Mathematics and Numeracy

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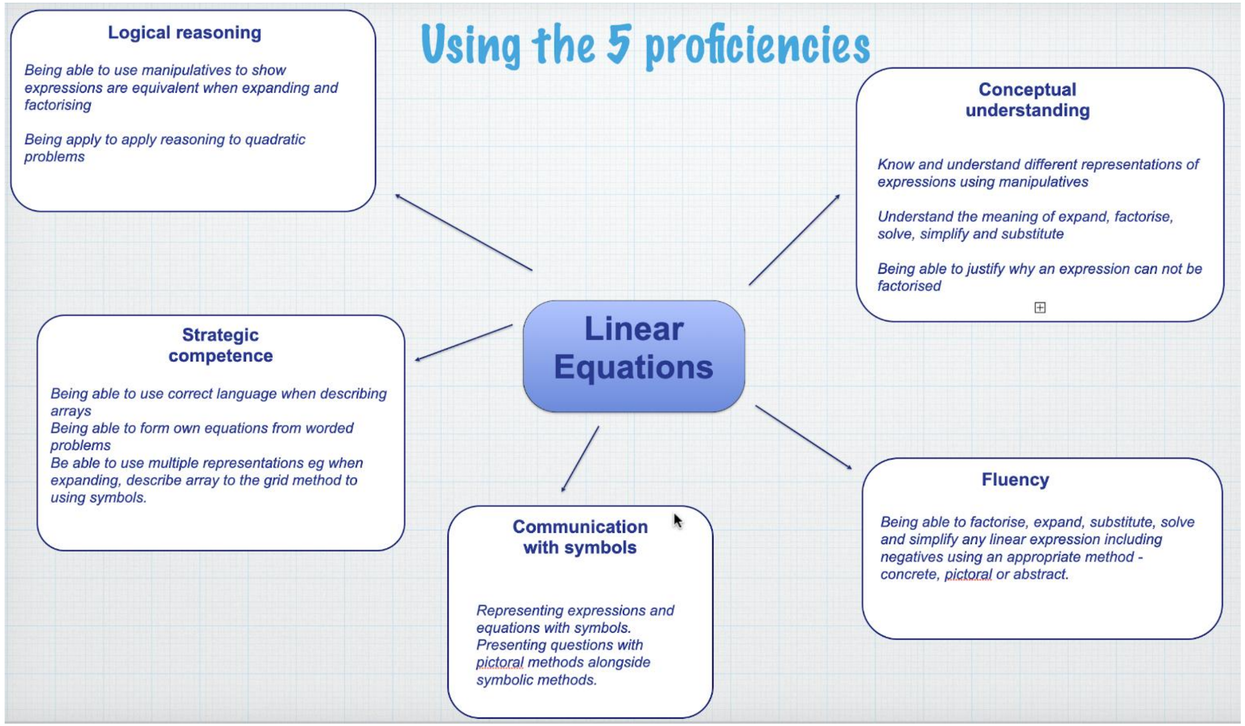
Start of the journey

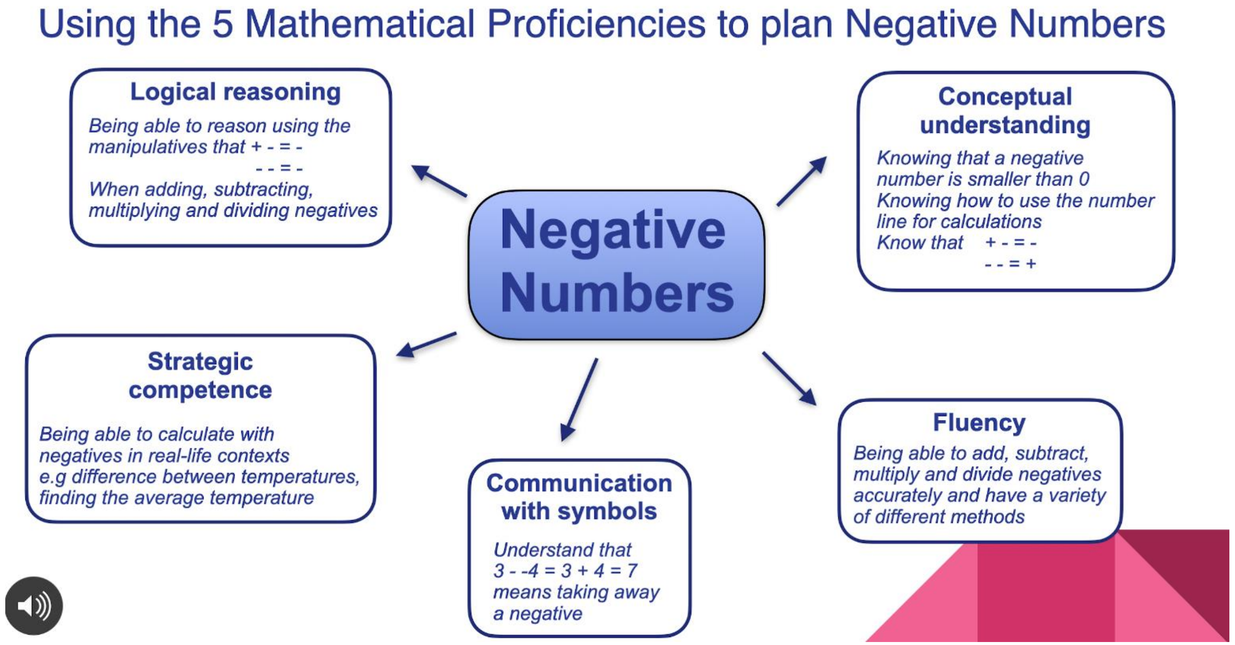
- Understanding the drive of the new M&N curriculum
- Single discipline - good or bad??
- Pedagogy
- Manipulatives and Mastery

Understanding progression

- What does progression look like in M&N
- Depth not breadth
- Mastery
- Time
- Application
- Authentic links
- Multiple Strategies

Planning using the 5 mathematical proficiencies





Unpacking the WM

The number system is used to represent and compare relationships between numbers and quantities.

Numbers are the symbol system for describing and comparing quantities. This will be the first abstract concept that learners meet in mathematics, and it helps to establish the principles of logical reasoning. In mathematics the number system provides learners with a basis for algebraic, statistical, probabilistic and geometrical reasoning, as well as for financial calculation and decision-making.
Knowledge of, and competence in, number and quantities are fundamental to learners' confident participation in the world, and provide a foundation for further study and for employment. Computational fluency is essential for problem-solving and progressing in all areas of learning and experience. Fluency is developed through using the four basic arithmetic operations and acquiring an understanding of the relation-ship between them. This leads to preparing the way for using algebraic symbolisation successfully.

Key Concepts

- Understand the value of digit, including negatives, fractions and decimals, and it's position on a number line
- Interpreting numbers, large and small, including indices
- Estimating and understanding tolerance and rounding
- Equivalence between decimals, fractions and percentages
- Proportion
- Inverse reasoning and reciprocals
- Experience and exploration of the 4 operations with all types of numbers
- Financial capability including profit and loss, and personal finance of tax, mortgages and budgeting

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Key links to the Four Purposes

Ambitious, capable learners;
- Building up a body of knowledge and the skills to connect that knowledge in different contexts
- Can use number effectively

Enterprising, creative contributors;
- Experiment skills creatively
- Be flexible when tackling mathematical problems

Ethical, informed citizens;
- Use knowledge to understand and consider environmental issues

Healthy, confident individuals;
- Managing own finances
- Take measured decisions about lifestyle and manage risk

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Experiences and cross-cutting themes

Experiences and links to local area

- Local banks for financial education
- Local council
- Populations
- Weather
- Engineering - Airbus

Careers and work related education

- Engineering
- Banking
- Accountancy
- Pharmacist/Medical
- Mortgage advisors
- Local small business owners
- Architecture

Local, national and international contexts

- Opportunities to explore famous Welsh mathematicians
- Opportunities to explore how maths is taught internationally, is it a language all understand?
- Welsh example when teaching finance eg rates set by Welsh Government

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Links to other What Matter Statements and AoLE's

Mathematics and Numeracy

- Number is the foundation of Maths and numeracy and unpins all learning with each of the what matter statements

Health and Well-being

- Financial risk
- Nutrition and exercise

Humanities

- Population
- Weather

Science and Technology

- Scales
- Understanding and interpreting large and small numbers

Journey at PS3

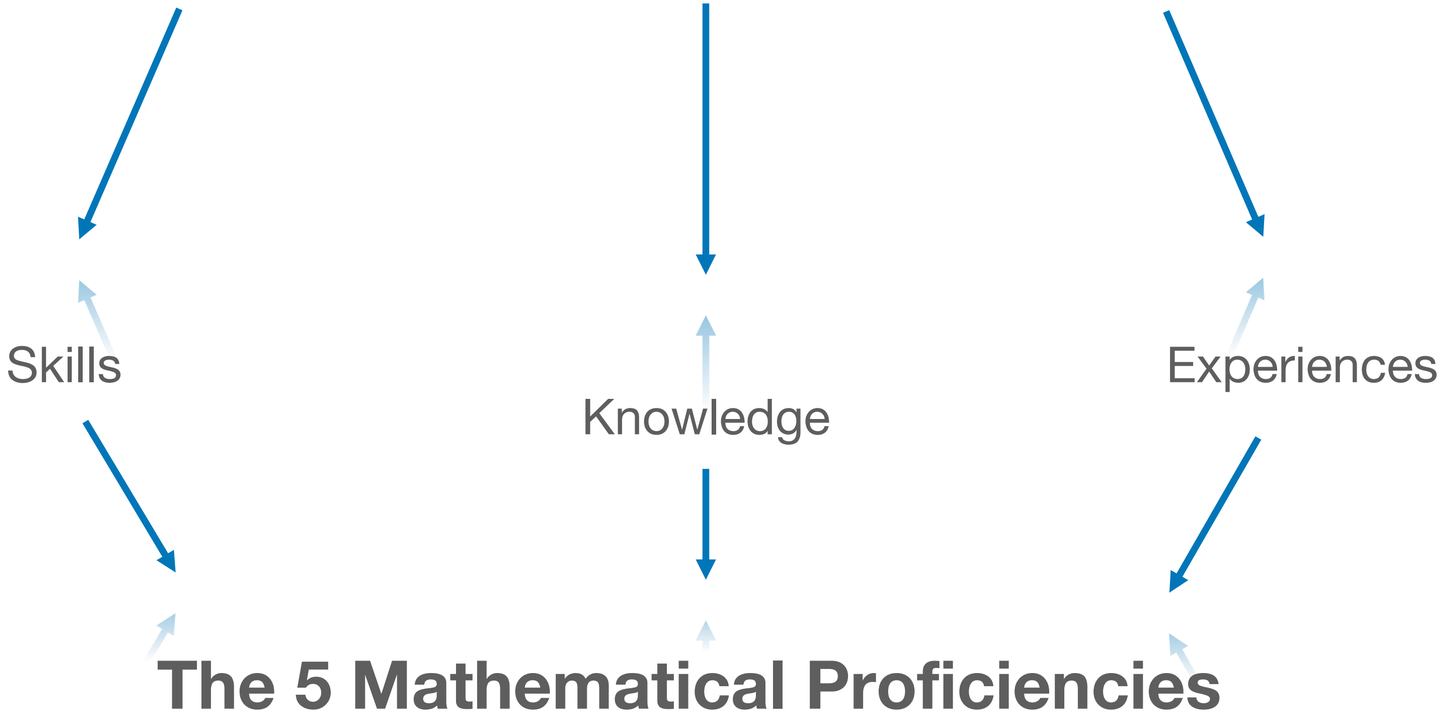
Where they have been….

I have explored additive relationships, using a range of representations. I can add and subtract whole numbers, using a variety of written and mental methods

What do we want learners to be successful, experience and reason in?

Where we want them to be….

I can use a range of representations to extend my understanding of the number system to include negative values, decimals and fractions.
I can accurately place integers, decimals and fractional quantities on a number line.
I can apply my understanding of number value to round and approximate appropriately.
I can verify calculations and statements about number by inverse reasoning and approximation methods.
I can use the four arithmetic operations confidently, efficiently and accurately with integers and decimals, and I can combine these using distributive, associative and cumulative laws where appropriate



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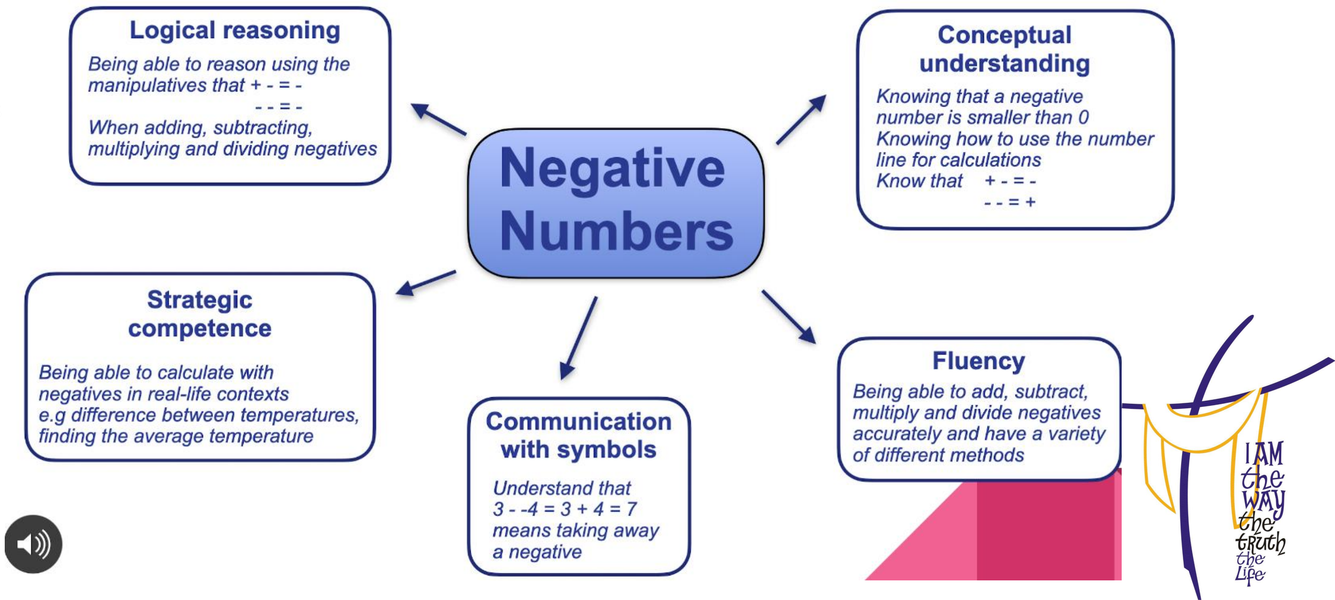
Skills

Understand and use representations of directed numbers
Order directed numbers using lines and appropriate symbols
Perform calculations that cross zero
Adding directed numbers
Subtracting directed numbers
Multiplication and division of directed numbers
Using a calculator for directed number calculations
Use order of operations with directed numbers

Evaluate algebraic expressions with directed numbers
Introduction to 2-step equations
Understand that positive numbers have more than one square root
Explore higher powers and roots

Knowledge and Experiences

Using counters, bar models, number lines
Using maths bot
Real life experiences eg temperature



Next steps

- Discussion in local groups
- Continuum from progression step 1 to 5
- Looking at a big idea