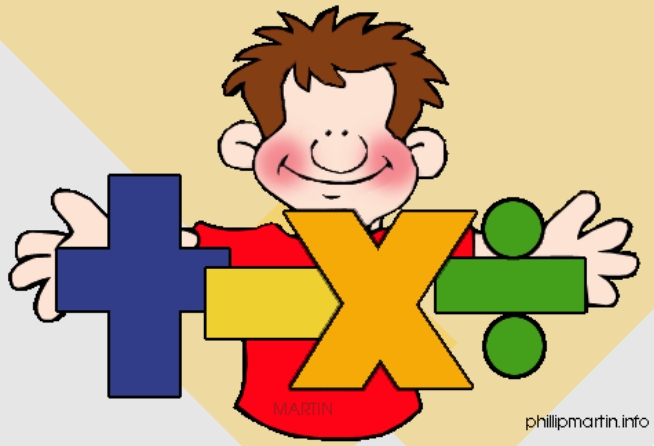


Maths Workshop

Friday 1st October, 2021

POPE PAUL CATHOLIC PRIMARY SCHOOL

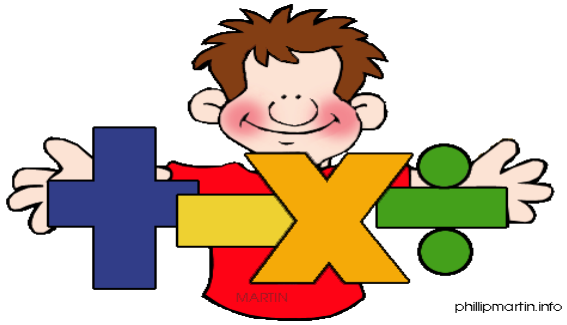
Learning in the light of Christ

Maths at Pope Paul
Aims of this afternoon session

- To gain an insight into how Maths is taught at Pope Paul.
- To take away some ideas to support your child(ren) at home.

National Curriculum

- The national curriculum for mathematics aims to ensure that all pupils:
- become **fluent** in the fundamentals of mathematics,
- **reason mathematically**
- can **solve problems**



- At Pope Paul School, the mathematical learning that children are presented with enables them to respond to mathematics in many forms. Being a **'mathematician'** is not, simply, completing mathematical tasks: it is the ability to formulate and choose an appropriate, efficient response which utilises a true understanding of the problem or situation.
- Using **Essential Maths** as a key driver for our planning of mathematics at Pope Paul School, we aim to provide children with deeper knowledge and understanding of mathematical procedures and related concepts.
- As such teachers identify the key learning for each class and plan to secure these. Learning sequences are developmental and, depending on the concept, a good proportion of time will be spent securing key learning. Teachers will use their judgement about when it is the right time to move on.

What does this look like at in our school?

Whole class **direct teaching** with clear and progressive modelling of concepts and procedures with sequences of varied examples.

The **consistent use** of core manipulatives and representations to support ability to access learning and to deepen children's understanding.

Rich **mathematical talk** is given high status and supported by the learning environment and teachers' questioning.

Emphasis placed on 'learning' through reasoning, developing multiple strategies and concepts towards understanding.

Challenge for pupils grasping concepts quickly is provided through depth and breadth of experience.

We encourage **maths talk** and **collaborative learning –** they work together to master a concept.

~~Some people just can't do maths~~

By working hard, **all children can succeed**

We provide time to **secure learning** before moving on

We encourage **intelligent practice** and use of key facts to 10.

Children are challenged through **depth** of experience

CPA

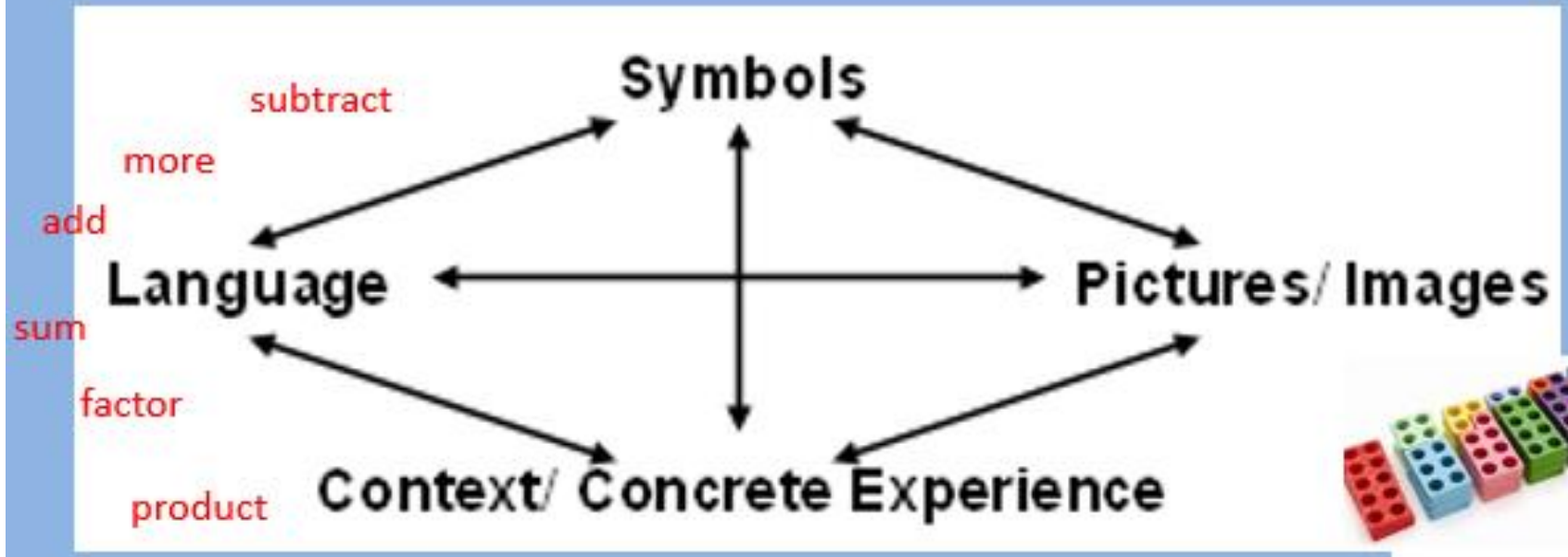
Moving freely between concrete materials, pictorial representations and abstract symbols.

1. The children are first introduced to an idea or skill using **objects**.

2. When the hands on experience is understood we relate them to representations such as a **diagram** or a **picture**.

3. The children represent their learning using **numbers** and **symbols**

= + x %

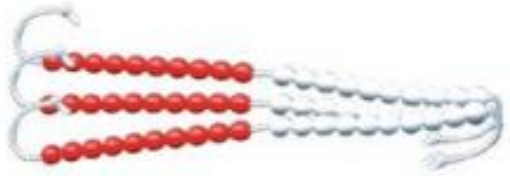


When we plan a Maths sequence we always ensure children are exposed to correct mathematical language, symbols (+ - = x), an image and a context.

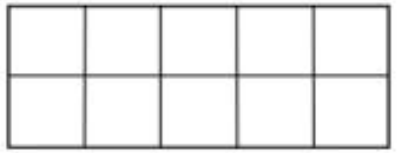
Bringing concrete, pictorial and abstract together

Have a go!

Try these calculations using some of the 'objects' on your table.



8 + 9



15 - 7

How could these be represented using pictures?

The Year 3 learner

Working mathematically

By the end of year 3, children will talk about their mathematics using the numbers they are familiar with, applying their understanding of number, measures and shape to a greater range of problems. They will make decisions about calculations and information that is needed to solve problems, for example when a recipe for two people needs to be doubled to make a recipe for four. Children will be expected to prove their thinking through pictures, jottings and conversations. They will be encouraged to pose their own questions, working in an organised way to solve them which will help pupils to identify common patterns or any errors more easily.

Number

- **Counting and understanding numbers**

Children will be very familiar with numbers that have 3 digits and will have experienced many opportunities to order, compare and show them in different ways using apparatus such as a tape measure, a 100 grid or money. Using their understanding of place value (how the value of each digit changes depending on its position in the number), children will be able to partition (break and make) numbers in different ways e.g. 234 = 200 and 30 and 4; 100 and 100 and 20 and 10 and 4; *or* 200 and 20 and 14. They will develop a secure understanding of numbers up to 1000 and will count beyond it in 1s, 10s and 100s. They will use this counting to help find 10 or 100 more than any given number.
Children will be introduced to numbers with one decimal place and will count up and down in tenths; share groups of objects or shapes into tenths and represent these in pictures and using hands-on resources.

Learning Sequences, Speaking Frames, Destination Questions

3LS1	Place Value and Regrouping
3LS2	Counting On and Back in Ones, Tens and Hundreds
3LS3	Estimation, Magnitude and Rounding
3LS4	Measures – Comparison, Estimation and Magnitude
3LS5	Mental Fluency – Addition
3LS6	Mental Fluency – Subtraction
3LS7	Fact Families and Applying the Inverse
3LS8	Written Addition
3LS9	Written Subtraction
3LS10	Problem Solving – Worded Problems

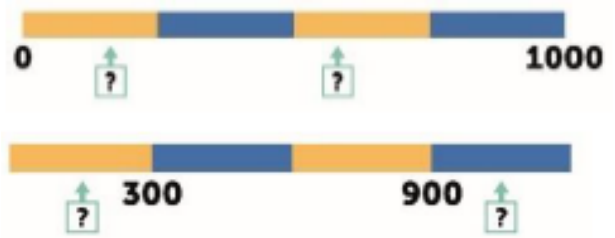
☐ is the hundred before ☐

☐ is the hundred after ☐

☐ is closer to ☐ than ☐

☐ is ☐ when rounded to the nearest ten.

☐ ≈ ☐



Think of a number that each of the ? could be.

Think of a number that each of the ? definitely cannot be.

Explain your reasoning for both.

Year 3

Learning Sequence 3

Estimation, Magnitude and Rounding

Key NC Statement
Compare and order numbers up to 1000

Related NC Statements
• read and write numbers up to 1000 in numerals and in words • solve number problems and practical problems involving these ideas • recognise the place value of each digit in a three-digit number (hundreds, tens, ones) • identify, represent and estimate numbers using different representations

Steps within the Learning Sequence
Step 1: Use value of digits to compare and order numbers (recognise most significant digit)
Step 2: Estimate the order of 3-digit numbers
Step 3: Estimate number magnitude
Step 4: Round numbers to nearest ten and hundred

Step one

Use value of digits to compare and order numbers (recognise most significant digit)

Pupils compare numbers using base-10 equipment and other non-mathematical representations.
Who has more? Ask pupils to build, say and write the numbers.

Which of the digits should we look at first when we are comparing numbers?

What would happen if the second shopkeeper sold 200 chocolate bars? Who would have the most then?

625	875
625	675

Which of the digits is most important now when comparing each of the numbers to 625?

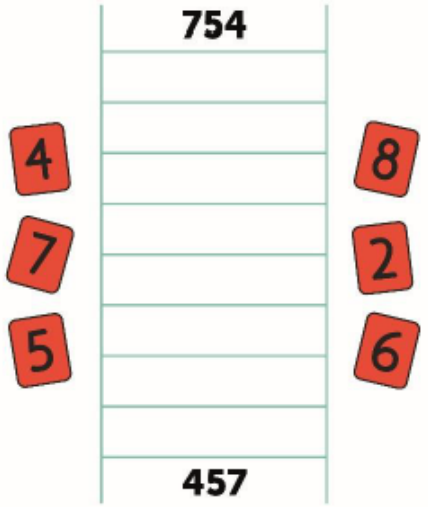
Pupils to order numbers ensuring they look at the digit with the greatest value first.

Step two

Estimate the order of 3-digit numbers

Model the activity.

Choose 3 digits from 0-9 digit card pack (for example 4, 5 and 7).
Ask pupils to make the smallest and the greatest 3-digit numbers they can (as example).
Ask pupils to write them in the correct places on handout _LS3_step2_pvladder.
Return the digit cards to the pack.



Select a pupil to pick three further digit cards and to make a new number that will fit onto the ladder e.g. 628.
Encourage pupils to think about which rung of the place value ladder it will go.

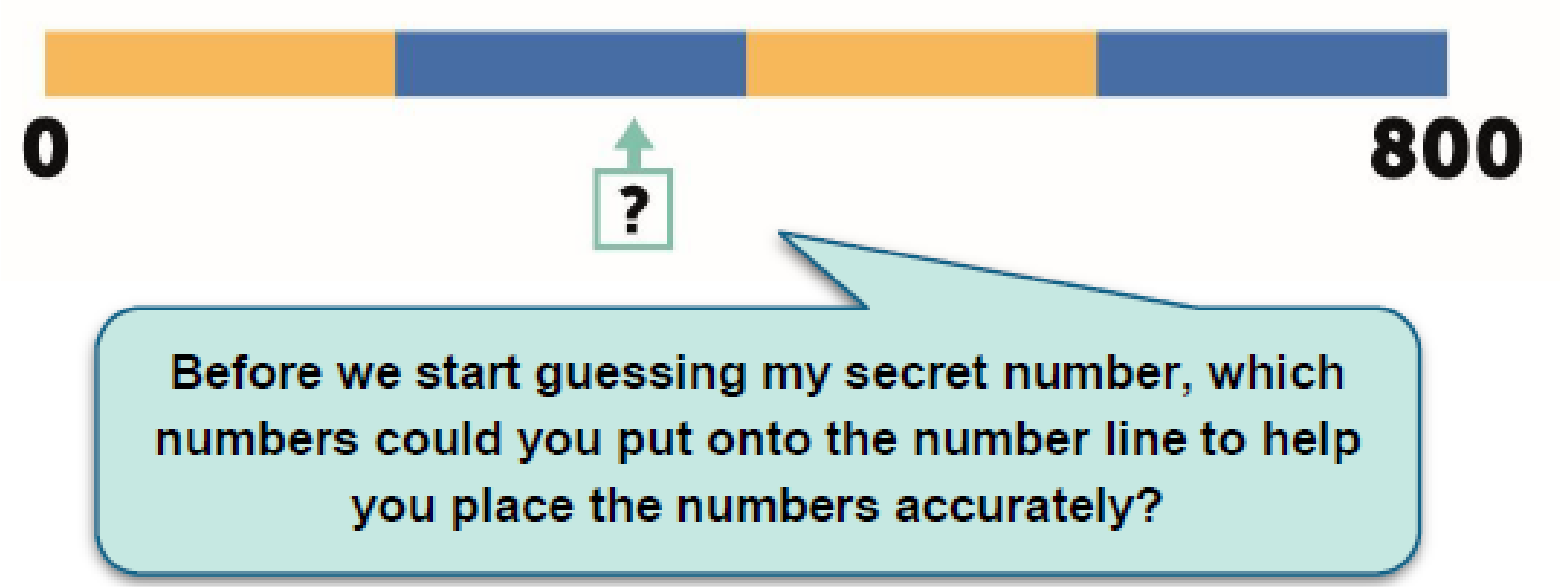
Is the new number closer to the greatest or smallest number?
As more numbers are added to the ladder, encourage pupils to be very careful about the numbers they make from the digit cards in order to find numbers that will fit onto the correct rungs.
Pupils can be asked to explain why a number cannot be made.

Pupils repeat in pairs.

Step three

Estimate number magnitude

Show pupils another number line. Mark the start and end numbers. Again mark on a secret number.



Encourage pupils to refer to key benchmarks such as halfway, quarter and three quarter points and perhaps multiples of 10, 100 etc.

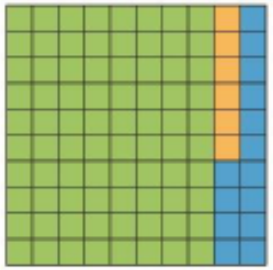
Provide different start and end numbers for pupils to either plot numbers onto or to estimate mystery numbers.

Step four

Round numbers to nearest ten and hundred

Pupils to justify which benchmarks are nearer to given numbers, beginning with 2-digit and then into 3-digit. Introduce the symbol for approximately equal to (≈) and clarify the conventions for numbers ending in 5 (when rounding to nearest ten) or 50 (rounding to nearest hundred).

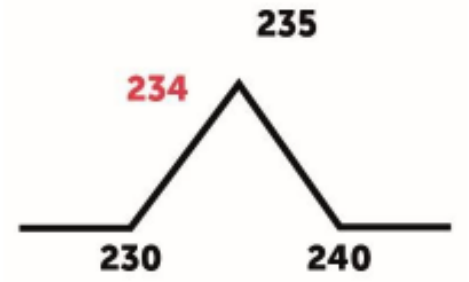
86



80 is the ten before and 90 is the ten after.

86 is closer to 90 than 80.

86 ≈ 90

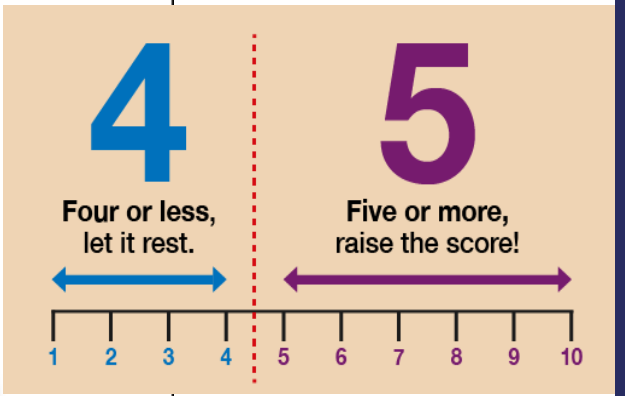


234 is 4 from 230 and 6 from 240.

234 is nearer to 230 than to 240.

234 is 230 when rounded to the nearest ten.

234 ≈ 230



Learning Sequences, Speaking Frames, Destination Questions

☐ is the hundred before ☐

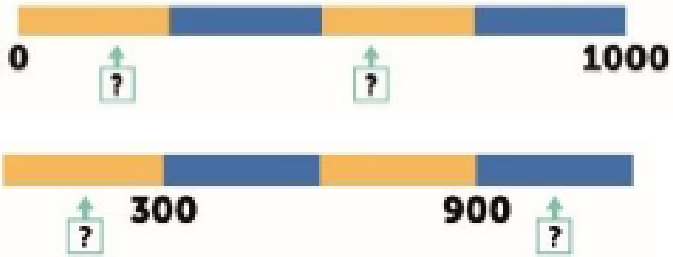
☐ is the hundred after ☐

☐ is closer to ☐ than ☐

☐ is ☐ when rounded to the nearest ten.

☐ ≈ ☐

4



Think of a number that each of the ? could be.

Think of a number that each of the ? definitely cannot be.

Explain your reasoning for both.

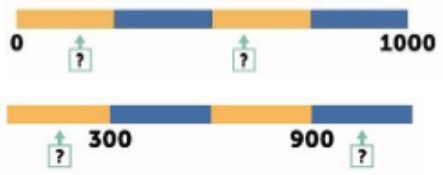
Activity for exploring ideas at greater depth

I am thinking of a number which when rounded to the nearest ten *and* nearest hundred is 300.

What could my number be?

Why is 45 ≈ 0 when rounded to the nearest hundred?

Destination Questions

1 True or false? You always look at the highest place value column first when ordering any numbers. Use some examples to prove your decision.	2 If you ordered these numbers from smallest to largest, what would the 4th number be? 483 421 412 338 491	3 Prove that 289 is closer to 300 than 315.
4  Think of a number that each of the ? could be. Think of a number that each of the ? definitely cannot be. Explain your reasoning for both.	5 Circle the numbers that could be rounded to 300. 339 299 401 251 306	6 How many different numbers can you show me that would be 500 when rounded to the nearest 10?

Mathletics

Introduction

Mathletics switches students onto maths. It's fun, supportive and effective for students of all ages and abilities, helping them achieve more.

Pupil Engagement

Mathletics gives each student their very own personal learning space. Filled with targeted curriculum content, interactive tutorials and support, alongside engaging games and rewards – the Student Console is a powerful hub of learning.

- Curriculum content can be assigned and controlled by the teacher.
- Self-directed learning is the focus, with searchable access to activities, interactive content, eBooks and video.
- Targeted and adaptive practice activities for differentiated learning.

Encourage your child to play maths puzzles and games. Puzzles and games – anything with a dice really – will help kids enjoy maths, and develop 1 number sense, which is critically important.

Always be encouraging and never tell your child they are wrong when they are working on a maths problem. Instead find the logic in their thinking – there is always some logic to what they say. For example if your child multiplies 3 by 4 and gets 7, say – Oh I see what you are thinking, you are using what you know about addition to add 3 and 4, when we multiply we have 4 groups of 3…

Encourage your child to take time to understand the logic…speed comes later.

Encourage number sense. What separates high and low achievers is number sense – having an idea of the size of numbers and being able to separate and combine numbers flexibly.

Encourage them to do their home learning and use the online resources.

How to assist your child

Questions?