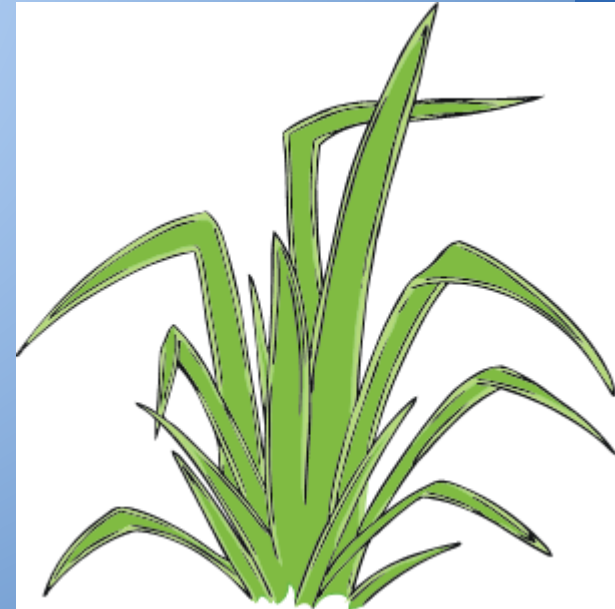


# The garden analogy: **Summative**

Summative assessment of the measuring is the plants growth at a point.

The measurement tells us how much the plants have grown.

It does not affect the growth of the plants.



# Assessing - Tools to evaluate strategies used.

Assessment strategies and tools					
Assessment tools \ Assessment strategies	Rubrics	Exemplars	Checklists	Anecdotal records	Continuums
Observations	✓		✓	✓	✓
Performance assessments	✓	✓		✓	✓
Process-focused assessments	✓		✓	✓	✓
Selected responses		✓	✓		✓
Open-ended tasks	✓	✓		✓	✓

# Assessment



## Place Value Rubrics

Hong Kong Schools,  
a world of opportunity  
情繫香江 情滿無限

### Year 1

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# Assessment

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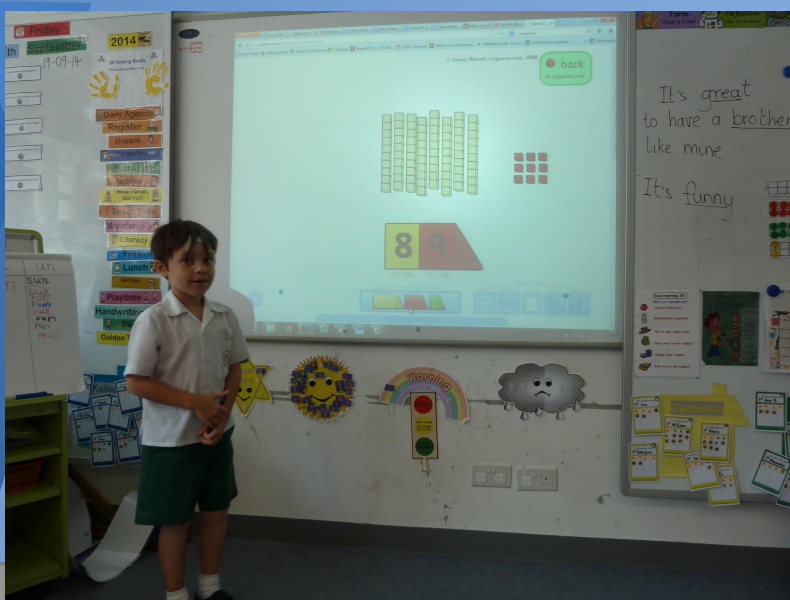
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<b>Recognise, model, read, write and order numbers to 100</b>	<b>Recognise, model, read, write and order three digit numbers</b>	<b>Recognise, model, represent and order numbers to at least four digit numbers</b>



Term 1 PLACE VALUE Pre-Assessment.

Name: \_\_\_\_\_

27/8/12

Decimals.

Write a number which is greater than 1 million. $6000066$ ✓	Write a number which has 2 decimal places. $6.66$ ✓	Write a number that comes between 5.6 and 5.68 $5.7$	Write a number that comes between 6.75 and 6.76? $6.075$ 2
$80 + 70000 + 6000 + 400 + 2 =$ $76482$ ✓	$6493 = 6 \text{ thousands, } \dots$ $400 + 90 + 3$ ✓	$256.8 = 2 \text{ hundreds, } \dots$ $50 + 6 + 10$ 1 tenths	$543.67 =$ $500 + 40 + 3 + 0.67$ 2
What is the value of 3 in 234 568? $30000$ ✓	How many hundreds are in 50 000? $500$	What is 300 more than 45 298? $45,598$ ✓	What is 0.4 less than 45.67? $45.27$ ✓ 3

Task 3

1) 

H	H	T	U
□	□	□	□
□	□	□	□
□	□	□	□

 5003  
five thousand and three  
 $5003 + 100 = 5103$  five thousand one hundred and three  
 $5003 - 10 = 4993$  four thousand nine hundred and ninety two ✓

2) 

Th	h	t	u
□	□	□	□
□	□	□	□
□	□	□	□

 3104  
three thousand one hundred and four  
 $3104 - 10 =$  Great modelling and writing of numbers.  
 $3104 + 100 = 3204$   
three thousand two hundred and four ✓

3) 

Th	h	t	u
□	□	□	□
□	□	□	□
□	□	□	□

 2906  
two thousand nine hundred and six  
 $2906 + 100 =$  three thousand and six ✓

Reflection  
This activity helped me improve my place value addition and subtraction.



# Gathering evidence:

## Summative assessment task(s):

*What are the possible ways of assessing students' understanding of the central idea?  
What evidence, including student-initiated actions, will we look for?*

**Summative Task:** Students demonstrate their understanding by representing a number using flash cards and objects. (Teacher led discussion in small groups)

**Summative Task:** Students demonstrate their understanding by counting a group of objects and represent that number through words, pictures and symbols. (Teacher led discussion in small groups)

SENA test at the end of the year.

## 3. How might we know what we have learned?

*This column should be used in conjunction with "How best might we learn?"*

What are the possible **ways** of assessing students' **prior knowledge and skills**? What evidence will we look for?

PIP's – pre assessment  
SENA assessment

What are the possible **ways** of assessing student learning in the context of the **three lines of inquiry**?

Photos, drawings, recording quantities, models  
Observations  
Number stories  
Teacher notes  
Student action

What evidence will we look for?

Evidence refer to Rubric.  
(I can statements)

- I can keep track when counting objects
- I know how many objects there is in a set
- I know what comes after a number
- I know what comes before a number
- I know different way to make numbers to 10
- ~~Recognise~~ groups of zero to 5 objects without counting
- I can use and understand number words and numerals to represent quantities in real life situations

# Assessment and Reporting to Parents

- Gateway report x 2 against outcomes
- Standardised assessment data (PiPS)
- 3 Way Conferences - targets shared (T1)
- Parent Conference (T2)
- Learning Journey (child takes parent around learning stations - T3)
- Online Portfolio (T3)