Peak School

Parent Presentation - Maths
Year 5 and 6 - Thursday 26th September, 2013

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Introduction

Purpose
To share with parents the teaching and learning of Maths at Peak School

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 transdiciplinary programme.

Number is taught as a standalone unit
- place value
- four operations
- fractions, decimals and percentages.

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

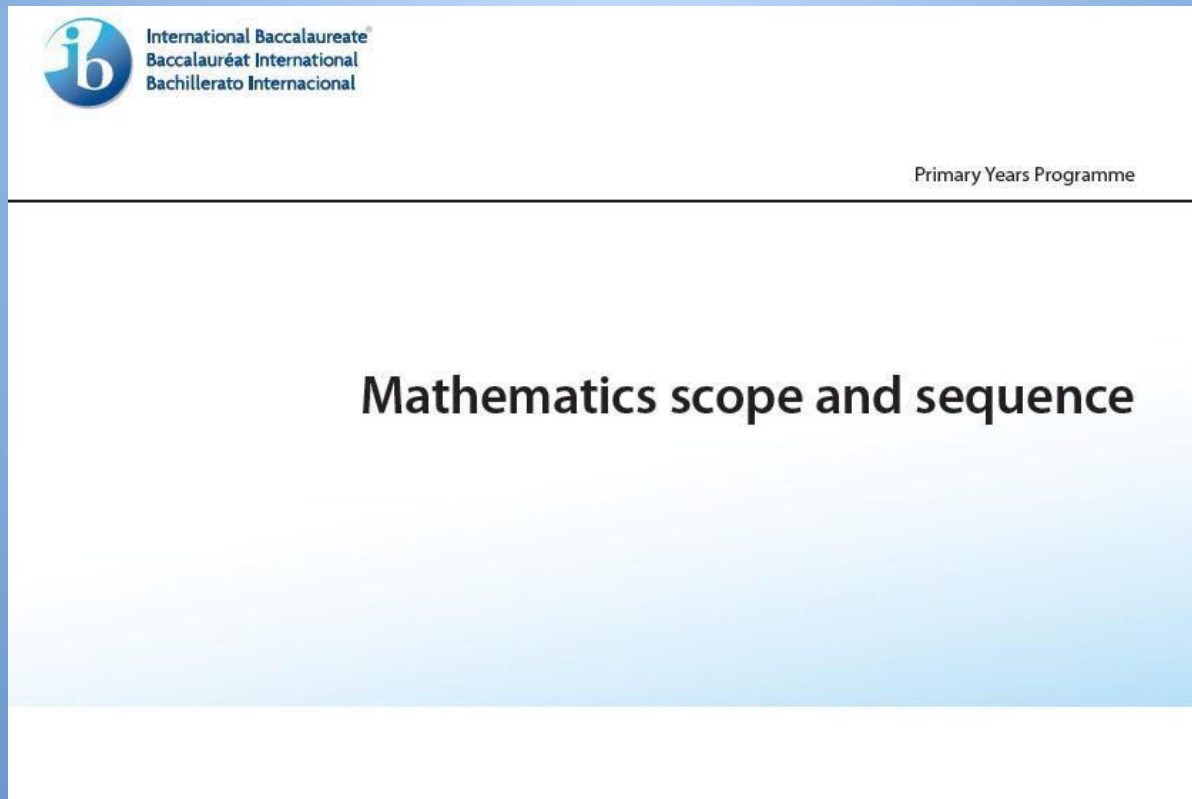# What do lessons look like?

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, sum, product.

To promote this teachers use picture books to reinforce concepts. They also are used for engagement and to make authentic links.
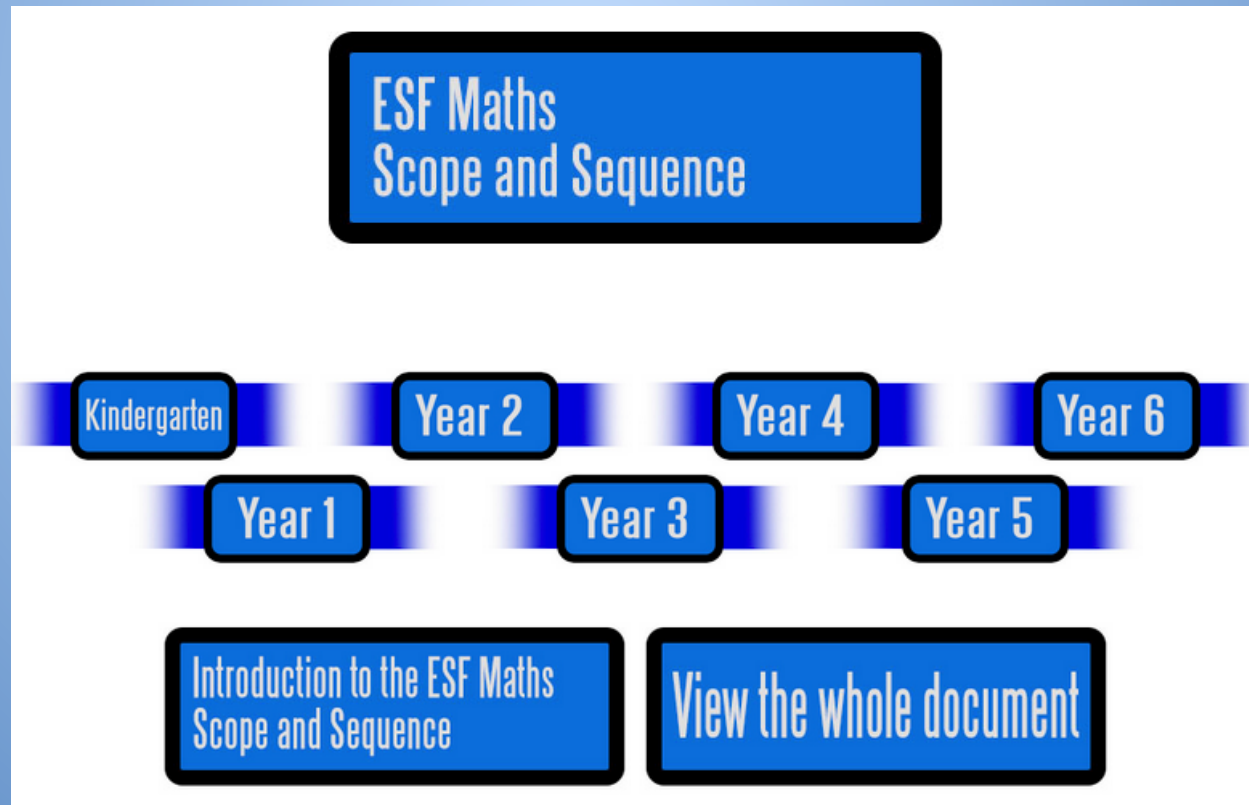
Written Curriculum - <u>What</u> we teach

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

International Baccalaureate
Baccalauréat International
Bachillerato Internacional

Primary Years Programme

Mathematics scope and sequence

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 has been introduced this year.

ESF Maths Scope and Sequence

Kindergarten | Year 2 | Year 4 | Year 6

Year 1 | Year 3 | Year 5

Introduction to the ESF Maths Scope and Sequence

View the whole document

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 5 : Place value

Working Towards

Working At Year 5

Working Beyond

Learning Outcomes

Place value

Apply place value to partition and rename numbers to tenths and hundredths.

Recognise and order numbers to millions or beyond

Recognise, model and order decimal fractions to hundredths or beyond.

Round decimal fractions to the nearest whole number

Written Curriculum – What we teach : Y6 Place Value Rubric

Beginning	Consolidating / Meets Expectations	Exceeds Expectations
Recognise and order numbers to millions or beyond • Read numbers to millions and beyond • Order numbers to millions and beyond • Compare numbers to millions and beyond • Rounding numbers to 100 000 to nearest 10, 100, 1000.	**Recognise, and order integers (including negative integers)** • Read positive and negative whole numbers • Order positive and negative whole numbers • Compare positive and negative whole numbers • Can use positive and negative whole numbers in real life situations	**Use standard index form (scientific notation) to record large numbers.** • Read large numbers in standard index form (scientific notation) • Compare and order large numbers using standard index form (scientific notation) • Use standard index form (scientific notation) to represent large numbers in real life situations
Recognise, model and order decimal fractions to hundredths. • Model numbers to hundredths to explain the place value system. • Read numbers to hundredths • Compare and order numbers to hundredths • Can apply place value knowledge of whole numbers and decimals in real life situations • Round decimal fractions to the nearest tenth or whole number	**Recognise, model and order decimal fractions to thousandths or beyond.** • Explain how the Base 10 place value system applies to decimals • Read numbers to thousandths and beyond • Compare and order numbers to thousandths and beyond • Can apply place value knowledge of decimals in real life situation • Round decimal fractions to the nearest hundredth, tenth or whole number	**Use standard index form (scientific notation) to record small numbers.** • Read decimal numbers in standard index form (scientific notation) • Compare and order decimal numbers using standard index form (scientific notation) • Use standard index form (scientific notation) to represent small numbers in real life situations

Written to taught Curriclum Y6

Y6   MATHS WEEKLY PLAN: Place Value 1

| CENTRAL IDEA	The base 10 place value system extends infinitely in two directions.				
GROUP	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
STARTER		Using 5 or 6 digits make target numbers eg largest even number, a smallest number etc Practise saying numbers and what each digit represents	Play Traffic lights (See attached notes)	X Bingo	Model Calculate A Digit
CIRCLES	Preassement - written assessment	One grain of rice: Estimating how many grains in piles of rice as intro. Read story, but stop at relevant points and ask children to fill in their record grid. Can they see /explain what is happening? At end of story children thinsk about what that many grains of rice looks like – look at own intial pile. Children then choose a number from the grid to focus on. Wrote in words, identify the value of the digits, add 10, subtract 100.	(Rotate through games) Play Grab 15 mins Reflect on task	Play place value Squeeze - Ref: Dice games for place value, Paul Swan (Purple book) With support	Play Calculate A Digit (3 digits) Ref Card Capers, Paul Swan. With support
TRIANGLES			Play Traffic lights 15 mins Reflect on task	Play place value Squeeze	Play Calculate A Digit
SQUARES			Play Go Fish 15 mins Reflect on task	Play place value Squeeze - decimals	Play Calculate A Digit
ASSESSMENT FOCUS		Can children estimate and make approximations in real-life situations involving large numbers. Read, write, compare and order numbers up to millions and beyond that occur in real life.	Can apply place value knowledge of whole numbers and decimals	Can apply place value knowledge of whole numbers and decimals. Read, write, compare and order numbers up to millions and beyond.	Can apply place value knowledge of whole numbers and decimals.

Taught (How)
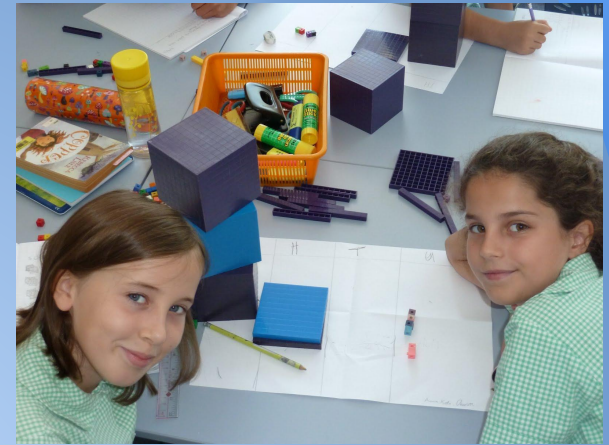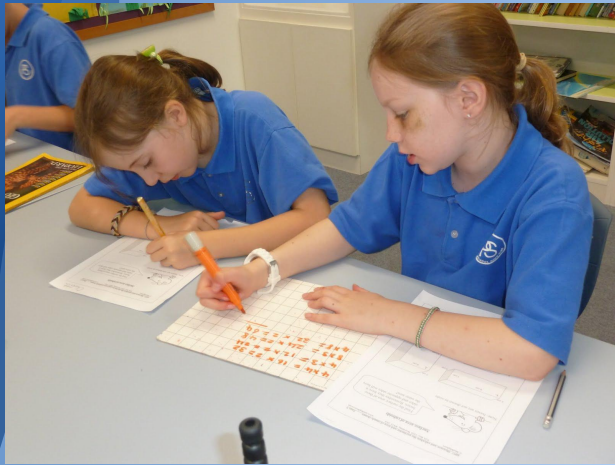
Year Five and Six.
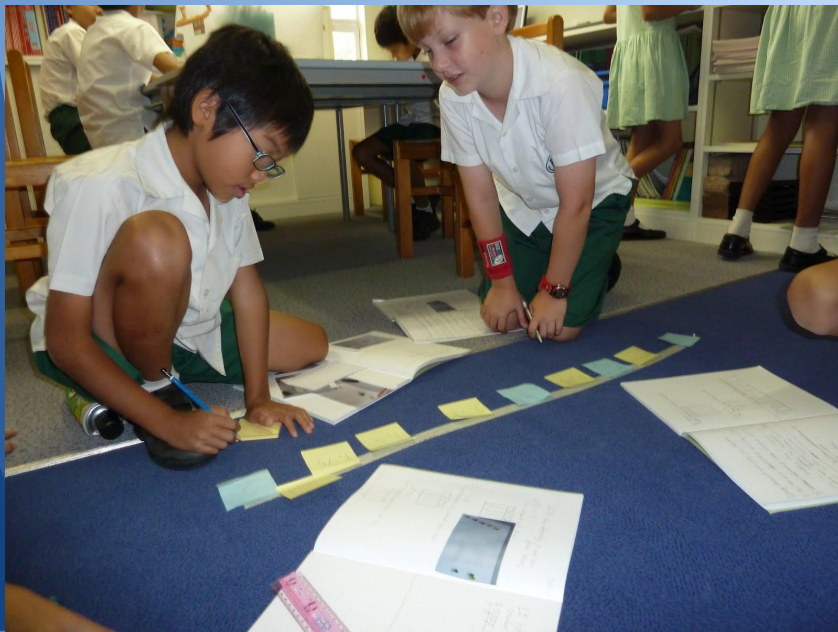
Year 6 outcome – Apply place value to partition and rename numbers to thousandths.

What is partitioning?

Splitting or breaking a number up into its different parts.

463 = 4 hundreds, 6 tens and 3 ones = 400 + 60 + 3
12.45= 1 ten, 2 ones 4 tenths and 3 hundredths = 10 + 2 + 0.4 + 0.05
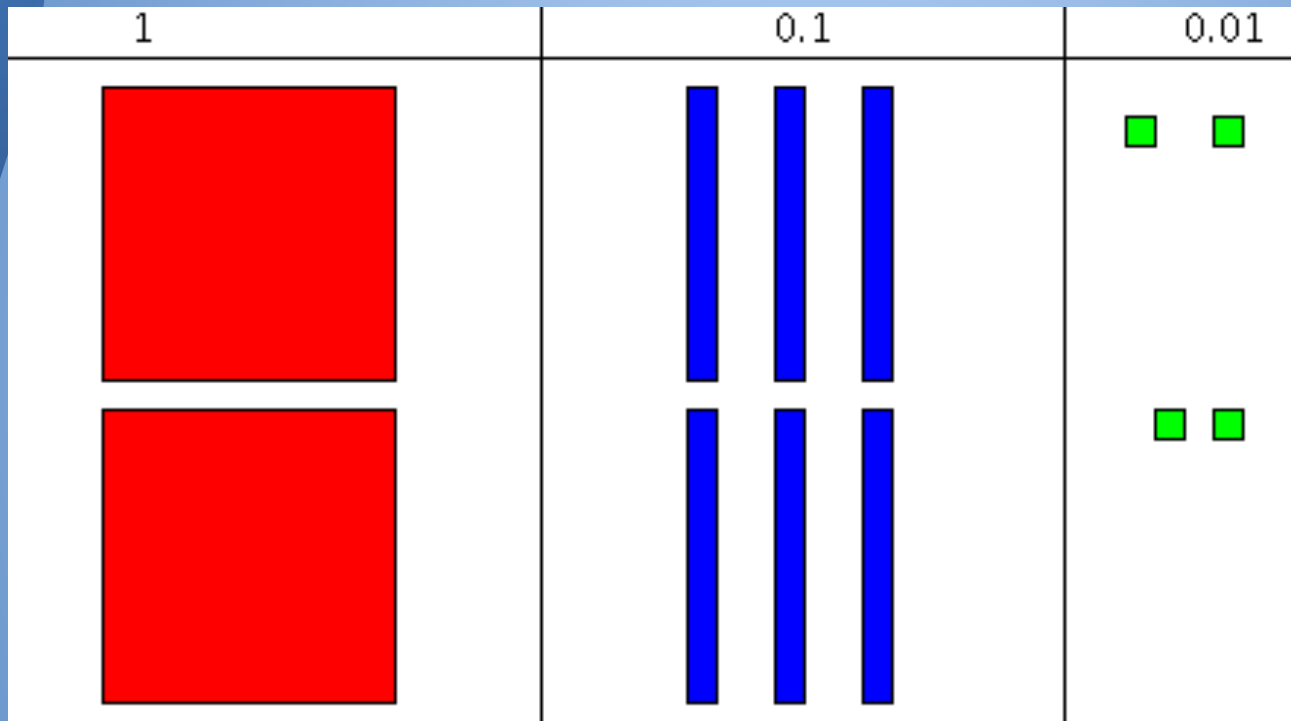
What is renaming?

1500 -

One thousand, 5 hundred

or 15 hundreds

or 150 tens

So how can 1.57 be renamed?

Year 5 Outcome - Recognise, model and order decimal fractions to hundredths and beyond.

Which is bigger 1.2 or 1.19?

How do these skills support calculating?

Solve mentally

$$728 - 98 =$$

Can rounding be used?

Solve mentally

5 x 19 =

Solve mentally

$$19.9 + 13.5 + 24.1 =$$

Solve mentally

$$119 \div 5 =$$

How can partitioning be used to support written multiplication?

Mental Strategies

Addition and Subtraction.

Place value partitioning

Compensation

Inverse operations

Jump strategies

Mental Strategies

Multiplying and Dividing

Split into place value

Doubling and halving

Rounding and compensating

Using known facts and inverse operations

Students are expected to explain the process clearly as they work.

Teachers take the time to work on these expanded forms to develop understanding.

Written Strategies

Once students demonstrate an understanding they introduced to a shorter more efficient method.

This is taught as an inquiry into effective written methods.
- What are the different methods?
- What methods do your parents use?
- What method works for you?

Mathematical Literacy

Students need to be able to explain their thinking using the correct mathematical language.

Students need to be able to identify the math within a problem.

What operations does the problem want me to use and what is the most effective strategy to use to solve the problem?

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?
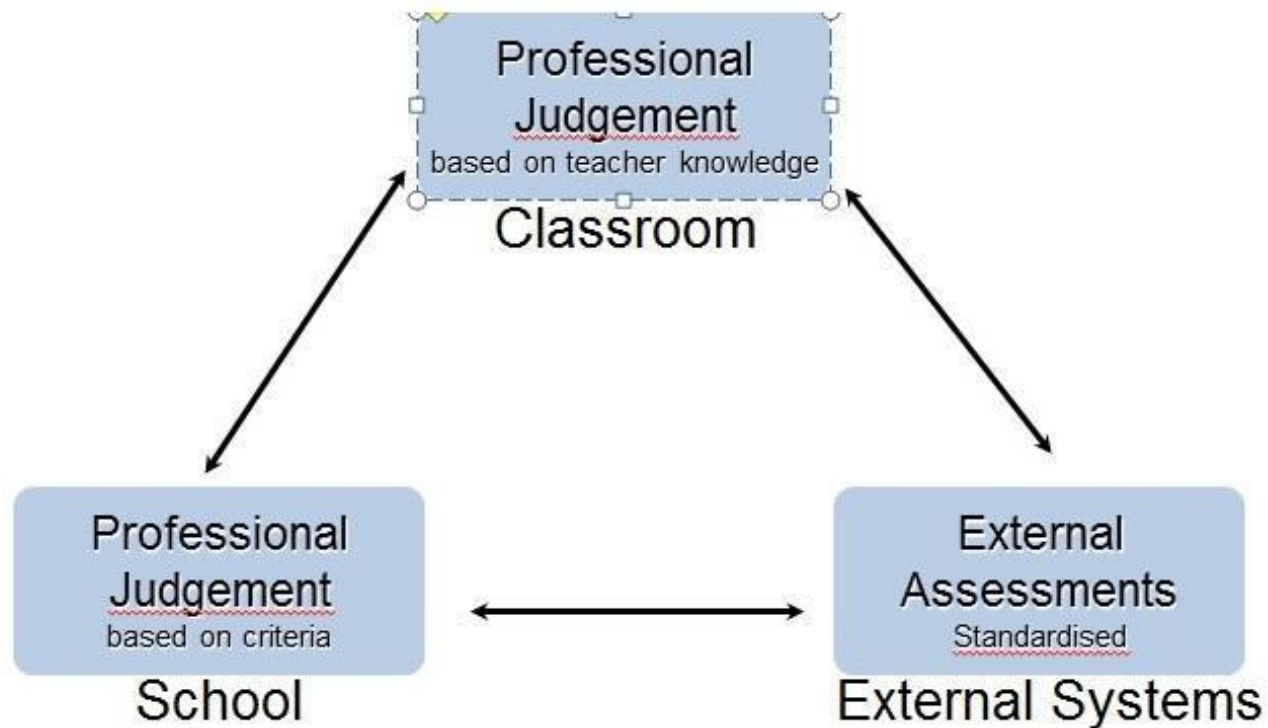
Three forms of Assessment

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.
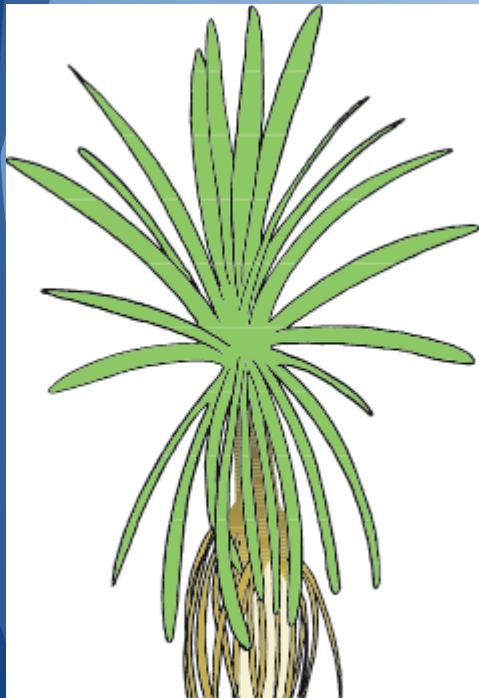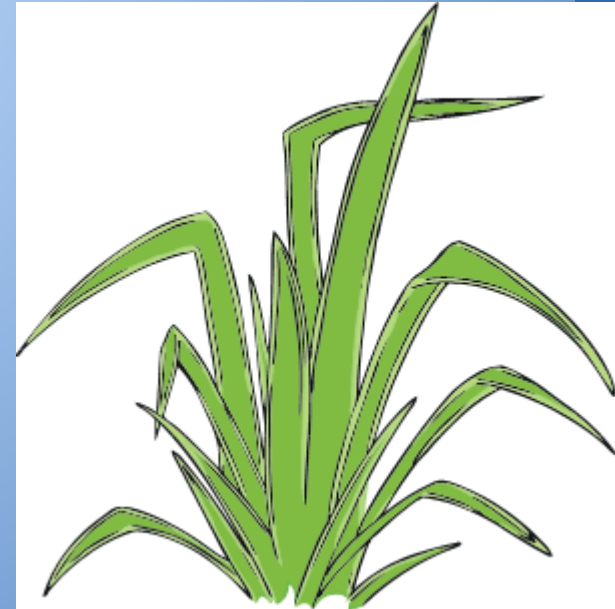
The garden analogy: Summative

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 - Year 5 PV Rubric

Year 5

Key for Levels of Achievement			
B = Beginning	**C = Consolidating**	**ME = Meets Expectations**	**EE = Exceeds Expectations**
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 practising 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.

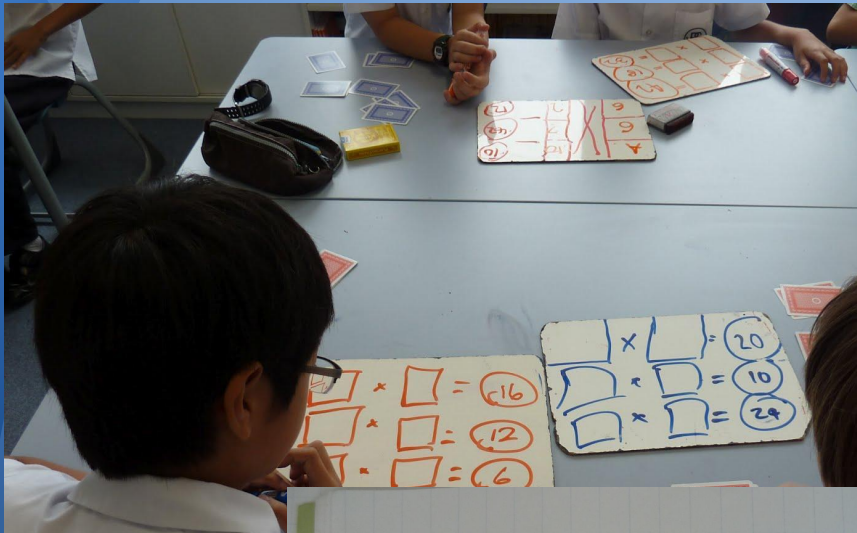| Beginning	Consolidating / Meets Expectations	Exceeds Expectations
Recognise, represent and order numbers to at least five digit numbers • Read numbers up to 99 999 • Compare and order numbers up to 99 999 positioning them on a number line • Write numbers up to 99 999 using digits and/or words • Round numbers up to 99 999 to the nearest 10,100,1000.	**Recognise and order numbers to millions or beyond** • Read numbers to millions and beyond • Order numbers to millions and beyond • Compare numbers to millions and beyond • Round numbers up to a million to the nearest 10, 100, 1000, 10 000, 100 000.	**Recognise, and order integers (including negative integers)** • Read positive and negative whole numbers • Order positive and negative whole numbers • Compare positive and negative whole numbers • Use positive and negative whole numbers in real life situations

Assessment - Year 6 PV Rubric

Year 6

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Assessment and Reporting to Parents

- Online Portfolio
- Gateway report x 2 against outcomes
- Standardised assessment data (ISA)
- 3 Way Conferences - targets shared
- Parent Conference
- Student Led Conference/Learning Journey