Aspire, Believe, Succeed

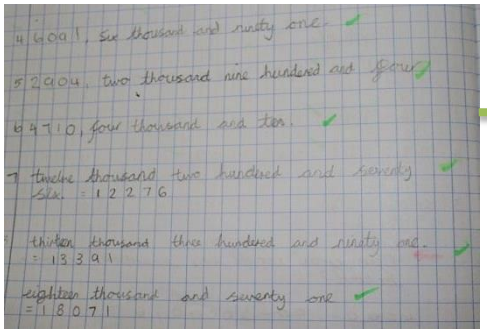
Maths Standards File

Year 5 Maths

KPIs	Performance Standard
Number and place value Reads, writes, orders and compares numbers to at least 1,000,000 and determines the value of each digit Interprets negative numbers in context, counts forwards and backwards with positive and negative whole numbers including through zero **Addition and subtraction** Adds and subtracts whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction) Numbers mentally with increasingly large numbers (eg 12,462 - 2,300 = 10,162) **Multiplication and division** Identifies multiples and factors including finding all factor pairs of a number and common factors of two numbers Solves problems involving multiplication and division including using a knowledge of factors and multiples, squares and cubes Solves problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates **Fractions (including decimals)** Compares and orders fractions whose denominators are all multiples of the same number Reads and writes decimal numbers as fractions eg 0.71 = 71/100 Reads, writes, orders and compares numbers with up to three decimal places Solves problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25	With reference to the KPIs By the end of Y5, a child should be fluent in formal written methods for addition and subtraction. Using a developing knowledge of formal methods of multiplication and division, a child should be able to solve problems including properties of numbers and arithmetic A child can: • make connections between fractions, decimals and percentages; • classify shapes with geometric properties and use the vocabulary needed to describe them; and • read, spell and pronounce mathematical vocabulary correctly.

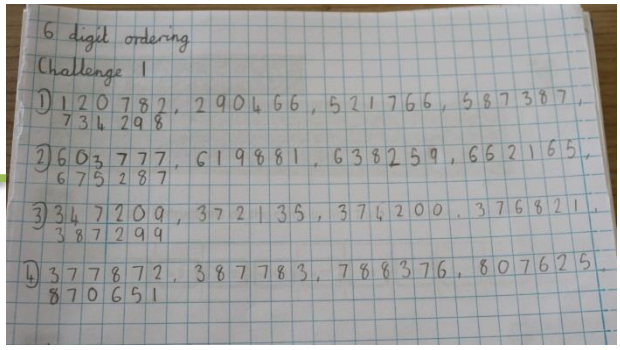
KPIs cont'd	Performance Standard
Measurement Converts between different units of metric measure (eg kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) Measures and calculates the perimeter of composite rectilinear shapes in centimetres and metres Calculates and compares the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) **Geometry: Properties of shape** Draws given angles and measures them in degrees (0) Distinguishes between regular and irregular polygons based on reasoning about equal sides and angles **Geometry: position and direction** Covered in Y6 Statistics Completes, reads and interprets information in tables, including timetables	

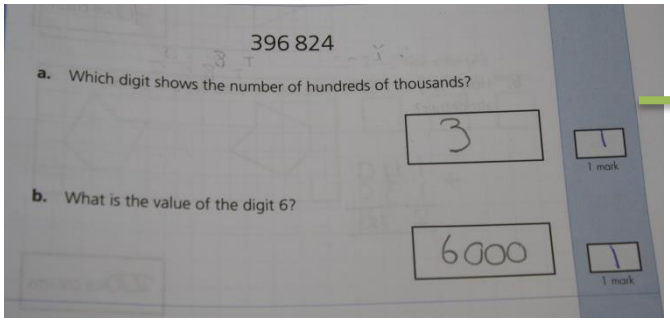
KPI: Number and place value - Reads, writes, orders and compares numbers to at least 1,000,000 and determines the value of each digit.



Children can independently write in digits and words numbers up to 1,000,000.

Children can order numbers up to 1,000,000.

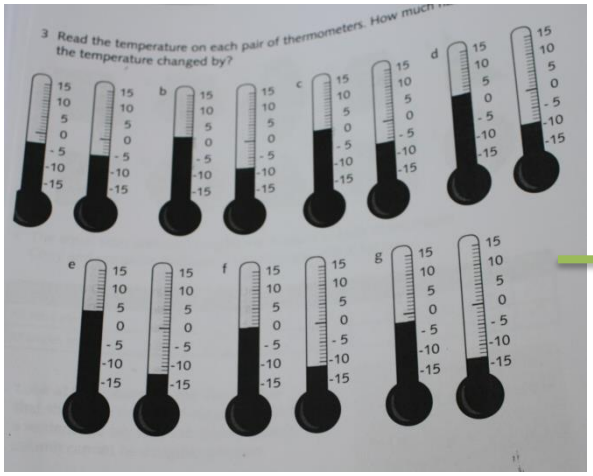




Children can apply their knowledge of numbers up to 1,000,000 to determine the value of different digits in a 6 digit number in the context of a test.

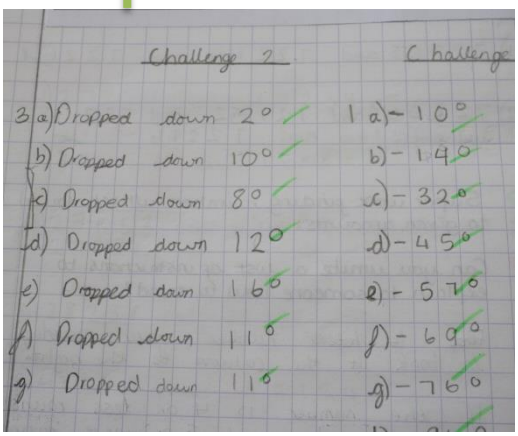
Commentry:
When given a number of any size (up to at least 1,000,000), the child can use their place value knowledge to order the numbers. In any context, the child can state the value of each digit. The child can confidently write these numbers in digits or words spelling them correctly.

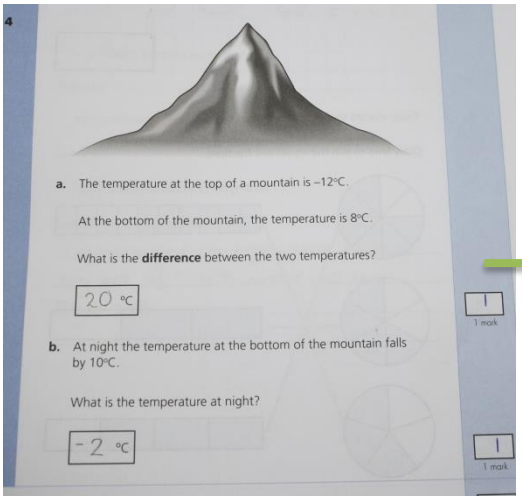
KPI: Number and place value- Interprets negative numbers in context, counts forwards and backwards with positive and negative whole numbers through including through zero.



Children can work with negative numbers.

In this context children were finding the difference between temperatures on different thermometers.

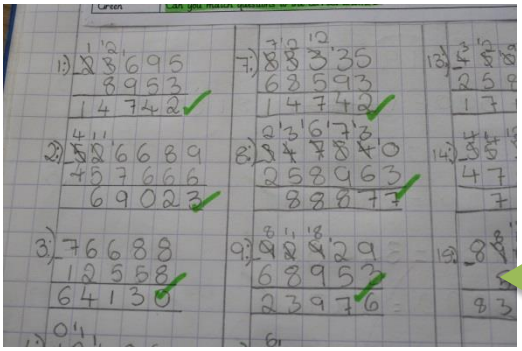




Children can apply their knowledge of negative numbers in the context of a test question, finding the difference between two temperatures and subtracting from a negative number.

Commentry:
The child can confidently use negative numbers. They can find the difference between two negative numbers or a positive and negative number. The child can add to and subtract from a negative number. They can label a blank number line which passes through zero (not shown).

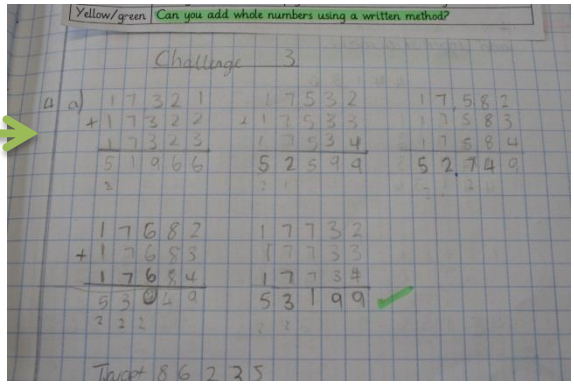
KPI: Addition and subtraction- Add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction)

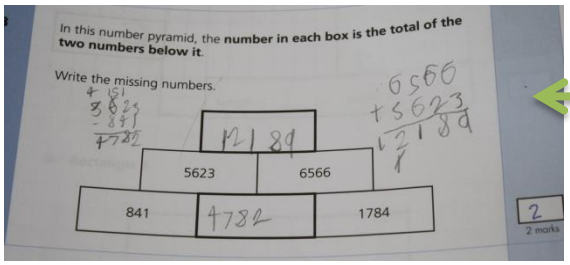


Children can use the written method to add and subtract number with more than four digits.

Children apply their knowledge of the written method in a range of different contexts

E.g. in this example where children were investigating three consecutive numbers which make a given value.

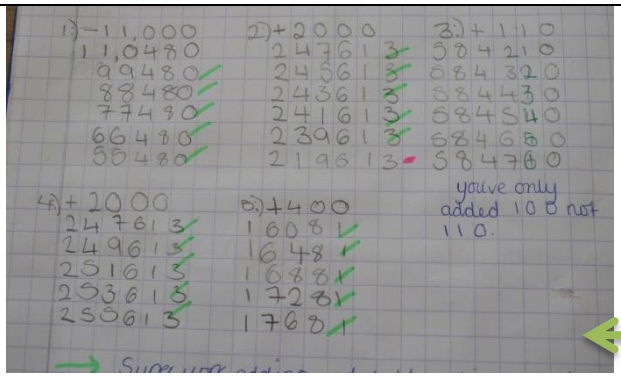




Children apply their knowledge of written methods in the context of a test.

Commentry:
The child is secure in the use of columnar method for addition and subtraction. They are able to apply this to problem solving. For example, in the example above the children were investigating three consecutive numbers which make a given value. They are able to add/ subtract numbers with a varied number of digits.

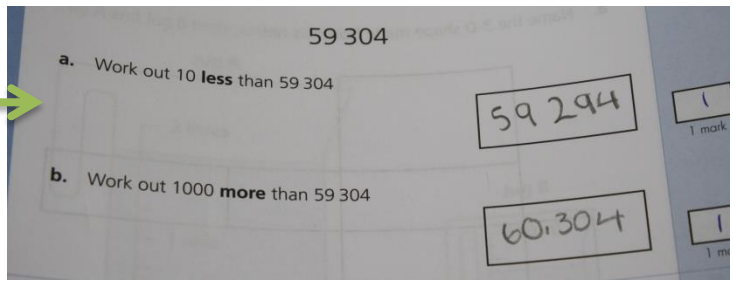
KPI: Addition and Subtraction – adding and subtracting numbers mentally with increasingly larger numbers.



Children recognise which digits change when adding and subtracting numbers mentally as well as which digits stay the same.

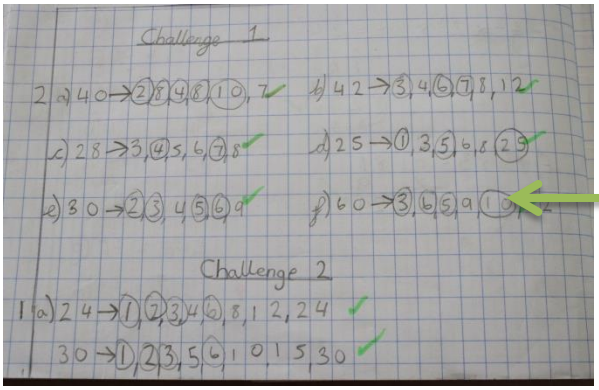
Children add and subtract numbers with increasing complexity e.g. 120, 2100.

Children apply their knowledge of adding and subtracting numbers mentally to a test situation not relying on the written method to find the answers.



Commentry:
The child has a range of methods to use when adding/ subtracting mentally. They are able to select the method which best suits the task/ numbers. In the example above place value has been used to add/ subtract, instead of a more formal written method. The child is able to explain why they have chosen the method they have.

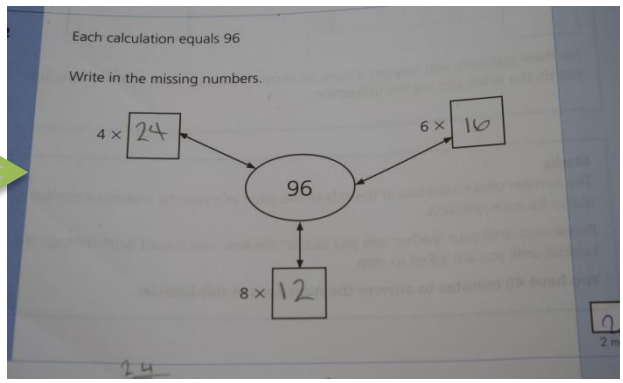
KPI: Multiplication and division – Identifies multiples and factors including finding all factor pairs of a number and common factors of two numbers.



Children can explain what the terms multiple and factor mean.

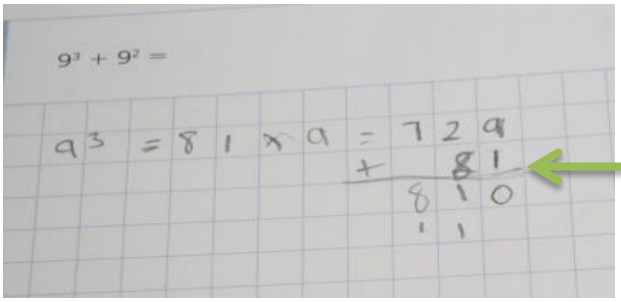
They can find multiples and factors of a given number and highlight those which are common.

Children can apply what they know about finding multiples and factors in the context of a test.



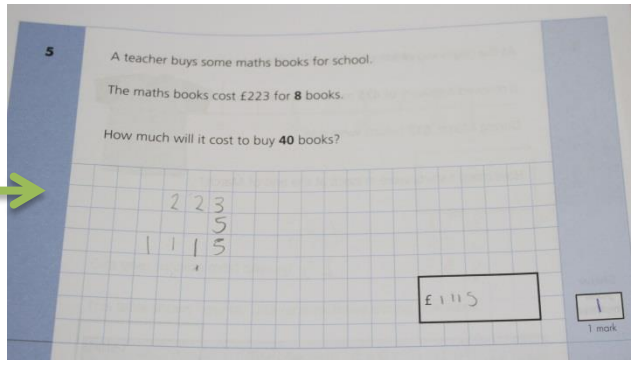
Commentry:
The child knows and understands the terms 'multiple' and 'factor'. They are able to give the factors of numbers which appear in the times tables up to 12x12. In the example above a child has applied their knowledge of factors to problem solving and used their multiplication knowledge to calculate the factors of 96.

KPI: Multiplication and division- solves problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes.



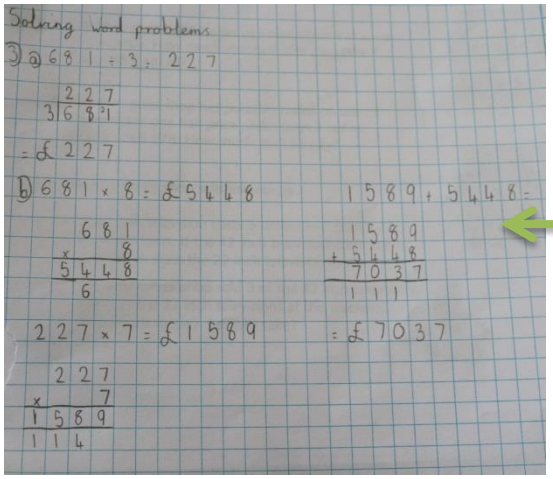
Children understand and use the terms factor, multiples, square and cube.

Children can apply this knowledge in the context of a test.



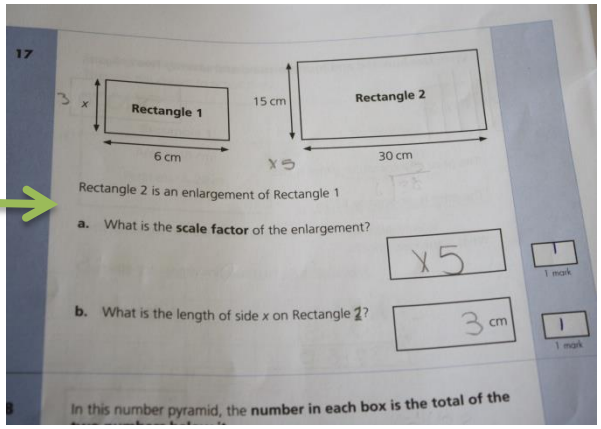
Commentry:
The child can recall the square numbers and knows how to calculate cube numbers. In the example above the child solved a problem by recognising 8 is a factor of 40 and using this to calculate the answer.

KPI: Multiplication and division - Solve problems involving multiplications and division including scaling by simple fractions and problems involving simple rates.



Children can recognise when a scale factor has been used and can use this to solve a question/problem. In this context children were using the cost of one television to find the cost of more than one.

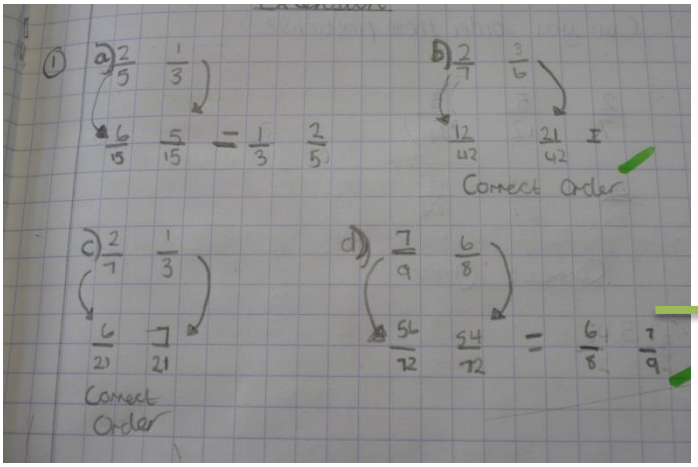
Children can apply their knowledge in the context of a test.



Commentry:
The child can confidently identify when scale factor has been used or needs to be used to solve a problem. They can use multiplication or division to inverse the scale factor. In the example at the top the child finds the cost of one television and then uses this to find the cost of more than one.

The second example shows the child is able to identify the scale factor used, again applying their knowledge of inverse between multiplication and division. They then use this to calculate the length of one side.

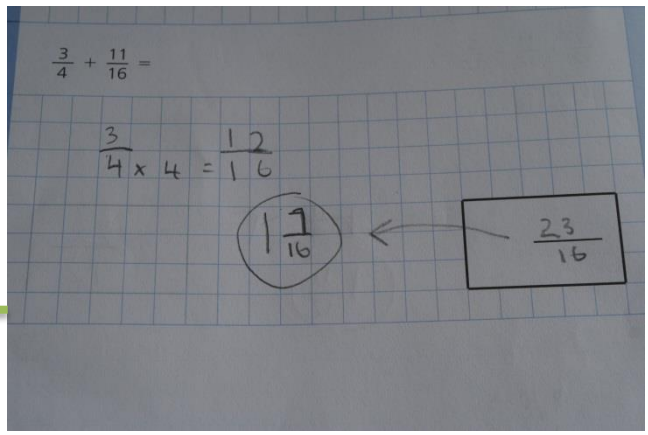
KPI: Fractions (including decimals) - Compares and orders fractions where denominators are all multiples of the same number.



Children can convert factions so they have the same denominator, recognising denominators that are multiples of the same number.

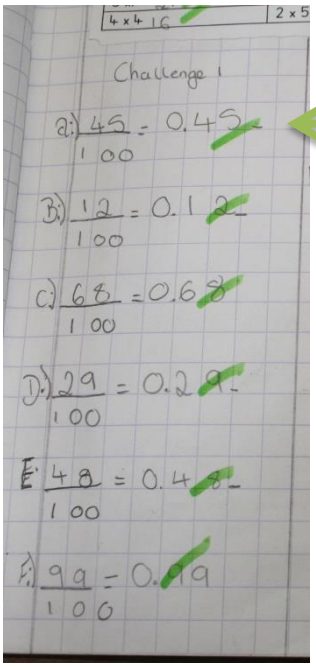
Children order the fractions according to their original format.

Children can apply what they know about converting fractions in the context of a test



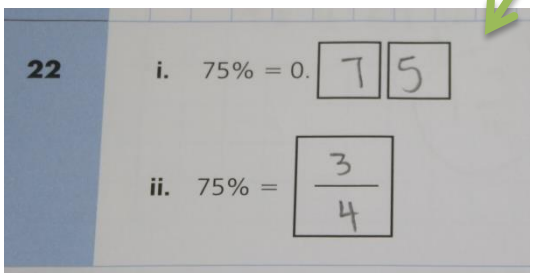
Commentry:
The children can confidently compare fractions which have common denominators. Where they are asked to compare fractions with different denominators, they are able to convert the fractions, so that their denominators are common, enabling them to order/ compare them.

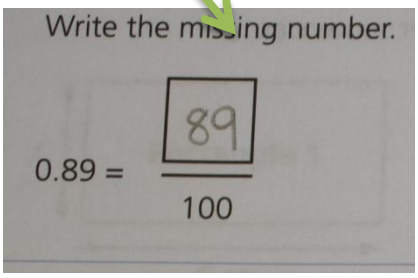
KPI: Fractions (including decimals) - reads and writes decimal numbers as fractions.



Children can write decimals as fractions.

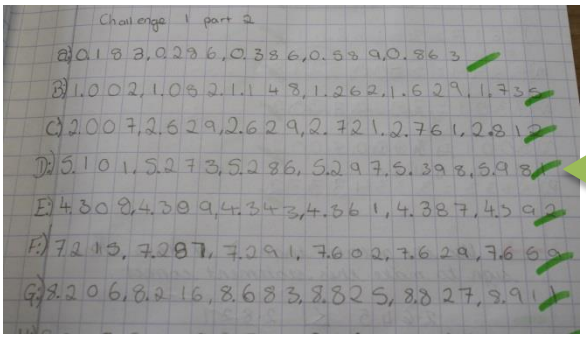
Children can apply their knowledge of converting fractions and decimals in the context of a test.





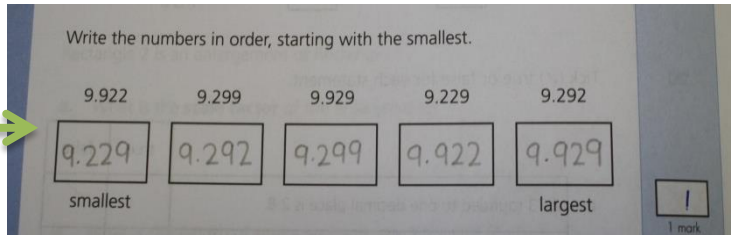
Commentry:
The child can confidently convert any decimal number to a fraction. They know and can recall the common fraction/ decimals, e.g. ¾=0.75, ¼=0.25, 1/5=0.2, etc.

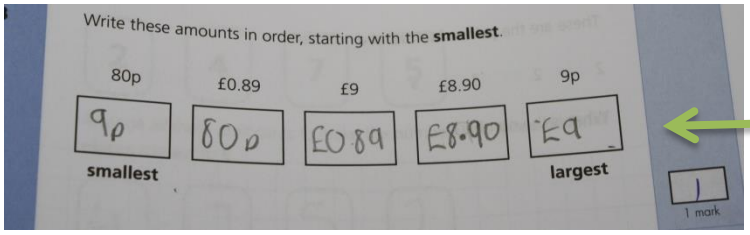
KPI: Fractions (including decimals) - Reads, writes, orders and compares numbers with up to three decimal places.



Children can order numbers with three decimal places.

Children can apply their knowledge of ordering decimals in the context of a test.

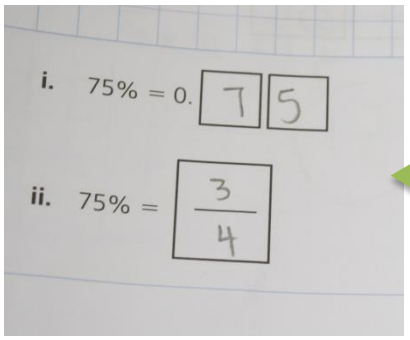




Children can apply their knowledge of ordering decimals in a different context e.g. money, weight or distance.

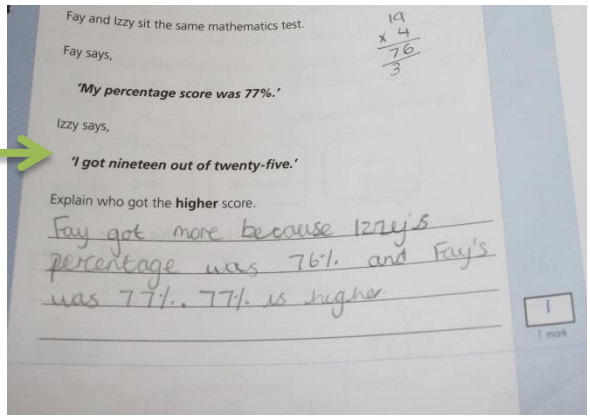
Commentry:
The child can use their place value knowledge to order decimal numbers, including in contexts e.g. using money notation.

KPI: Fractions (including decimals) – solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5, and those fractions with a denominator of a multiple of 10 or 25.



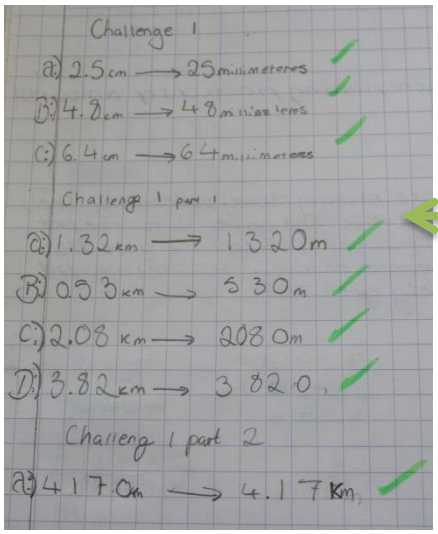
Children can convert between percentages and decimals.

Children can apply what they have learnt in the context of a problem.



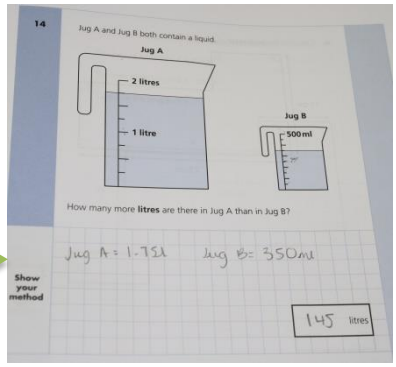
Commentry:
The child knows the percentage, fraction and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5, etc. In the second example above, the child uses their knowledge of fractions to calculate a percentage. They convert 19/25 to 76/100.

KPI: Measurement – converts between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)



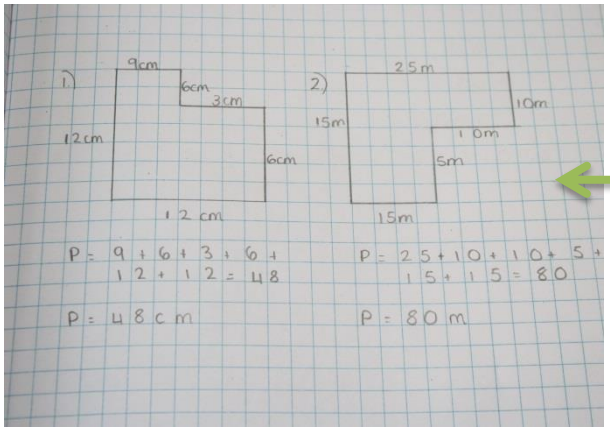
Children can convert between a range of metric measures ensuring they use the correct unit of measurement.

Children can apply their knowledge of conversion in order to answer test based questions.



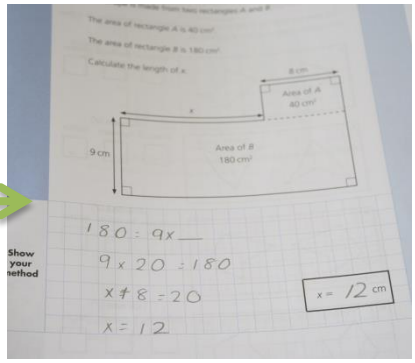
Commentry:
The child knows the conversion rates for each unit of measurement. They can convert measurements using the correct notation and units of measurement. They can apply this to a range of real life contexts, e.g. weight, capacity, length, etc)

KPI: Measurement- Measures and calculates the perimeter of composite rectilinear shapes in centimetres and metres.



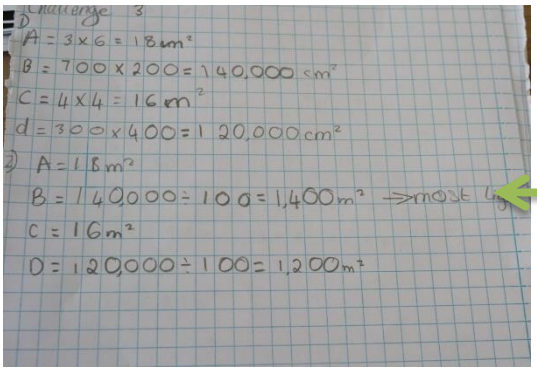
Children can calculate and measure the perimeter of a composite rectilinear shape.

Children apply what they have learnt in the context of a test.



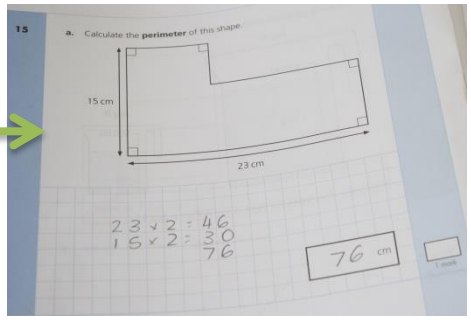
Commentry:
The child can calculate the perimeter of composite rectilinear shapes, including those where they must first find the lengths of missing sides. They write the answers using the correct notation and unit of measurement.

KPI: Measurement- Calculates and compares the area of rectangles (including squares) and including using standard units, square centimetres (cm^2) and square metres (m^2)



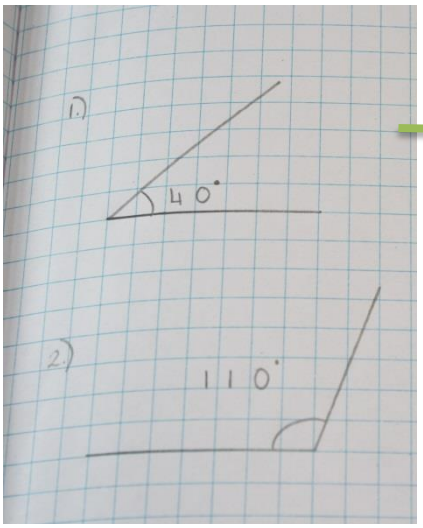
Children can calculate the area of a rectangle and then compare this with the area of other shapes.

Children can apply what they know about area to a test question.



Commentry:
The child can calculate the area of rectangles (including squares). They can use this knowledge to compare the areas of different rectangles explaining which is larger or smaller. In the first example, the children were given a range of windows and investigated which one let the most light through. In the second example the child has found the missing length based on the area.

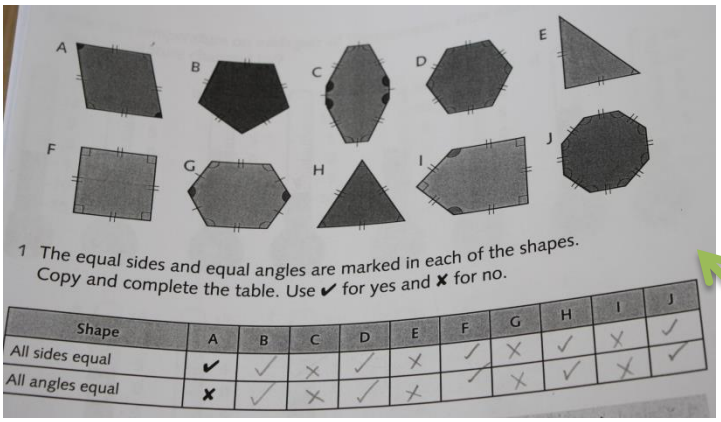
KPI: Geometry: properties of shape- Draws given angles and measures them in degrees (^{o})



Children can measure angles using a protractor.
Children can measure angles to a given size.

Commentry:
The child can use a protractor to measure/ draw an angle with an accuracy of within 2 ^{o} .

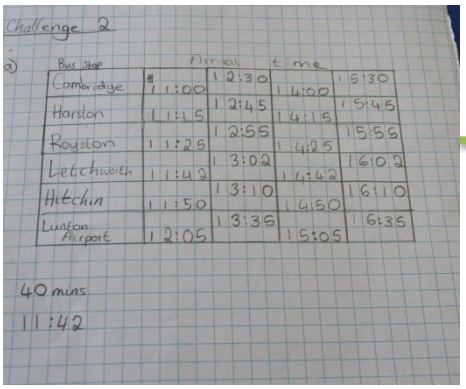
KPI: Geometry: properties of shape – distinguishes between regular and irregular polygons based on reasoning about equal sides and angles.



Children can explain the difference between regular and irregular polygons using the size of angles and lengths.

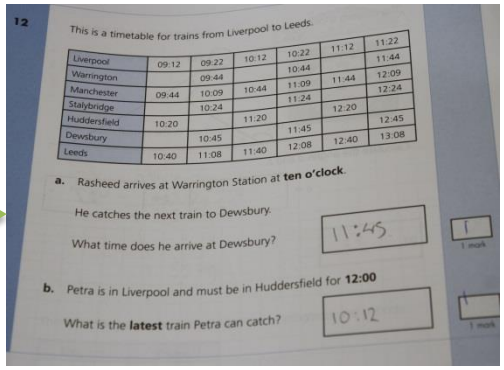
Commentry:
The child was able to identify whether each shape had equal sides and angles. From this, they classified each shape as regular or irregular.

KPI: Statistics – completes reads and interprets information in tables, including timetables.



Children can read and complete a table to find the necessary information to answer a range of questions.

Children can apply their knowledge of reading timetables to answer test based questions



Commentry:
The child can understand the data in a table and is confident in using this data to answer questions. They can also interpret the data to fill in gaps on the table or to answer questions which are in real life contexts. In this example the child has identified the train that would be needed in order to arrive at the destination at a given time.