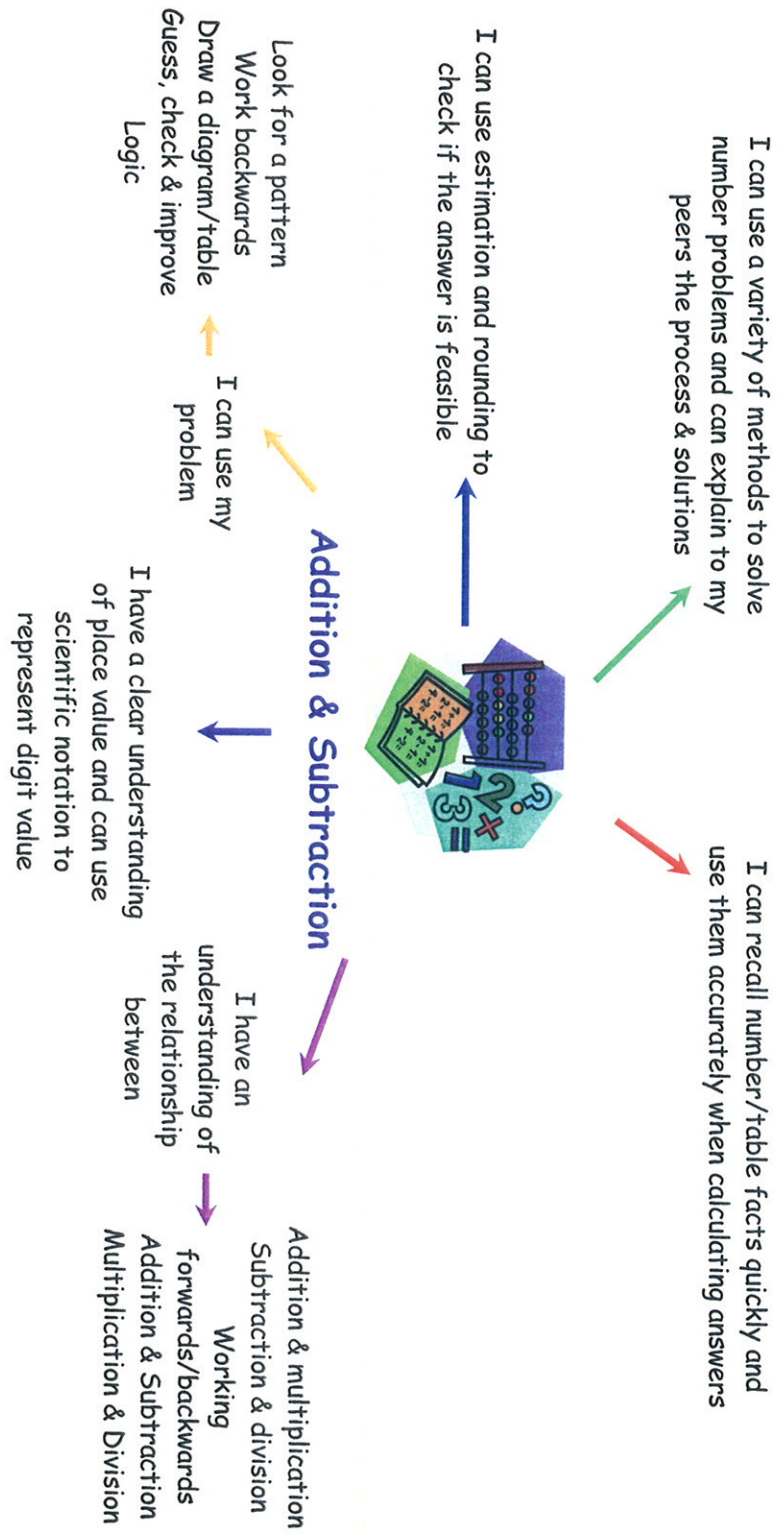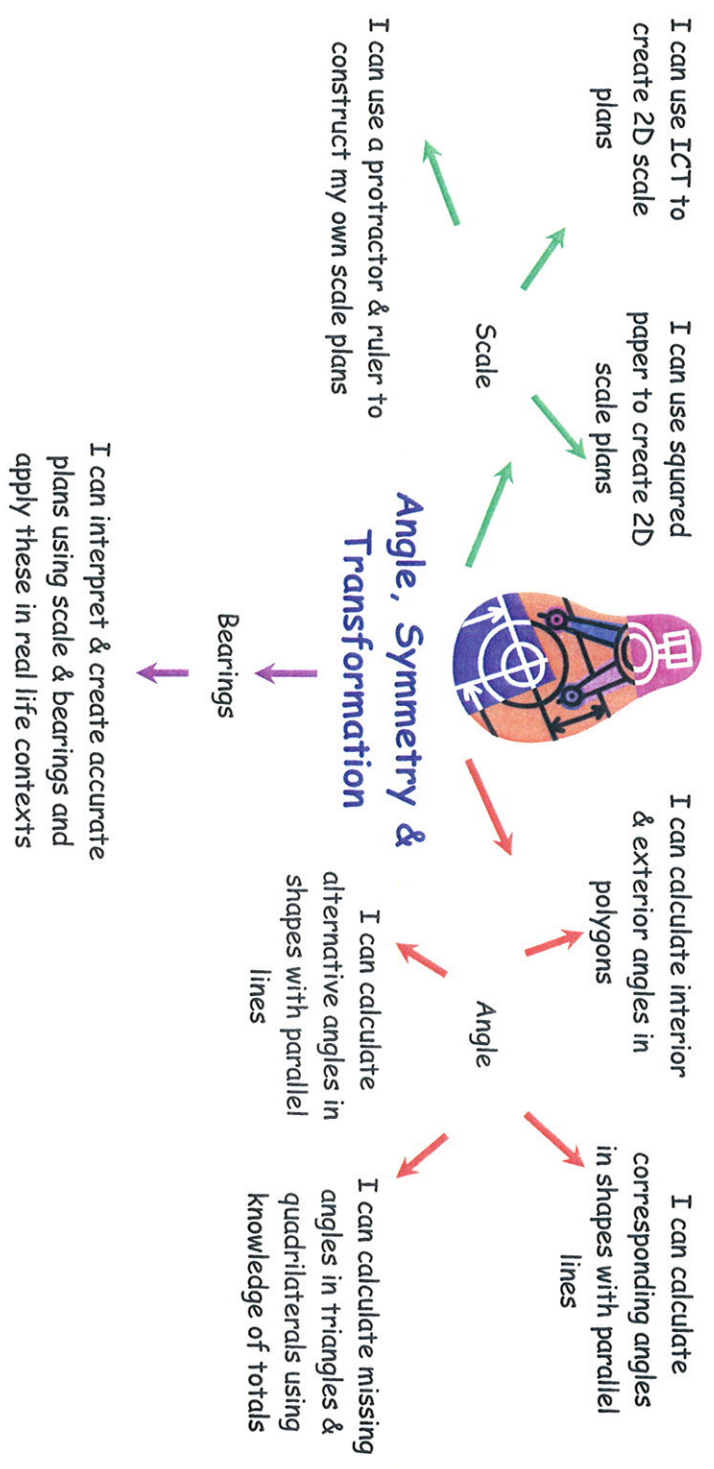I can use a variety of methods to solve number problems in familiar contexts, clearly communicating my processes and solutions.   MNU 3-03b

I can continue to recall number facts quickly and use them accurately when making calculations. MNU 3-03a

Addition & Subtraction

I can use a variety of methods to solve number problems and can explain to my peers the process & solutions

I can use estimation and rounding to check if the answer is feasible

- Look for a pattern
- Work backwards
- Draw a diagram/table
- Guess, check & improve
- Logic

I can use my problem

I can recall number/table facts quickly and use them accurately when calculating answers

I have a clear understanding of place value and can use scientific notation to represent digit value

I have an understanding of the relationship between

- Addition & multiplication
- Subtraction & division
- Working forwards/backwards
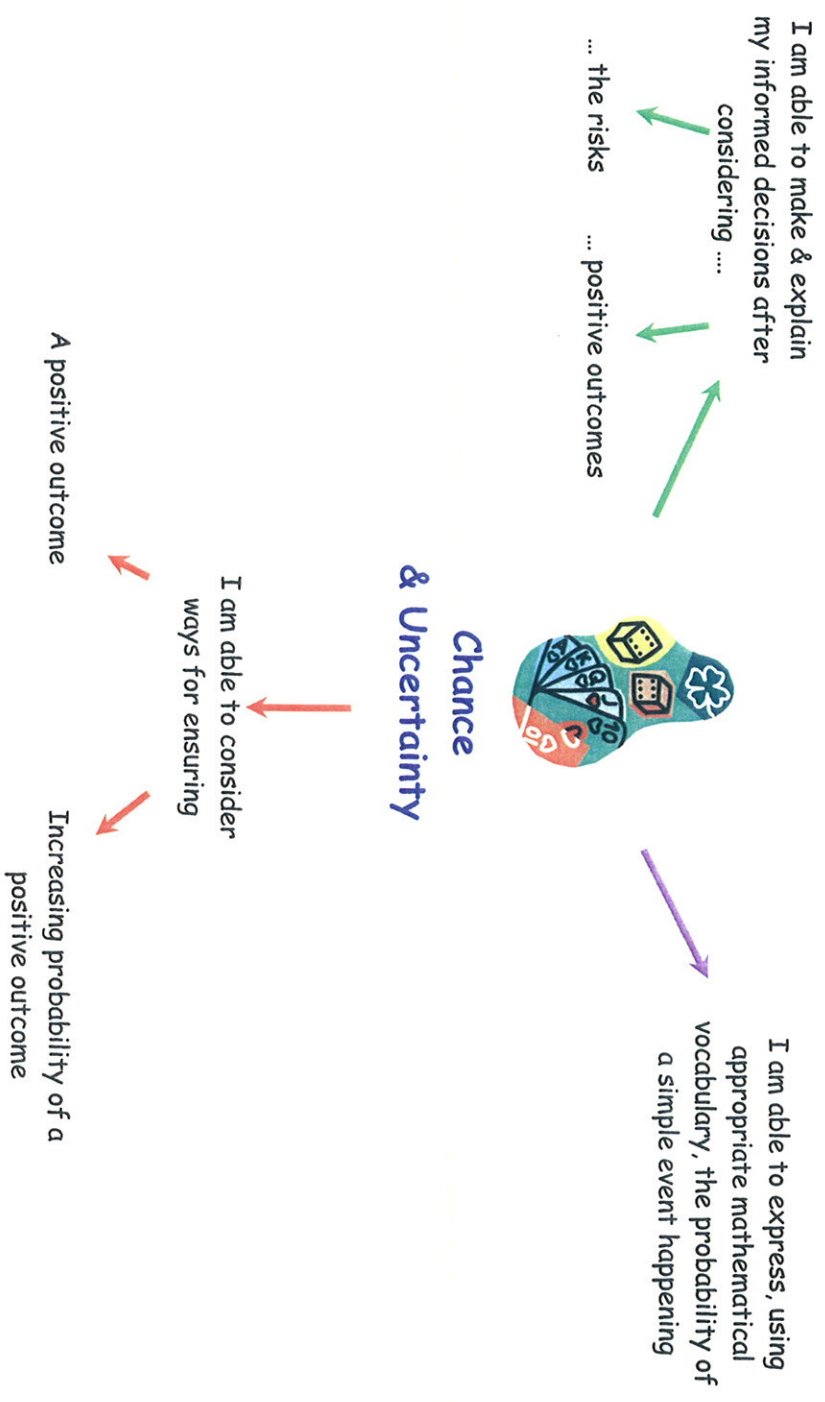- Addition & Subtraction
- Multiplication & Division

I can name angles and find their sizes using my knowledge of the properties of a range of 2D shapes and the angle properties associated with intersecting and parallel lines. **MTH 3-17a**

Having investigated navigation in the world, I can apply my understanding of bearings and scale to interpret maps and plans and create accurate plans, and scale drawings of routes and journeys. **MTH 3-17b**

I can apply my understanding of scale when enlarging or reducing pictures and shapes, using different methods, including technology. **MTH 3-17c**

Angle, Symmetry & Transformation

Scale

I can use ICT to create 2D scale plans

I can use squared paper to create 2D scale plans

I can use a protractor & ruler to construct my own scale plans

Bearings

I can interpret & create accurate plans using scale & bearings and apply these in real life contexts

Angle

I can calculate interior & exterior angles in polygons

I can calculate corresponding angles in shapes with parallel lines

I can calculate alternative angles in shapes with parallel lines

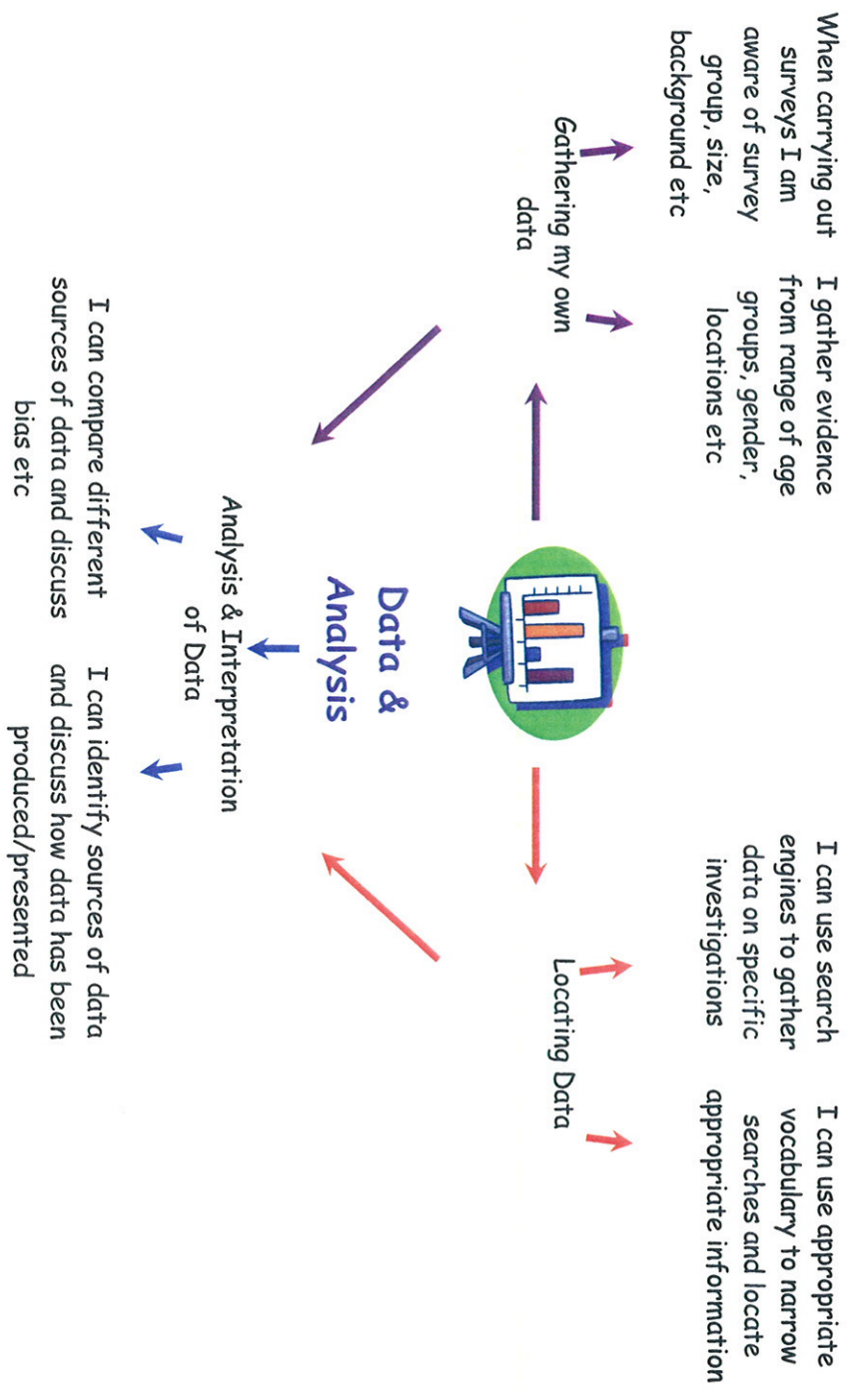I can calculate missing angles in triangles & quadrilaterals using knowledge of totals

I can find the probability of a simple event happening and explain why the consequences of the event, as well as its probability, should be considered when making choices.
MNU 3-22a

Chance & Uncertainty

I am able to make & explain my informed decisions after considering ....

... the risks

... positive outcomes

A positive outcome

I am able to consider ways for ensuring

Increasing probability of a positive outcome

I am able to express, using appropriate mathematical vocabulary, the probability of a simple event happening

I can work collaboratively, making appropriate use of technology, to source information presented in a range of ways, interpret what it conveys and discuss whether I believe the information to be robust, vague or misleading. **MNU 3-20a**

When analysing information or collecting data of my own, I can use my understanding of how sample size and bias can affect the reliability of data being gathered, to check or ensure that the results are unprejudiced. **MTH 3-20b**

I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology.
MTH 2-21a / MTH 3-21a

Gathering my own data

When carrying out surveys I am aware of survey group, size, background etc

I gather evidence from range of age groups, gender, locations etc

Data & Analysis

Analysis & Interpretation of Data

I can compare different sources of data and discuss bias etc

I can identify sources of data and discuss how data has been produced/presented

Locating Data

I can use search engines to gather data on specific investigations

I can use appropriate vocabulary to narrow searches and locate appropriate information

Estimation & Rounding

I am able to round a number to the nearest

Whole
Tenth
Hundredth
Thousandth
1st significant no.
2nd significant no.

I can estimate mentally using various strategies which I am confident in using
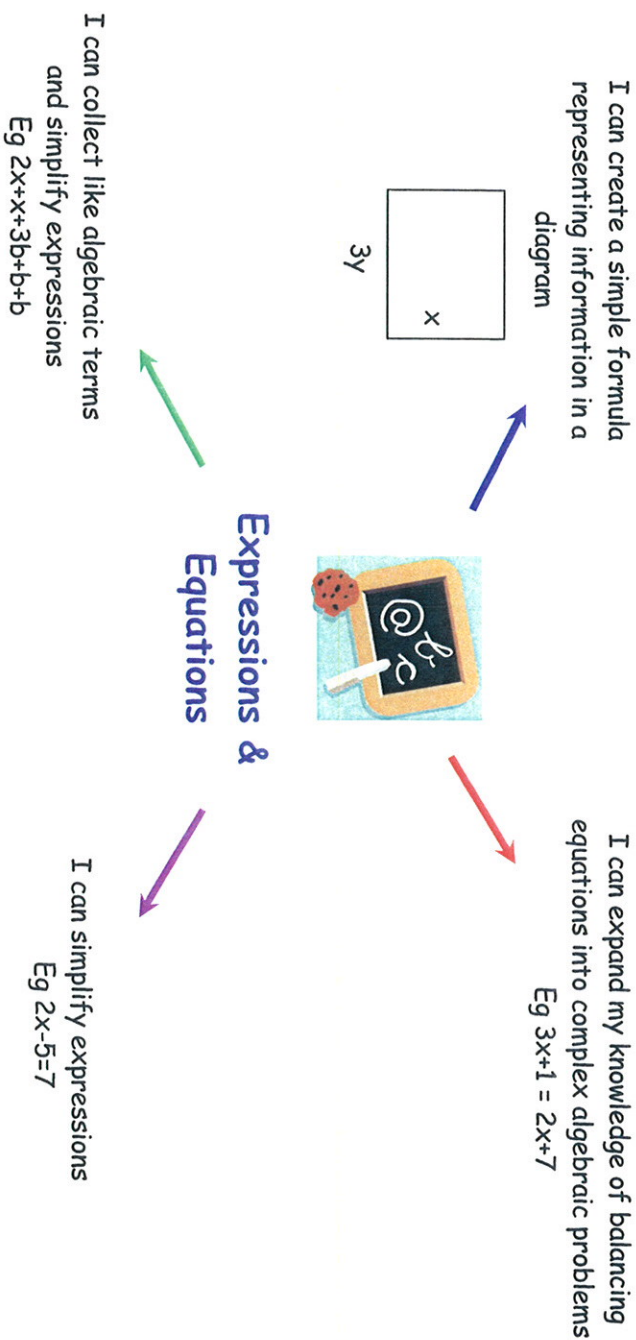
I am able to assess the degree of accuracy required of my answer in relation to the event/situation being measured

22-11 = ?

I can collect like algebraic terms, simplify expressions and evaluate using substitution. **MTH 3-14a**

Having discussed ways to express problems or statements using mathematical language, I can construct, and use appropriate methods to solve, a range of simple equations. **MTH 3-15a**

I can create and evaluate a simple formula representing information contained in a diagram, problem or statement. **MTH 3-15b**

Expressions & Equations

I can create a simple formula representing information in a diagram

3y

x

I can expand my knowledge of balancing equations into complex algebraic problems

Eg 3x+1 = 2x+7

I can collect like algebraic terms and simplify expressions

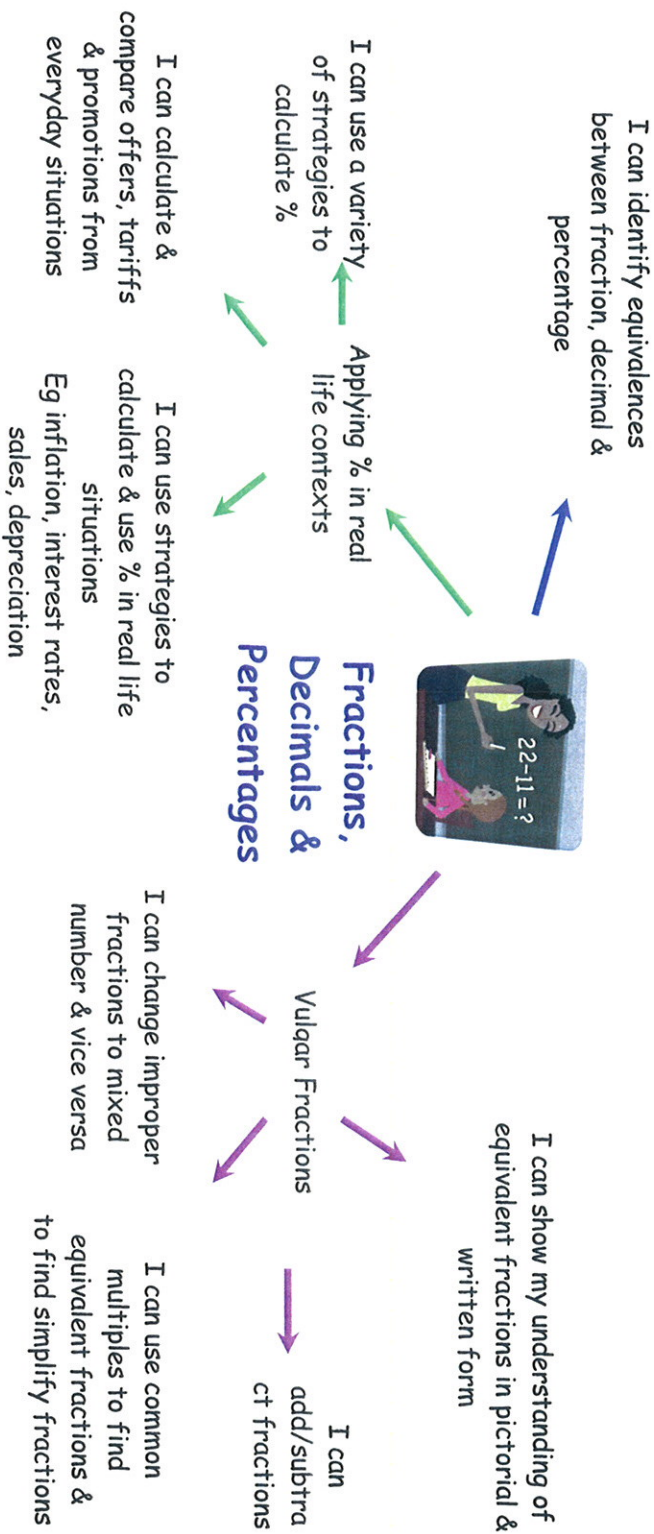Eg 2x+x+3b+b+b

I can simplify expressions

Eg 2x-5=7

I can solve problems by carrying out calculations with a wide range of fractions, decimal fractions and percentages, using my answers to make comparisons and informed choices for real life situations. **MNU 3-07a**

By applying my knowledge of equivalent fractions and common multiples, I can add and subtract commonly used fractions. **MTH 3-07b**

Having used practical, pictorial and written methods to develop my understanding, I can convert between whole or mixed numbers and fractions. **MTH 3-07c**

Fractions, Decimals & Percentages

I can identify equivalences between fraction, decimal & percentage

I can use a variety of strategies to calculate %

Applying % in real life contexts

I can calculate & compare offers, tariffs & promotions from everyday situations

I can use strategies to calculate & use % in real life situations

Eg inflation, interest rates, sales, depreciation

Vulgar Fractions

I can show my understanding of equivalent fractions in pictorial & written form

I can change improper fractions to mixed number & vice versa

I can add/subtra ct fractions

I can use common multiples to find equivalent fractions & to find simplify fractions

Numeracy & Mathematics

Mathematic   its impact on the world, past, present and future

Third Level

I have worked with others to research a famous mathematician and the work they are known for, or investigated a mathematical topic, and have prepared and delivered a short presentation. MTH 3-12a

Archimedes
Fibonacci
Pascal
Pythagoras
Babbage
Descartes
Lovelace
Banneker

I can research &
deliver a short
presentation on
discoveries in
maths

Impact on the
world, past,
present & future

Virtually Yours in Maths—Famous Mathematicians
www.ncsu.edu/midlink/vy/vymath.htm

I can create a presentation
on a mathematical topic of
personal interest for my
class

I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task and using a formula to calculate area or volume when required. MNU 3-11a

Having investigated different routes to a solution, I can find the area of compound 2D shapes and the volume of compound 3D objects, applying my knowledge to solve practical problems. MTH 3-11b

Measurement

I can use my knowledge of area to solve practical problems eg wallpaper, carpeting

I am able to dissect compound 2D shapes to calculate area

Area

I am able to use practical methods of estimating & calculating areas

I can use different formula to calculate areas of shapes

I am able to select the appropriate measuring equipment to accurately measure length, weight & capacity

Volume

I can find the volume of compound 3D objects

I am able to use practical methods of estimating & calculating of capacity & volume

I can use different formula to calculate volume of 3D objects
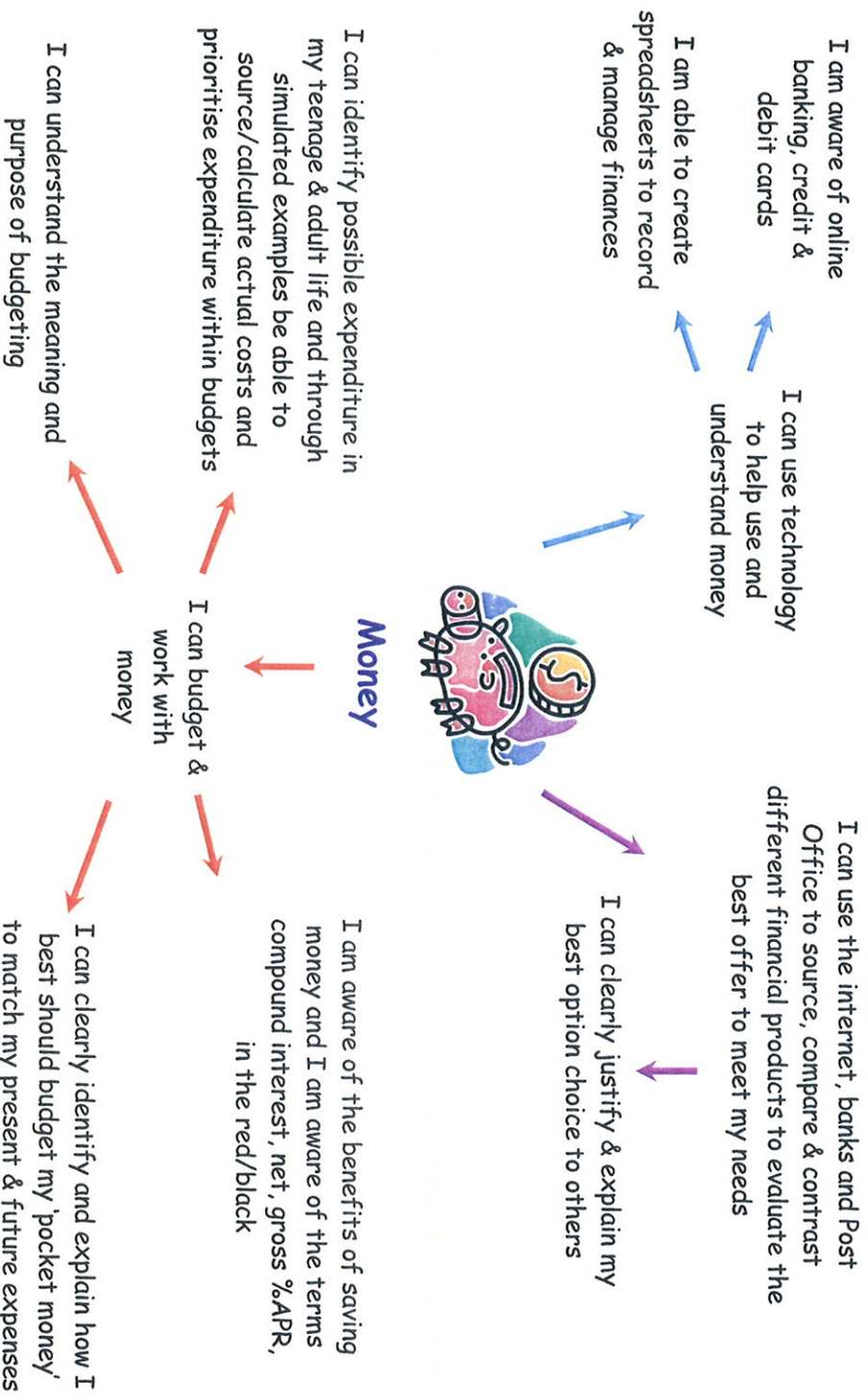
I am aware of the difference between volume & capacity

I When considering how to spend my money, I can source, compare and contrast different contracts and services, discuss their advantages and disadvantages, and explain which offer best value to me. **MNU 3-09a**

I can budget effectively, making use of technology and other methods, to manage money and plan for future expenses.
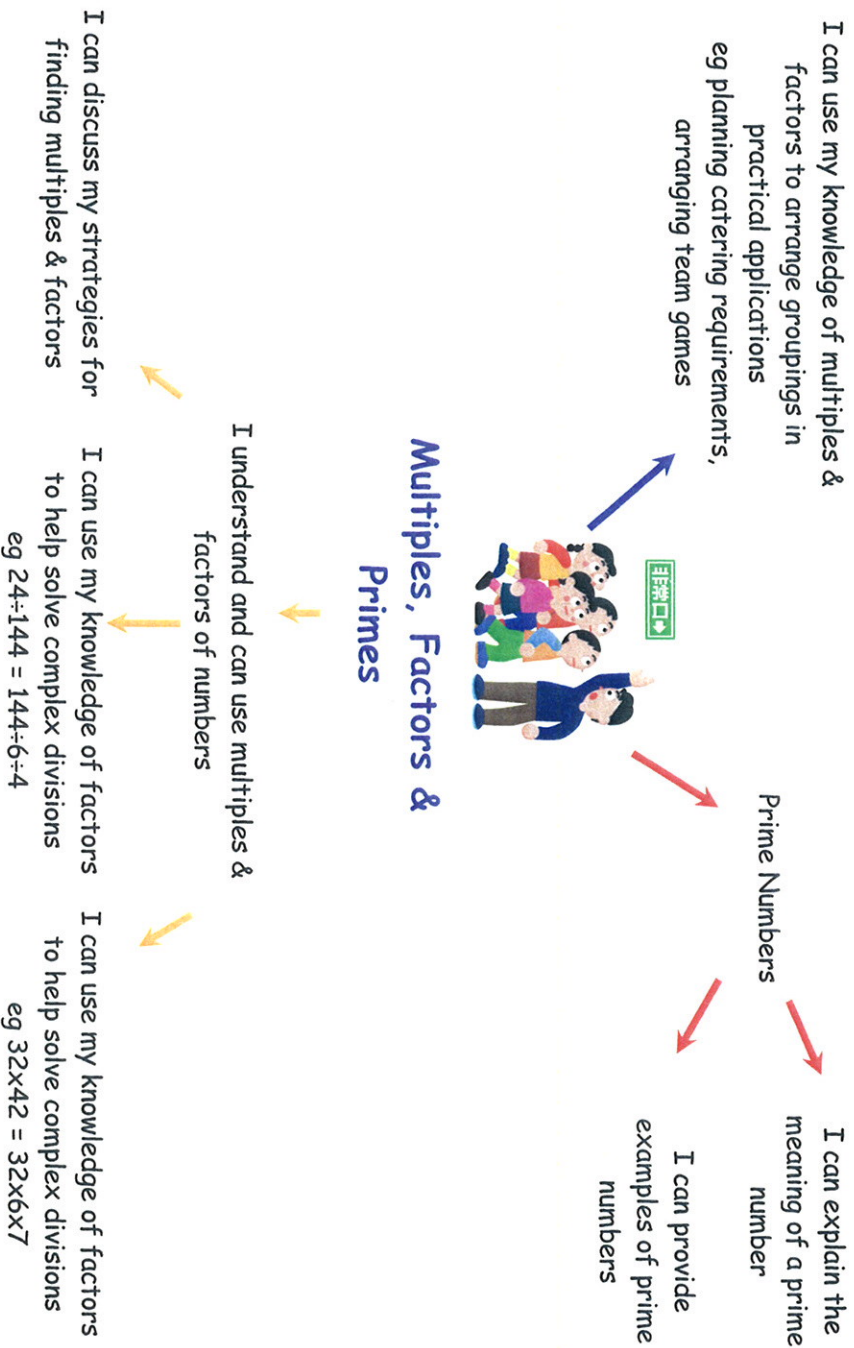**MNU 3-09b**

Money

I am aware of online banking, credit & debit cards

I can use technology to help use and understand money

I am able to create spreadsheets to record & manage finances

I can identify possible expenditure in my teenage & adult life and through simulated examples be able to source/calculate actual costs and prioritise expenditure within budgets

I can understand the meaning and purpose of budgeting

I can budget & work with money

I can clearly identify and explain how I best should budget my 'pocket money' to match my present & future expenses

I am aware of the benefits of saving money and I am aware of the terms compound interest, net, gross %APR, in the red/black

I can clearly justify & explain my best option choice to others

I can use the internet, banks and Post Office to source, compare & contrast different financial products to evaluate the best offer to meet my needs

I have investigated strategies for identifying common multiples and common factors, explaining my ideas to others, and can apply my understanding to solve related problems. MTH 3-05a

I can apply my understanding of factors to investigate and identify when a number is prime and can explore and explain the application of prime numbers in today's world. MTH 3-05b

Multiples, Factors & Primes

I can use my knowledge of multiples & factors to arrange groupings in practical applications
eg planning catering requirements, arranging team games

Prime Numbers

I can explain the meaning of a prime number

I can provide examples of prime numbers

I understand and can use multiples & factors of numbers

I can use my knowledge of factors to help solve complex divisions
eg 24÷144 = 144÷6÷4

I can use my knowledge of factors to help solve complex divisions
eg 32x42 = 32x6x7

I can discuss my strategies for finding multiples & factors

MNU 3-04a

I can use my understanding of numbers less than zero to solve simple problems in context.

Negative Numbers

I can use my understanding of debt and profit in business and in personal savings to calculate changing balances across the zero

I am aware of examples of the use of negative numbers in measuring temperature and can identify and calculate the rise and fall in degrees between temperatures passing through zero degrees

I can extend my knowledge of co-ordinates location to the negative x and negative y axis

I am able to calculate simple algebraic problems with and understanding of negative and positive numbers

Eg -2-3=

3-(-4)=

3-4=

4+(-3)=

Mathematics
Patterns & ationships
Third Level

Having explored number sequences, I can establish the set of numbers generated by a given rule and determine a rule for a given sequence, expressing it using appropriate notation. **MTH 3-13a**

Patterns & Relationships

I am able to determine a rule within a table

Eg Posts - Bars

2	5
3	
10	
4	
:	

I can able to establish the set numbers generated by a given rule

Eg How many ....

I am able to determine a rule for a given sequence.

Eg 1, 3, 7, 12 ...

Having explored the notation and vocabulary associated with whole number powers and the advantages of writing numbers in this form, I can evaluate powers of whole numbers mentally or using technology. MTH 3-06a

Powers & Roots

I can calculate sums with powers of 10
10^1 10^2 10^3

I can express 5000 as a whole number between 1 and 10 multiplied by a power of 10

I can use scientific notation to express number
$643 = 6.43 \times 10^2$

I can understand the notation and vocabulary associated with square roots, cube roots
$\sqrt{64}$ $\sqrt[3]{64}$

I can understand the notation and vocabulary associated with square and cubed numbers
9^2 5^3

I can use a calculator to evaluate $\sqrt{19}$ to 2 decimal place

I can show how quantities that are related can be increased or decreased proportionally and apply this to solve problems in everyday contexts.

Ratio & Proportion

I understand and can establish the ratio between related quantities

Eg 20 boys : 30 girls

= 2 : 3

I am able to apply my knowledge of ratio to keep the proportion the same when solving problems in real life situations

Eg Cooking for large numbers

Helpers on school trip

Having investigated a range of methods, I can accurately draw 2D shapes using appropriate mathematical instruments and methods.

2D & 3D Shape

I can draw polygons using a protractor, compass & ruler using my knowledge of interior angles

Eg hexagon = 360÷6

I can draw quadrilaterals using a ruler & protractor
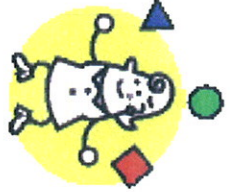
I can draw equilateral and isosceles triangles using a compass and ruler

I can draw equilateral and isosceles triangles using a ruler and protractor

MNU 3-10a

Using simple time periods, I can work out how long a journey will take, the speed travelled at or distance covered, using my knowledge of the link between time, speed and distance.

I can calculate distance, speed & time using known formula

Time

I can use various strategies to calculate durations in real life contexts

Mentally counting before/back in time

Written using 24hr time

I can use my skills & knowledge of Distance, Speed, Time & Durations to plan journeys, holiday schedules, travel times