St. Peter's RC Primary School
Policy for learning and teaching mathematics
October 2020

Article 28 (right to education) Every child has the right to an education. Primary education must be free and different forms of secondary education must be available to every child. Discipline in schools must respect children's dignity and their rights. Richer countries must help poorer countries achieve this.

Article 29 (goals of education) Education must develop every child's personality, talents and abilities to the full. It must encourage the child's respect for human rights, as well as respect for their parents, their own and other cultures, and the environment.

Rationale

This policy, whilst allowing for individuality and diversity, reflects the shared values of our staff, pupils and parents. We offer a mathematics curriculum which provides equality of opportunity for all pupils, irrespective of ability, gender or ethnic background. We aim to provide pupils with a solid grounding in the basic skills of mathematics (including mental agility), so that they can use and apply these skills in a wide variety of contexts. We aim to support staff to feel confident and skilled in delivering the Curriculum for Excellence Mathematics and Numeracy Experiences and Outcomes through professional development, ongoing support from the School Maths Co-ordinator and the provision of high quality concrete resources, textbooks and online resources.

The specific aims of our mathematics programme are:

- To promote enjoyment and enthusiasm for maths;
- To promote confidence and competence with a secure knowledge of number facts and their application in money and measurement;
- To equip pupils with the skills to solve problems mentally, selecting an efficient strategy from a range of known approaches;
- To make use of diagrams and informal notes to help them to record steps when using mental methods that generate more information than can be kept in their heads
- To quickly identify when a mental strategy is not appropriate and, in these cases, have an efficient, reliable written method which they can use.
- To develop the ability to solve problems through decision making and reasoning in a range of contexts;
- To develop practical understanding of the ways in which information is gathered and presented;
- To explore features of shape, position and movement;
- To understand the importance of mathematics in everyday life.

1. CURRICULUM

Pupils are entitled to a broad, balanced and interesting curriculum. We use the Mathematics and Numeracy Experiences and Outcomes in the Curriculum for Excellence to plan our curriculum. We adhere to the 7 Principles of Curricular Design (Challenge and Enjoyment, Breadth, Progression, Depth, Personalisation and Choice, Coherence and Relevance) to plan experiences in

Number, money and measure

- Estimation and rounding
- Number and number processes
- Multiples, factors and primes
- Powers and roots
- Fractions, decimal fractions and percentages
- Money
- Time
- Measurement
- Mathematics – its impact on the world, past, present and future
- Patterns and relationships
- Expressions and equations.

Shape, position and movement

- Properties of 2D shapes and 3D objects
- Angle, symmetry and transformation.

Information handling

- Data and analysis
- Ideas of chance and uncertainty.

In addition, we are committed to promoting confidence, accuracy and agility in mental maths and each class has a specific focus for taught daily Mental Maths lessons.
We believe that Mental Maths should mean more than just mental calculation. It should be taught every day, giving children a range of practical opportunities to secure the basics of number skills for addition, subtraction, multiplication and division.

2. LEARNING AND TEACHING

All pupils have at least one maths lesson every day. Every class has twenty minutes' mental maths every day in addition to the main maths lesson which lasts between 30 minutes and one hour. In all our maths teaching, we must be aware of the learning intentions and success criteria

- WHY we are teaching a particular topic
- WHAT we expect the children to gain / learn
- HOW we are going to approach / teach it
- HOW we are going to assess the learning

- Planning

Planning reflects the needs of the class, group and individuals. Teachers make medium term plans based on Curriculum for Excellence Outcomes and Experiences, blocking in the broad areas of learning and ensuring appropriate balance between practical activities and jotter work . Teachers then complete the details of activities, appropriate resources, homework, evaluation and assessment. The plans should be shared electronically on the Google Classroom Class plans page. A hard copy should be printed for the Forward Planning file. Full use is made of the planning materials and Numeracy Progressions on the ACC Curriculum Resources shared Google Drive.

- **The Learning and Teaching Environment**

All teachers create the climate for successful learning by promoting a positive environment:

Physical Environment All classrooms include displays that promote and celebrate mathematical thinking, including questions, problems of the week etc. Every classroom has a maths trolley and full use is made of games, concrete materials, the 100+ board, active learning materials such as 'Show Me' boards, number fans etc. The interactive whiteboard, the Education City website and the RM Easimaths programmes are used to promote and consolidate learning. The vocabulary used in mathematics is displayed and discussed regularly.

Social Environment Learners are encouraged to share their thinking and understanding with each other and the teacher. Assessment is for Learning strategies are used throughout the lesson. Peer support and collaborative learning are encouraged. Games are used as an important learning tool and not just for early finishers.

Emotional Environment Learners know that risk taking is encouraged and valued. Mistakes are seen as learning opportunities. Dialogue between learners has to be meaningful and supportive.

- **Process**

Maths lessons are delivered in a variety of ways to groups, individuals and the whole class. Direct interactive teaching methods and active pupil participation are encouraged at all times. Teachers have the responsibility and flexibility to deliver lessons in a manner which is most effective for the learners.

There is an expectation that each lesson has a clear start and sustains a brisk pace:

- Starter – Begin each lesson by linking the learning to previous lessons. Interactive mental maths helps pupils to 'warm up' and develop agility and confidence.
- Learning and Teaching – The Learning Outcome and Success Criteria are shared with pupils. Using a whole class theme (eg Money), pupils and teacher develop learning in the chosen experience and outcome. There should be lots of dialogue and opportunities for all pupils to develop and test their thinking.
- Activity – Activities should be differentiated for varying abilities. Groups should be engaged in challenging and achievable activities which meet the learning outcomes. Teachers have a specific role to target and support individual learners and groups with differentiated questions which check understanding and extend learning. There is continuous assessment which helps teachers to plan next steps and decide how Pupil Support Assistants can support identified children.
- Plenary – Each lesson should end with a plenary to assess what has been learned and to inform future planning.

Problem Solving permeates the mathematics curriculum. We teach the strategies necessary for effective Problem Solving. Pupils are provided with opportunities to apply these strategies in a variety of contexts. The chance to experience open-ended problem solving activities is provided throughout the school.

Talking about learning in maths and discussing strategies are vitally important. Children should be able to explain a strategy to others and offer solutions to problems in ways which others can understand. Dialogue can only take place in a meaningful way if the learning environment is supportive. Learners should be engaged in a focused, purposeful manner.

Listening skills are an important development for dialogue to take place. There should be opportunities for pupils to present their strategies and solutions in a broad range of situations (eg pupil to teacher, pupil to pupil, pupil to group, group or pupil to class).

We use the Aberdeen City Progressive Vocabulary Booklet to ensure consistency in the language used by pupils and staff to express concepts. We show respect for pupils and families who explain thinking in different terms and use diagrams and symbols to demonstrate thinking and understanding. We are mindful that many of our pupils have English as an Additional Language and we seek to equip them with the language to talk about maths with classmates and teachers.

- **Meeting Pupils' Needs**

In order to meet the needs of each pupil, we try to provide all pupils with appropriate challenge and opportunities to experience success. In all classes, there are children of differing mathematical ability. This is recognised by staff, and suitable learning opportunities are provided for all children by matching the challenge of the task to the ability of the child. This may be through differentiation by outcome, differentiated group work, differentiated resources, working in mixed ability pairs or amount of adult support etc.

- **Support for Pupils**

We strive to achieve early identification of both mathematical difficulties and talents, and to provide those children with appropriate support to the best of our ability. This may involve a differentiated programme of work, Support for Learning input, an Individualised Educational Programme (IEP), special resources / materials or other form of in-class support.

- **Assessment**

Children are assessed continuously and the results of assessments inform teacher's planning. At the beginning of each new topic, teachers assess pupils' knowledge, understanding and skills in previous related outcomes using the 'Before you start' activities on the Heinemann Teacher Activity card. Throughout learning activities, staff use informal Assessment is for Learning (AiFL) strategies to recognise gaps in understanding through observation, discussion or checking written work. At the end of each topic, pupils complete short check ups or problem solving activities which provide evidence of learning.

Regular short mental maths tests encourage pupils to recall maths facts rapidly. Teachers differentiate tests to meet the needs of pupils and never call out the scores achieved by pupils.

Periodic holistic assessments give pupils the opportunity to demonstrate their knowledge and skills across several Experiences and Outcomes. Teachers work together to create appropriate holistic assessments which are completed three times per year.

Children complete formal computer-based Scottish National Standardised Assessments once in P1, once in P4 and once in P7.

- **Tracking progress**

Pupil progress is recorded in teachers' forward plans. Dates of achieving milestones are entered and predictions are made about when children are likely to attain the next level (Early, First, Second and, in exceptional cases, Third level). Pupils are developing their personal learning planners, recording areas where their understanding is secure and setting their targets for future learning. This information is passed to the receiving teacher as pupils pass from class to class

to ensure continuity and progression. During learning and teaching meetings, pupil progress is tracked so that additional support can be put in as necessary.

3. ATTAINMENT

We constantly strive to improve attainment in mathematics. Our goal is to see each child achieve his or her full potential. Pupils' progress is carefully tracked in an effort to ensure good progress from prior levels of attainment. In general, we would expect children to take three years to work through a level, showing secure knowledge, understanding and skills that can be applied in unfamiliar situations by the end of P1 (Early Level), P4 (First Level) and P7 (Second Level).

4. RESOURCES

We have a wide range of appropriate resources to support the teaching of mathematics. Each class area has a selection of everyday apparatus and the appendix to this policy lists resources held in all classrooms. Heinemann Active Maths pupil textbooks, online activities and games have been introduced to all classes. Other supplementary core texts are Heinemann Maths and TeeJay Maths. Most Heinemann Active Maths pupil textbooks are stored in the maths cupboard in the Resources room at the back of the library (Room 2). There is a big 100+ board in the main building and one in the Priest Gordon annexe. ICT is used appropriately to support learning and teaching. All teachers can access the Easiteach lessons and resources for their Interactive whiteboards via the teacher laptops.

5. HOMEWORK

All pupils have Education City passwords and pupils are encouraged to log on at home to practise Maths games. In P1 – P3, maths homework is sent home only when appropriate. This homework may involve practical challenges. If pupils are asked to write answers, clear expectations about this are shared with parents. In P4 – P7, maths homework is set every week. It is varied and may take the form of practical tasks where children apply their developing knowledge and skills eg in measuring. Children will be expected to practise concepts they are learning in class. Times table facts and number bonds are reinforced by homework tasks.

6. QUALITY ASSURANCE

Implementation

Class Teachers have responsibility for the effective implementation of this Policy in their own classrooms and for contribution to the further review, development and improvement of the policy.

The Headteacher is responsible for ensuring the provision of materials and for the organisation of appropriate opportunities for Continuing Professional Development for all staff.

Monitoring and Self Evaluation

The Headteacher has responsibility for monitoring the implementation of the Policy throughout the school through

- Learning and teaching meetings
- Scrutiny and discussion of forward plans, checking for evidence that mental strategies are being taught
- Learning walks/ classroom observations
- Sampling pupils' work on a regular basis through pupil interviews and jotter discussions
- Working alongside teachers in classes
- Evaluation and review of assessment data

Findings will inform all staff of areas of strength and those areas set out for improvement.

Review of Policy This policy will be reviewed in November 2022.

Mental Maths Appendix

Teaching 7 Addition and Subtraction Strategies

1. Counting forwards and backwards

Children first encounter the act of counting by beginning at one and counting on in ones. Their sense of number is extended by beginning at different numbers and counting forwards and backwards in steps, not only of ones, but also of twos, tens, hundreds and so on. The image of a number line helps them to appreciate the idea of counting forwards and backwards. They will also learn that, when adding two numbers together, it is generally easier to count on from the larger number rather than the smaller. Eventually 'counting-on' will be replaced by more efficient methods.

Progression:

Step 1	4 + 8 7 - 3 13 + 4 15 – 3 18 – 6	Count on in ones from 4 or count on in ones from 8 Count back in ones from 7 Count on from 13 Count back in ones from 15 Count back in twos
Step 2	14 + 3 27 – 4 18 – 4 30 + 3	Count on in ones from 14 Count on or back in ones from any two-digit number Count back in twos from 18 Count on in ones from 30
Step 3	40 + 30 90 – 40 35 - 15	count on in tens from 40 count back in tens from 90 or count on in tens from 40 count on in steps of 3, 4, or 5 to at least 50
Step 4	73 – 68 86 – 30 570 +300 960 - 500	Count on 2 to 70 then 3 to 73 Count back in tens from 86 or count on in tens from 30 Count on in hundreds from 300 Count back in hundreds from 960 or count on in hundreds from 500
Step 5	1 ½ + ¾	Count on in quarters
Step 6	1.7 + 0.5	Count on in tenths

2. Reordering

Sometimes a calculation can be more easily worked out by changing the order of the numbers. The way in which children rearrange numbers in a particular calculation will depend on which number facts they have instantly available to them.

It is important for children to know when numbers can be reordered

(eg $2 + 5 + 8 = 8 + 2 + 5$ or $15 + 8 – 5 = 15 – 5 + 8$ or $23 – 9 – 3 = 23 – 3 – 9$)

and when they cannot (eg $8 – 5 \neq 5 – 8$).

The strategy of changing the order of numbers only really applies when the question is written down. It is difficult to reorder numbers if the question is presented orally.

3. Partitioning using multiples of 10 and 100

It is important for children to know that numbers can be partitioned into, for example, hundreds, tens and ones, so that 326 = 300 + 20 + 6. In this way, numbers are seen as wholes, rather than as a collection of single-digits in columns. This way of partitioning numbers can be a useful strategy for addition and subtraction. Both numbers involved can be partitioned in this way, although it is often helpful to keep the first number as it is and to partition just the second number.

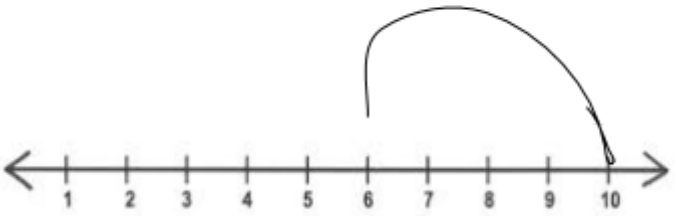
Progression:

Step 1	30 + 47 78 – 40 25 + 14	= 30 + 40 +7 = 70 – 40 -8 = 20 + 5 + 10 + 4 =20 + 10 + 5 + 4
Step 2	23 + 45 68 - 32	= 40 + 5 + 20 + 3 = 40 +20 + 5 +3 = 60 + 8 – 30 – 2 = 60 – 30 + 8 - 2
Step 3	55 + 37 365 - 40	= 55 + 30 + 7 = 85 + 7 = 300 + 60 + 5 – 40 = 300 + 60 – 40 + 5
Step 4	43 + 28 + 51 5.6 + 3.7 4.7 – 3.5	=40 + 3 + 20 + 8 + 50 + 1 = 20 + 20 + 50 + 3 + 8 + 1 = 5.6 + 3 + 0.7 = 8.6 + 0.7 = 4.7 – 3 – 0.5
Step 5	540 + 280 276- 153	= 540 + 200 + 80 = 276 – 100 – 50 - 3

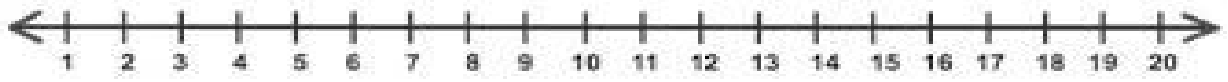
4. Partitioning bridging through multiples of 10

An important aspect of having an appreciation of number is to know when a number is close to 10 or a multiple of 10: to recognise, for example, that 47 is 3 away from 50, or that 96 is 4 away from 100. When adding or subtracting mentally, it is often useful to make use of the fact that one of the numbers is close to 10 or a multiple of 10 by partitioning another number to provide the difference. The use of an empty number line where the multiples of 10 are seen as 'landmarks' is helpful and enables children to have an image of jumping forwards or backwards to these 'landmarks'

6 + 7 = 6 + 4 + 3 = 10 + 3 = 13



6 + 7 = 6 + 4 + 3



6 10 13

Progression:

Step 1	As example above
Step 2	49 + 32 = 49 + 1 + 31
Step 3	57 + 14 = 57 +3 + 11 or 57 + 13 + 1
Step 4	3.8 + 2.6 = 3.8 + 02 + 2.4
Step 5	296 + 134 = 296 + 4 + 130 584 – 176 = 584 – 184 + 8 0.8 + 0.35 = 0.8 + 0.2 + 0.15

5. Partitioning (rounding and adjusting)

This strategy is useful for adding numbers that are close to a multiple of 10, for adding numbers that end in 1 or 2, or 8 or 9. The number to be added is rounded to a multiple of 10 plus a small number or a multiple of 10 minus a small number.

For example, adding 9 is carried out by adding 10 and then subtracting 1.

Subtracting 18 is carried out by subtracting 20 and adding 2.

A similar strategy works for decimals where numbers are close to whole numbers or a whole number of tenths. For example, 1.4 + 2.9 = 1.4 + 3 – 0.1 or 2.45 – 1.9 = 2.45 – 2 + 0.1

Progression:

Step 1	5 + 9 = 5 + 10 - 1
Step 2	34 + 9 = 34 + 10 -1 70 – 9 = 70 – 10 + 1
Step 3	58 + 71 = 58 + 70 + 1 84 – 19 = 84 – 20 +1
Step 4	38 + 69 = 38 + 70 – 1 64 - 19 = 64 – 20 + 1
Step 5	138 + 69 = 138 + 70 – 1 405 – 399 = 405 – 400 + 1 2 ½ + 1 ¾ = 2 ½ + 2 – ¼
Step 6	5.7 + 3.9 = 5.7 + 4.0 – 0.1

6. Partitioning – near doubles

If children have instant recall of doubles, they can use this information when adding two numbers that are very close to each other. So, knowing that 6 + 6 = 12, they can be encouraged to use this to help them find 7 + 6, rather than use a ‘counting on’ strategy or ‘building up to 10’. Children need to be secure in doubling and halving in order to use this near doubles strategy.

Progression:

Step 1	5 + 6	is double 5 and add 1 or double 6 and subtract 1
Step 2	13 + 14 40 + 39	is double 14 subtract 1 or double 13 add 1 is double 40 subtract 1
Step 3	18 + 16 36 + 35 60 + 70	is double 18 and subtract 2 or double 16 and add 2 is double 36 and subtract 1 or double 35 and add 1 is double 60 and add 10 or double 70 and subtract 10
Step 4	38 + 35 160 + 170 380 + 380	is double 35 and add 3 is double 150 and add 10 then add 20, or double 160 and add 10, or double 170 and subtract 10 is double 400 and subtract 20 twice
Step 5	1.5 + 1.6	is double 1.5 and add 0.1 or double 1.6 and subtract 0.1
Step 6	421 + 387	is double 400 add 21 and then subtract 13

7. Partitioning – Bridging through numbers other than 10

Time is a universal measure that is non-metric, so children need to learn that bridging through 10 or 100 is not always appropriate. A digital clock displaying 9.59 will, in two minutes time, read 10.01 not 9.61. When working with minutes and hours, it is necessary to bridge through 60 and with hours and days through 24. So to find the time 20 minutes after 8.50, for example, children might say 8.50 + 10 minutes takes us to 9.00, then add another 10 minutes.

Step 1	1 week = 7 days What time will it be in one hour's time? How long is it from 2 o'clock to 6 o'clock? It is half past seven. What time was it 3 hours ago? It is 7 o'clock in the morning. How many hours to mid-day?
Step 2	1 year = 12 months 1 week = 7 days 1 day = 24 hours 1 hour = 60 minutes What time will it be 1 hour after 9 o'clock? 10.30 to 10.45 9.45 to 10.15
Step 3	40 minutes after 3.30 50 minutes before 1.00 pm It is 10.40. How many minutes to 11.00? It is 9.45. How many minutes to 10.00?
Step 4	It is 8.35. How many minutes to 9.15?
Step 5	It is 11.30. How many minutes to 15.40?
Step 6	It is 10.45. How many minutes to 13.20?

Teaching 5 Multiplication and Division Strategies

1. Knowing multiplication and division facts to 12

Instant recall of multiplication and division facts is a key objective in developing children's numeracy skills. Learning these facts and being fluent at recalling them quickly is a gradual process which takes place over time and which relies on regular opportunities for practice in a variety of situations

Progression:

Step 1	Count in twos – 2, 4, 6, 8, ... to 20 Count in tens – 10, 20, 30 ... to 50 Count in fives – 5, 10, 15, 20, ... to 20 or more
Step 2	Count in fives – 5, 10, 15, 20, ... to at least 30 Recall the 2 times table up to 2 x 10 Recall the 10 times table up to 10 x 10 Recall division facts for the 2 and 10 times tables
Step 3	Count in threes – 3, 6, 9, 12, ... to 30 Count in fours – 4, 8, 12, 16, ... to 40 Recall the 5 times table up to 5 x 10 Recall the corresponding division facts
Step 4	Count in sixes, sevens, eights and nines Recall the 3 times table up to 3 x 10 Recall the 4 times table up to 4 x 10 Recall the corresponding division facts
Step 5	Know the square numbers (eg 2 x 2, 3 x 3, 4 x 4, etc) up to 10 x 10 Recall the 6 times table up to 6 x 10 Recall the 8 times table up to 8 x 10 Recall the 9 times table up to 9 x 10 Recall the 7 times table up to 7 x 10 Recall the corresponding division facts (N.B – this order recognises that children can use their knowledge of the 3 and 4 tables to help them with their 6 and8 times tables, before moving on to 9 and 7 times tables)
Step 6	Recall the 11 times table up to 11 x 10 Recall the 12 times table up to 12 x 10 Recall the corresponding division facts Know the squares of 11 and 12 (ie 11 x 11 and 12 x 12)

2. Multiplying and dividing by multiples of 10

Being able to multiply by 10 and multiples of 10 depends on an understanding of place value and is fundamental to being able to multiply and divide larger numbers

Progression:

Step 1	7 x 10 60 ÷ 10
Step 2	6 x 100 26 x 10 700 ÷ 100
Step 3	4 x 60 3 x 80 351 x 10 79 x 100 976 x 10 580 ÷ 10
Step 4	9357 x 100 9900 ÷ 10 737 ÷ 10 2060 ÷ 100
Step 5	23 x 50 637.6 x 10 135.4 ÷ 100

3. Multiplying and dividing by single digit numbers and multiplying by two digit numbers

Progression:

Step 1	9 x 2 5 x 4 18 ÷ 2 16 ÷ 4
Step 2	7 x 3 4 x 8 35 ÷ 5 24 ÷ 3 23 x 2 46 ÷ 2
Step 3	13 x 9 32 x 3 36 ÷ 4 93 ÷ 3
Step 4	428 x 2 154 ÷ 2 47 x 5 3.1 x 7
Step 5	13 x 50 14 x 15 153 ÷ 51 8.6 x 6 2.9 x 9 45.9 ÷ 9

4. Doubling and halving

The ability to double numbers is a fundamental tool for multiplication. Historically, all multiplication was calculated by a process of doubling and adding. Most people find doubles the easiest multiplication facts to remember, and they can be used to simplify other calculations. Sometimes it can be helpful to halve one of the numbers in a product and double the other.

Progression:

Step 1	7 + 7 is double 7
Step 2	7 + 7 = 7 x 2 Half of 14 is 7 Half of 30 is 15
Step 3	18 + 18 is double 18 Half of 18 is 9 60 x 2 is double 60 Half of 120 is 60 Half of 900 is 450 Half of 36 is 18
Step 4	14 x 5 = 14 x 10 ÷ 2 12 x 20 = 12 x 2 x 10 60 x 4 = 60 x 2 x 2
Step 5	36 x 50 = 36 x 100 ÷ 2 Half of 960 = 480 Quarter of 64 = Half of half of 64 15 x 6 = 30 x 3
Step 6	34 x 4 = 34 x 2 x 2 26 x 8 = 26 x 2 x 2 x 2 20% of £15 = 10% of £15 x 2 36 x 25 = 36 x 100 ÷ 4 = (36 ÷ 4) x 100 1.6 ÷ 2 = 0.8

5. Fractions, decimals and percentages

Children need an understanding of how fractions, decimals and percentages relate to each other. For example, if they know that ½ , 0.5 and 50% are all ways of representing the same part of a whole, then the calculations

½ x 40 40 x 0.5 50% of £40

can be seen as different versions of the same calculation.

Sometimes it might be easier to work with fractions, sometimes with decimals and sometimes with percentages. There are strong links between this section and the earlier section ‘Multiplying and dividing by multiples of 10’.

Progression:

Step 1	Find half of 8 Find half of 30
Step 2	Find one third of 18 Find one tenth of 20 Find one fifth of 15
Step 3	Find half of 9, giving the answer as 4 ½ Know that 0.7 is 7/10 Know that 0.5 is ½ Know that 6.25 is 6 ¼ Find ½ of 36 Find ½ of 150 Find ½ of £21.60
Step 4	Know that 27/100 = 0.27 Know that 75/100 is ¾ or 0.75 Know that 3 hundredths is 3/100 or 0.03 Find 1/7 of 35 Find ½ of 920 Find ½ of £71.30 Know that 10% = 0.1 = 1/10 Know 25% = 0.25 = ¼ Find 25% of £100 Find 70% of 100cm

Step 5	Know that 0.007 is 7/1000 Know that 0.27 is 27/100 0.1 x 26 0.01 x 17 7 x 8.6 Know that 43% is 0.43 or 43/100 Find 25% of £360 Find 17 ½% of £5250

Rapid Recall Facts

Children should be able to rapidly recall the following:

Step 1	all pairs of numbers with a total of 10, eg 3 + 7; addition and subtraction facts for all numbers to at least 5; Addition - doubles of all numbers to at least 5, eg 4 + 4.
Step 2	addition and subtraction facts for all numbers to at least 10; all pairs of numbers with a total of 20, eg 13 + 7; all pairs of multiples of 10 with a total of 100, eg 30 + 70; multiplication facts for the 2 and 10 times-tables and corresponding division facts; doubles of all numbers to ten and the corresponding halves; multiplication facts up to 5 x 5, eg 4 x 3.
Step 3	addition and subtraction facts for all numbers to 20; all pairs of multiples of 100 with a total of 1000; all pairs of multiples of 5 with a total of 100; multiplication facts for the 2, 5 and 10 times-tables and corresponding division facts.
Step 4	multiplication facts for 2, 3, 4, 5 and 10 times-tables; division facts corresponding to tables of 2, 3, 4, 5 and 10
Step 5	multiplication facts to 10 x 10; division facts corresponding to tables up to 10 x 10
Step 6	squares of all integers from 1 to 10