

Mathematics

Key Stage 3 Non Statutory Guidance
for Mathematics with Financial Capability

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Section 01

Purpose of this Guidance

This guidance is part of the support and implementation package for the Revised Northern Ireland Curriculum (hereafter referred to as Northern Ireland Curriculum) already with your school that includes:

- The Statutory Curriculum at Key Stage 3: Supplementary Guidance; and
- The Curriculum Support and Implementation Box.

Both these resources and additional learning and teaching materials are also available at www.nicurriculum.org.uk.

Mathematics with Financial Capability is part of the minimum requirement for every pupil at Key Stage 3. This guidance seeks to build on good practice and to provide heads of department with information and practical approaches to help them plan and roll-out the requirements for Mathematics with Financial Capability in a manageable way. The guidance explains and provides interpretation of the statutory requirements for Mathematics with Financial Capability.

There are departmental questions and activities after each section which can help you and the members of your department to reflect on and evaluate your current practice and identify actions for departmental planning.

The questions and activities follow *The 4A's Model for Planning* as documented in the booklet, *Planning for the Revised Curriculum at Key Stage 3*, in your school's Curriculum Support and Implementation Box. Working through this guidance and its accompanying activities means that your department will be well on course for rolling out the Northern Ireland Curriculum.

Section 02

Mathematics with Financial Capability in the Northern Ireland Curriculum

The Northern Ireland Curriculum seeks to empower pupils to achieve their potential and to make informed and responsible decisions throughout their lives. It is about helping pupils prepare for life and work:

- as individuals;
- as contributors to society;
- as contributors to the economy and environment.

Mathematics has a significant role to play in this. As a unique language, it enables us to calculate, estimate, describe relationships and make predictions. By developing a feel for number, shape and space, pupils will be able to recognise how a situation can be described mathematically, to appreciate patterns and relationships and to produce imaginative and creative work arising from mathematical ideas.

Financial Capability is an essential life skill in the 21st century. Financial decisions are becoming increasingly complex. There are more methods of paying for goods and services, with greater availability of credit and likelihood of falling into debt. A job for life is no longer guaranteed, we are living longer and there is an increased individual responsibility to plan for retirement. Financial Capability is also an ideal context in which to develop mathematical and numerical skills.

Meeting Curriculum Objectives

Mathematics with Financial Capability **develops pupils as individuals** by:

- developing pupils' thinking skills, allowing them to think in more independent and abstract ways to problem solve, to reason and to make decisions;
- informing many of the 'human' choices and decisions that pupils, as individuals, make about real-life issues and the actions they subsequently take.

Mathematics with Financial Capability **develops pupils as contributors to society** by:

- providing them with a powerful means of describing, analysing and influencing the world around them;
- developing confidence and skills in making financial decisions and taking responsibility for the resulting consequences.

Mathematics with Financial Capability **develops pupils as contributors to the economy and environment**:

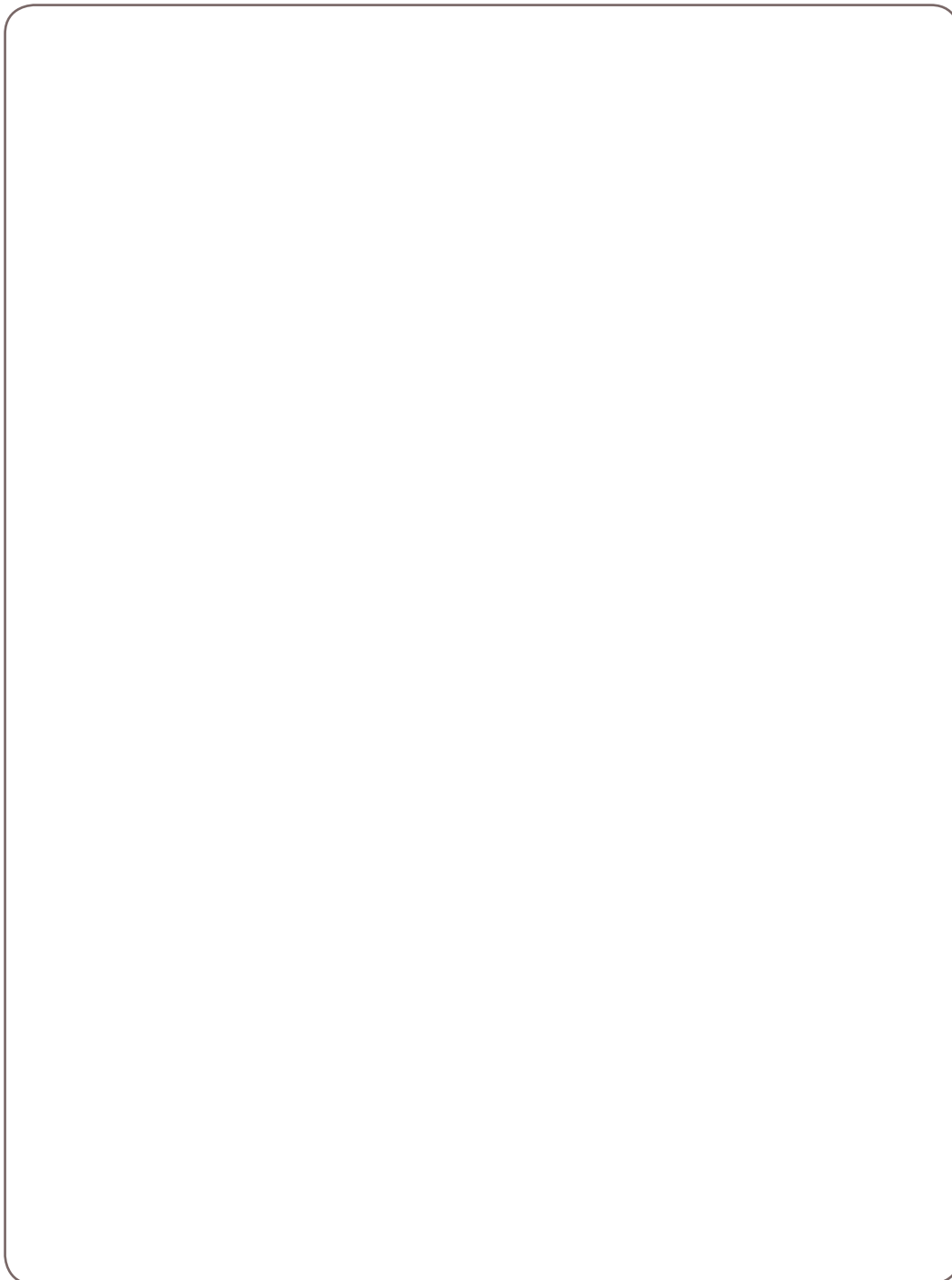
- as it is an essential skill for employment;
- by generating more confident consumers who can demand a better service from financial service providers;
- as an understanding of money and the economy gives confidence to participate more fully in democratic decisions as to how public money is spent.

Questions for Departments

In order to contribute to the curriculum objectives during Key Stage 3, what do we want our pupils in Mathematics with Financial Capability to:

- know (knowledge and understanding);
- be able to do (skills);
- be like (attitudes and dispositions)?

Action



Section 03

Links to Key Stage 2 and Key Stage 4

3.1 Key Stage 2

Key Stage 3 Mathematics with Financial Capability builds on the knowledge, understanding and skills developed at primary school through the Mathematics and Numeracy area of learning.

The statutory requirements for **Key Stage 2** address:

- Processes in Mathematics:
 - Making and monitoring decisions;
 - Communicating mathematically;
 - Mathematical reasoning;
- Number:
 - Understanding number and number notation;
 - Patterns, relationships and sequences in number;
 - Operations and their applications;
 - Money;
- Measures;
- Shape and Space:
 - Exploration of shape;
 - Position, movement and direction;
- Handling Data:
 - Collecting, representing and interpreting data;
 - Introduction to probability.

3.2 Key Stage 4

The flexible framework at Key Stage 3 allows:

- teachers to establish foundations for Key Stage 4 study by providing opportunities for pupils to demonstrate deeper understanding;
- pupils to become more independent learners who will be more adept and experienced in managing their own learning.

Key Stage 3 experiences should provide a robust basis for learning at Key Stage 4. The knowledge, understanding and skills outlined in the statutory requirements for Key Stage 3 Mathematics with Financial Capability provide a framework that enables teachers to tailor the breadth and depth of coverage to meet the needs and interests of pupils.

CCEA offers a range of qualifications, details of which are available on the CCEA website. At the time of writing, GCSE specifications in all subjects are currently being reviewed.

Section 04

Understanding the Statutory Requirements for Mathematics with Financial Capability

This section includes explanation of:

- The Layout of the Statutory Requirements;
- Knowledge, Understanding and Skills;
- Curriculum Objectives and Key Elements;
- Learning Outcomes;
- Thinking Skills and Personal Capabilities.

4.1 The Layout of the Statutory Requirements

Developing pupils' Knowledge, Understanding and Skills	(Objective 1) Developing pupils as Individuals	(Objective 2) Developing pupils as Contributors to Society
<p>Through engagement with a range of stimuli including peers, poetry, prose, drama, non-fiction, media and multimedia which enhance creativity and stimulate curiosity and imagination, pupils should have opportunities to become critical, creative and effective communicators by:</p> <ul style="list-style-type: none"> • expressing meaning, feelings and viewpoints; • talking, to include debate, role-play, interviews, presentations and group discussions; • listening actively and reporting; • reading and viewing for key ideas, engagement and empathy; • writing and presenting in different forms for different audiences and purposes; • participating in a range of drama; • interpreting visual stimuli including moving image; • developing an understanding of different forms, genres and methods of communication and an understanding of how texts are created; • developing their knowledge of how language works and their accuracy in using the conventions of language, including spelling, punctuation and grammar; 	<p>Pupils should have opportunities to:</p> <p>Engage, through language, with their peers and with fictional and real-life characters and situations, to explore their own emotions and develop creative potential, for example, discuss what they would have done or how they would have felt when faced with a situation in a novel; produce a digital portfolio highlighting their personal qualities etc. [Key Element: Personal Understanding]</p>	<p>Pupils should have opportunities to:</p> <p>Use literature, drama, poetry or the moving image to explore others' needs and rights, for example, consider the needs of a fictional character; participate in a role play involving conflicting rights etc. [Key Element: Citizenship]</p> <p>Explore how different cultures and beliefs are reflected in a range of communication methods. [Key Element: Communication]</p>
<p>and television etc.</p> <p>Create a campaign to promote a health and safety issue such as dealing with misuse of substances. Improvise a scene demonstrating peer support or peer pressure about a health related issue. [Key Element: Personal Health]</p> <p>Explore issues related to Moral Character : Demonstrate a willingness to challenge stereotypical, biased or distorted viewpoints with appropriately sensitive, informed and balanced responses, for example, discuss moral choices of real-life and fictional characters; take responsibility for choices and actions. [Key Element: Moral Character]</p> <p>Explore the use of language and imagery in conveying and evoking a variety of powerful feelings, for example, comment on a film, novel, performance or poem which has stimulated a personal insight. [Key Element: Spiritual Awareness]</p>	<p>Explore issues related to Ethical Awareness : Investigate and evaluate communication techniques used to explore a relevant ethical issue, for example, track coverage of the same issue in a range of media; design and produce own current affairs programme/news sheet for young audience etc. [Key Element: Ethical Awareness]</p>	<p>related to Economic Awareness : Discuss the impact of economics on the lives of people, debate whether you should be paid by child labour; consider the consequences of financial difficulties (literature, Economic Awareness)</p> <p>Develop an effective communication strategy, for example, produce promotional material for a local heritage site; present the case for a local site/building; participate in a school assembly/parliament about a local issue. [Key Element: Education for Sustainable Development]</p>
<p>Learning Outcomes</p> <p>The learning outcomes require the demonstration of skills and application of knowledge and understanding of English and Media Education.</p> <p>Pupils should be able to:</p>	<ul style="list-style-type: none"> • research and manage information effectively using a range of media and ICT where appropriate; • show deeper understanding of issues and make informed decisions, using Mathematics and ICT where appropriate; • demonstrate creative and effective communication through writing, speaking and using media; • work effectively in groups and teams; • demonstrate a willingness to challenge stereotypical, biased or distorted viewpoints with appropriately sensitive, informed and balanced responses; • demonstrate a willingness to take responsibility for choices and actions; • communicate effectively using a range of media and ICT; • attend to the needs and rights of others. 	<p>These state the skills and capabilities pupils should be able to demonstrate throughout the key stage in the context of Mathematics with Financial Capability.</p>

Objectives
The curriculum objectives relate to Learning for Life and Work and provide the real and relevant contexts in which knowledge, understanding and skills in Mathematics with Financial Capability are developed. The objectives should be developed throughout the key stage.

Exemplar
See back cover for an A3 version of the Statutory Requirements for Mathematics with Financial Capability with additional guidance and examples

The Knowledge, Understanding and Skills in Mathematics with Financial Capability to be developed during Key Stage 3

The objectives are made up of Key Elements. These provide opportunities for subjects to connect with Learning for Life and Work and with other subjects.

NB: Teachers may develop activities that combine many of the statutory requirements. Objects highlighted in BOLD (including each of the Key Elements) are met.

4.2 Knowledge, Understanding and Skills

The first column in the statutory requirements for Mathematics with Financial Capability is titled “Developing pupils’ Knowledge, Understanding and Skills”.

- Everything in this column is a statutory requirement for the key stage as a whole; not for individual years within the key stage.
- It is intended that schools interpret and develop these requirements as appropriate to their own context.
- The recursive nature of Mathematics with Financial Capability means that the bullet points in the ‘Knowledge, Understanding and Skills’ column are likely to be covered a number of times in each academic year within the key stage.

The following table seeks to explain, illustrate and expand on the bullet points under ‘Knowledge, Understanding and Skills’.

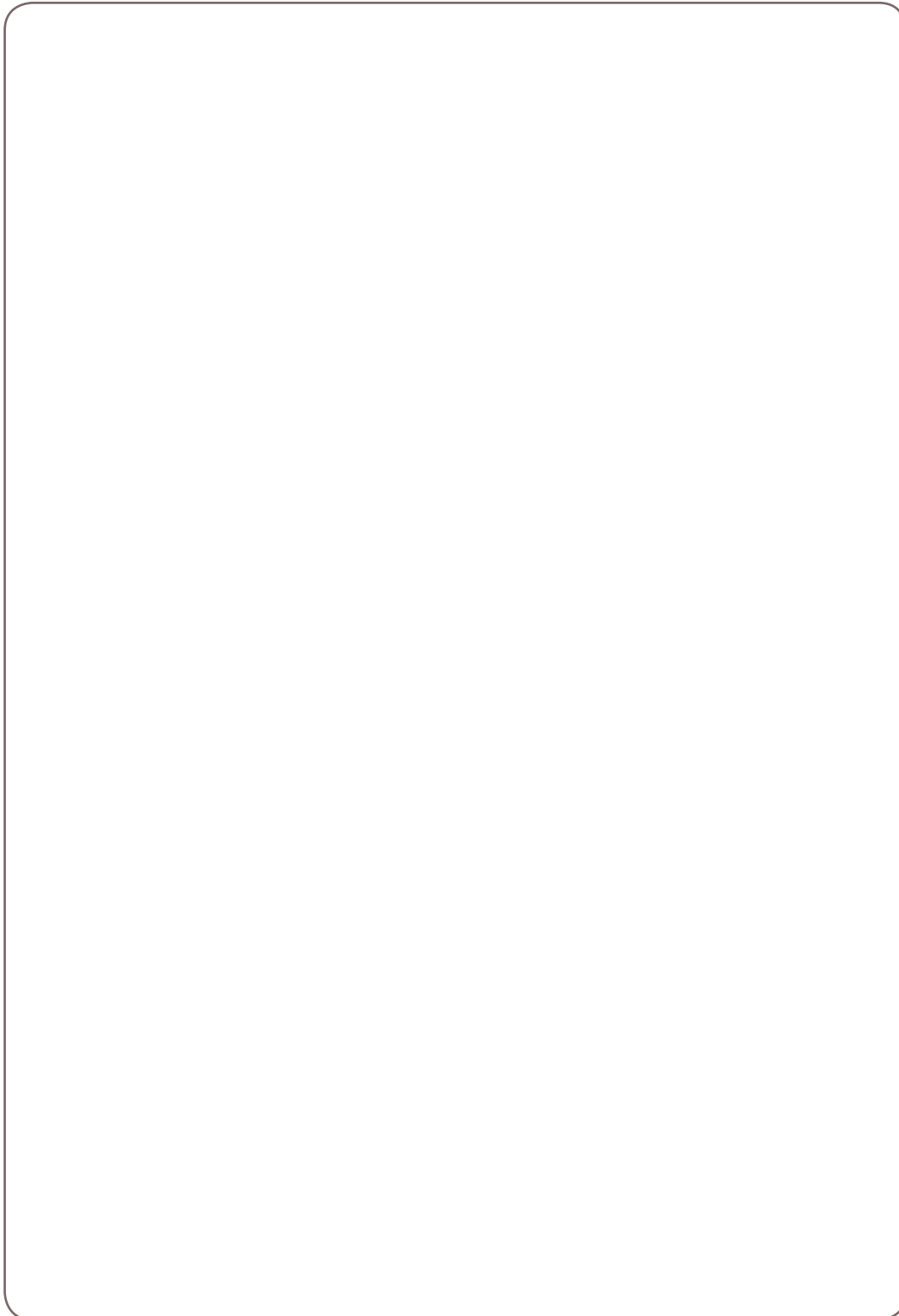
Developing pupils’ Knowledge, Understanding and Skills	Supporting notes
<ul style="list-style-type: none"> • knowledge and understanding of: <ul style="list-style-type: none"> – Number – Algebra – Shape, Space and Measures – Handling Data • knowledge and understanding of personal finance issues, and skills to enable competent and responsible financial decision making 	<p>These are the traditional areas within Mathematics and reflect the strands within the primary curriculum for Mathematics and Numeracy.</p> <p>The Northern Ireland Numeracy Strategy details progression through these areas.</p> <p>Where possible, they should be explored through the contexts of the key elements.</p> <p>Opportunities for pupils to work across these areas, choosing the most appropriate mathematics, develop their skills and confidence in Using Mathematics across the curriculum.</p> <p>This bullet describes Financial Capability. As well as the calculation and knowledge aspects, there is also a more subjective component. This involves developing confidence around making financial decisions and exploring feelings around money. Further details for developing Financial Capability are given in Appendix 3.</p>

Developing pupils' Knowledge, Understanding and Skills	Supporting notes
<ul style="list-style-type: none"> • the application of mathematical skills to real life and work situations • the creative use of technology to enhance mathematical understanding <p>by demonstrating:</p> <ul style="list-style-type: none"> • creative thinking in their approach to solving mathematical problems; • increasing competence in mental mathematics skills; • increasing competence in pencil and paper methods; • increasing confidence in the use of mathematical language and notation; • practical skills in using technology. 	<p>Applying mathematical skills confidently in a range of situations that pupils will meet everyday, both now and in the future, including financial contexts. This supports learning for life and work.</p> <p>Use of appropriate software, the Internet and other resources such as interactive whiteboards to explain and illustrate mathematical concepts more fully, supporting the learning and teaching of Mathematics.</p> <p>Encourage pupils to pursue their own thinking in how to approach mathematical problems. Explore and compare different approaches and methods that could be used. This supports the development of pupils as more independent learners.</p> <p>Strategies and guidelines for developing mental mathematics skills are provided in the Northern Ireland Numeracy Strategy Learning and Teaching file. These skills are necessary for making fast decisions in everyday life.</p> <p>Pupils develop knowledge and skills to carry out calculations without depending on calculators.</p> <p>Pupils can record calculations and solve problems using appropriate mathematical notation. They can talk about their work using mathematical language. They can construct and interpret graphical information.</p> <p>This includes the accurate use of a calculator and also computer based work. Computer based work involves calculation, presentation and research aspects relevant to Mathematics with Financial Capability.</p>

Questions for Departments

- What is the current balance between knowledge, understanding and skills in the department's provision for Mathematics with Financial Capability?
- What are the implications for further learning and teaching at Key Stage 3?

Action



4.3 Curriculum Objectives and Key Elements

The curriculum objectives are broken down into key elements. The key elements are a vehicle for ensuring that Mathematics with Financial Capability directly connects to the whole curriculum objectives. The key elements also provide a means for connecting learning in Mathematics with Financial Capability to other subjects and to Learning for Life and Work. Using Learning for Life and Work to make connections is explored further in 5.3.

The table below shows how each curriculum objective is linked to specific key elements.

The Northern Ireland Curriculum should provide relevant learning opportunities to help each pupil develop as:		
Objective 1 An individual	Objective 2 A contributor to society	Objective 3 A contributor to the economy and the environment
Key Elements Personal Understanding Mutual Understanding Personal Health Moral Character Spiritual Awareness	Key Elements Citizenship Cultural Understanding Media Awareness Ethical Awareness	Key Elements Employability Economic Awareness Education for Sustainable Development

For example, developing pupils as individuals will require a focus on the key elements of Personal Understanding, Mutual Understanding, Personal Health, Moral Character and Spiritual Awareness.

Each subject must contribute to all key elements across the key stage. Some subjects will have more naturally occurring opportunities to promote certain key elements.

The key elements that Mathematics with Financial Capability contributes to more fully are:

- Personal Understanding;
- Mutual Understanding;
- Moral Character;
- Media Awareness;
- Employability;
- Economic Awareness.

For example, Mathematics with Financial Capability will have a leading role in learning about Economic Awareness. Although every other subject will address aspects of this, a significant amount of Financial Capability can be looked at through the lens of Economic Awareness in this area of learning.

The text within columns 2, 3 and 4 in the statutory requirements for Mathematics with Financial Capability relates to activities which contextualise some of the key elements. Some of the key elements are more significant than others in Mathematics with Financial Capability and therefore, activities relating to a specific key element may be revisited often during Key Stage 3.

The key elements can help to make meaningful links with other subjects, promote coherence across the whole curriculum and facilitate more collaborative planning and teaching.

The following table gives examples of some of the questions which may help to explore and extrapolate what is meant by each key element in Mathematics with Financial Capability.

Developing the Key Elements through Mathematics with Financial Capability

Developing pupils as individuals contributors to society contributors to the economy and environment
<p>Personal Understanding How do I organise my time? How can I communicate this mathematically? Could I make any changes to how I spend my time?</p> <p>Mutual Understanding How can we work effectively together to solve problems? What happens if we have different viewpoints?</p> <p>Personal Health (links with Science and some aspects of Home Economics) What is my height? What is my body temperature? What is my heart rate? What amount of each nutrient must I eat to stay healthy? What are the chances of getting particular diseases? Which diseases have become less common? Why?</p> <p>Moral Character What is a logical argument? Can I explain how I found the solution to a problem?</p> <p>Spiritual Awareness Which patterns do I find most amazing? Do they involve numbers or shapes? Where are mathematical patterns found in nature? Is there a biggest number? What is infinity?</p>	<p>Citizenship How is mathematical information used by the Government to make decisions? Why do we pay tax? Why is there a census?</p> <p>Cultural Understanding How have different cultures contributed to our understanding of Mathematics? How did our system of numbering develop? How have different cultures and religions used shape and pattern? Can you play a maths game from a different culture such as Mancala?</p> <p>Media Awareness How is numerical information and data presented in the news? Are advertisements about financial products always as good as they first seem?</p> <p>Ethical Awareness What are the human stories behind the statistics? Do statistics tell the whole story?</p>	<p>Employability How are the skills we use in Mathematics useful to life outside school? Which careers are based on Mathematics?</p> <p>Economic Awareness What do I spend my money on? Do I save money? What are the different ways of managing money?</p> <p>Education for Sustainable Development How much energy can we save? Does recycling save money? How much does it cost to dispose of our waste?</p>

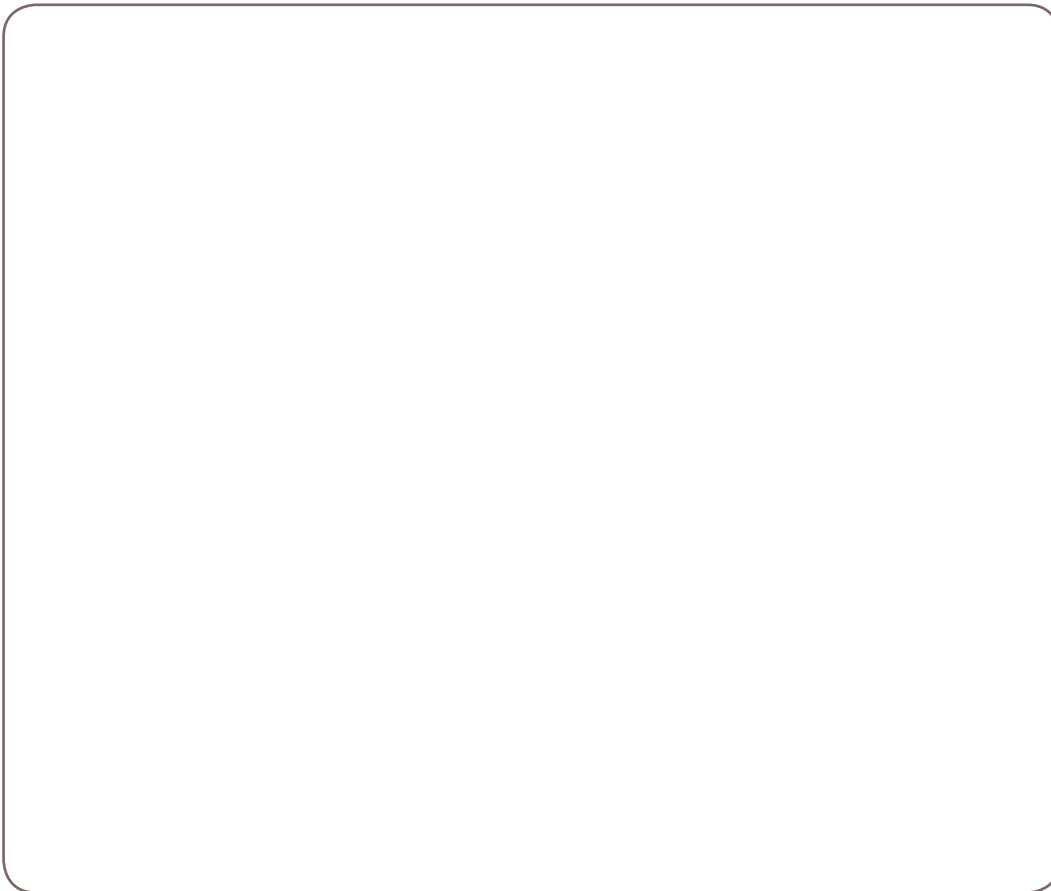
Questions for Departments

Which key elements do we :

- address well?
- need to focus more on?
- not address at all?

Are there any key elements that we could develop with another department to promote connected learning?

Action



4.4 Learning Outcomes

Learning Outcomes state the skills and capabilities pupils should be able to demonstrate throughout Key Stage 3 in each subject. These are similar across each area of learning and promote the infusion of the **cross-curricular skills** (Communication, Using Mathematics and Using ICT) (please refer to Appendix 1 for further guidance on the cross-curricular skills). The learning outcomes also promote the infusion of **Thinking Skills and Personal Capabilities** (also refer to Appendix 2 for further guidance on Thinking Skills and Personal Capabilities).

As with all subjects, it is statutory for teachers to provide opportunities for pupils to **acquire** and **develop** the cross-curricular skills and the Thinking Skills and Personal Capabilities in Mathematics with Financial Capability. Pupils should also be given opportunities to demonstrate their skills and application of knowledge and understanding of Mathematics with Financial Capability to meet the learning outcomes.

Evidence for Learning Outcomes

Evidence of the application of skills, knowledge and understanding for a learning outcome can be demonstrated at any point in the learning process. Learning outcomes can be based on process or product. They may be evidenced by teacher, pupil or peer assessment of a range of pupils' work and performance, including work generated using ICT. The nature of feedback on learning outcomes can be qualitative, quantitative, verbal or written to suit the purpose of the assessment.

Using and Recording Evidence

The number of occasions when learning outcomes are internally recorded, the system for internal recording and the use made of internal records is at the discretion of departments in line with whole school policy. Learning outcomes can be demonstrated through formal or informal assessment, formative and/or summative assessment.

Evidence of learning outcomes can be:

- recorded informally, that is, primarily for feedback to pupils and for teacher reference;
- recorded formally, that is, in line with departmental and internal whole school assessment policy requirements;
- used to inform reporting, for example, in relation to Pupil Profile requirements.

Skills and the Learning Outcomes

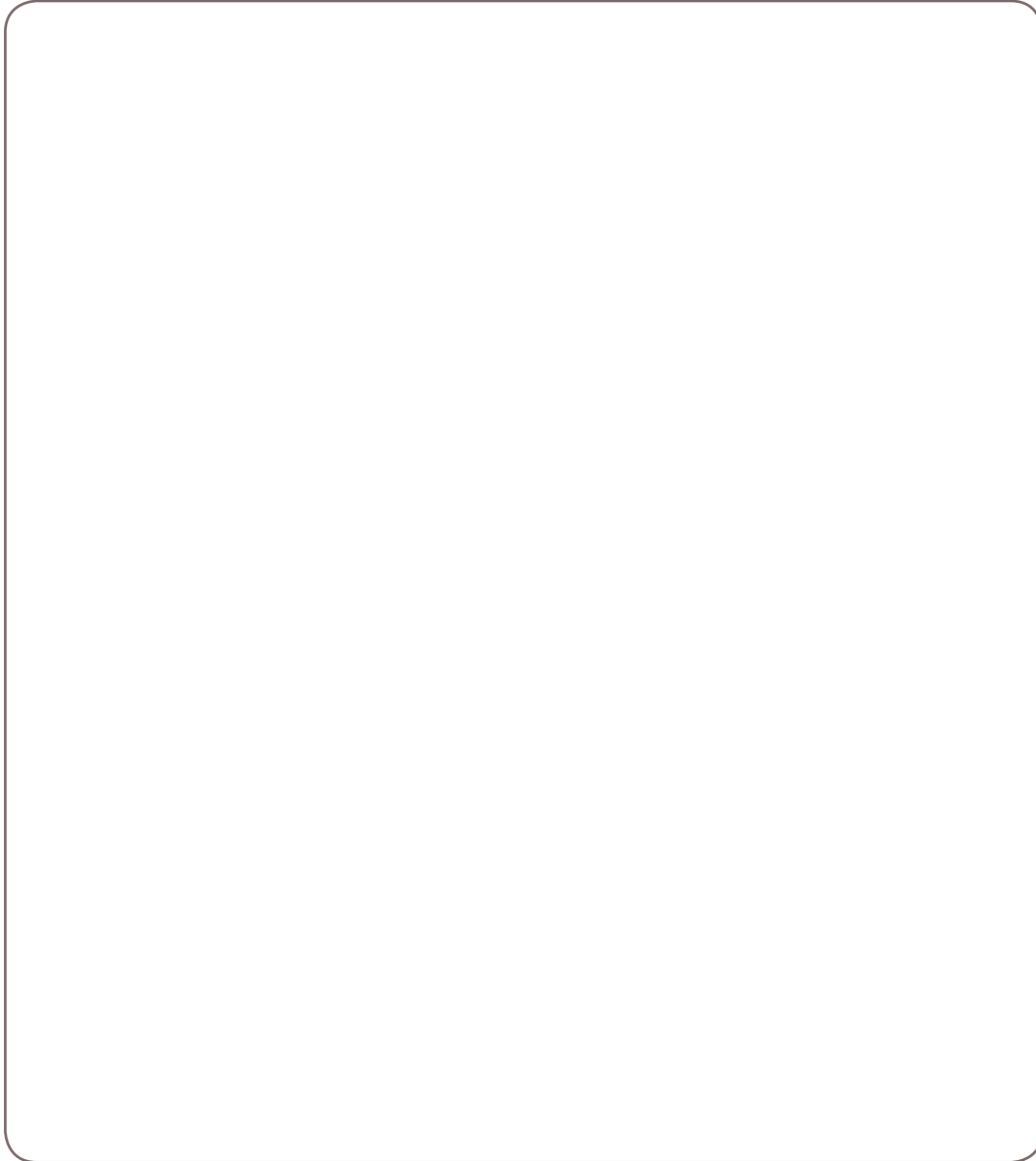
The relationship between the learning outcomes and the cross-curricular skills and Thinking Skills and Personal Capabilities is set out in the table below.

Learning Outcomes	Cross-Curricular Skills/Thinking Skills and Personal Capabilities
Demonstrate mental mathematical capability with simple problems	Thinking, Problem-Solving, Decision-Making (Using Mathematics)
Decide on the appropriate method and equipment to solve problems – mental, written, calculator, mathematical instruments or a combination of these	Thinking, Problem-Solving, Decision-Making (Using Mathematics)
Demonstrate financial capability in a range of relevant everyday contexts	Thinking, Problem-Solving, Decision-Making (Using Mathematics)
Research and manage information effectively to investigate and solve mathematical problems, including Using ICT where appropriate	Managing Information (Communication, Using Mathematics, Using ICT)
Show deeper mathematical understanding by thinking critically and flexibly, solving problems and making informed decisions, demonstrating Using ICT where appropriate	Thinking, Problem-Solving, Decision-Making (Using Mathematics, Using ICT)
Demonstrate creativity and initiative when developing ideas and following them through	Being Creative
Work effectively with others	Working with Others
Demonstrate self-management by working systematically, persisting with tasks, evaluating and improving own performance	Self-Management
Communicate effectively in oral, visual, written, mathematical and ICT formats, showing clear awareness of audience and purpose	Communication Using Mathematics Using ICT

Questions for Departments

- How can we plan for learning outcomes?
- How can our existing departmental assessment policy be amended to make reference to the learning outcomes?
- Which learning outcomes will be the most challenging for our department?

Action

A large, empty rounded rectangular box with a thin black border, intended for users to write their action plan.

4.5 Thinking Skills and Personal Capabilities

The Thinking Skills and Personal Capabilities framework consists of five overlapping sets of skills:

- Managing Information;
- Thinking, Problem-Solving, Decision-Making;
- Being Creative;
- Working with Others;
- Self-Management.

Each strand is broken down into further detail (see Appendix 2). These can facilitate lesson planning and provide criteria against which pupils' performances can be assessed and reported. For example, linking cause and effect, examining evidence, planning a task, etc.

Many of the skills are not new and are already being developed across a range of subjects. This single framework aims to make the development of Thinking Skills and Personal Capabilities more structured and explicit, to encourage application across a range of contexts and to provide a common language that pupils and teachers can use to talk about their thinking and learning.

There are a number of teaching strategies that will promote the development of Thinking Skills and Personal Capabilities generally, for example, setting open ended tasks, effective questioning, using thinking frames and diagrams, reflecting and talking about thinking and learning, providing meaningful opportunities for collaborative learning etc.

Many of these activities also support the principles of Assessment for Learning.

The big shift, however, is to focus on opportunities in Mathematics with Financial Capability where a specific thinking skill or personal capability can be used to deepen understanding of a particular concept or context. The context used provides opportunities for the development and practice of the thinking skill or personal capability. This can lead to lessons where there is the parallel development of subject knowledge and understanding as well as the development of, for example, a particular mode of thinking. This approach is known as infusion; adding one thing to another to give it a new significance.

Planning for infusion involves, for example:

- (a) looking across a series of units of work for year 8 and identifying where the most appropriate contexts are to introduce and develop specific skills, such as, evaluating the most appropriate information, justifying opinions, reaching agreement within a group, etc.
- (b) identifying the specific skills and capabilities best developed through Mathematics with Financial Capability and setting up contexts to introduce and practice them, such as: generating possible solutions; justifying methods; examining options; seeking out questions to explore and problems to solve.

This explicit approach to developing Thinking Skills and Personal Capabilities provides opportunities to observe, record, feedback and report on pupils' strengths and areas for future focus in terms of their development in Thinking Skills and Personal Capabilities. It also enables pupils to transfer particular thinking skills or personal/interpersonal skills to other contexts.

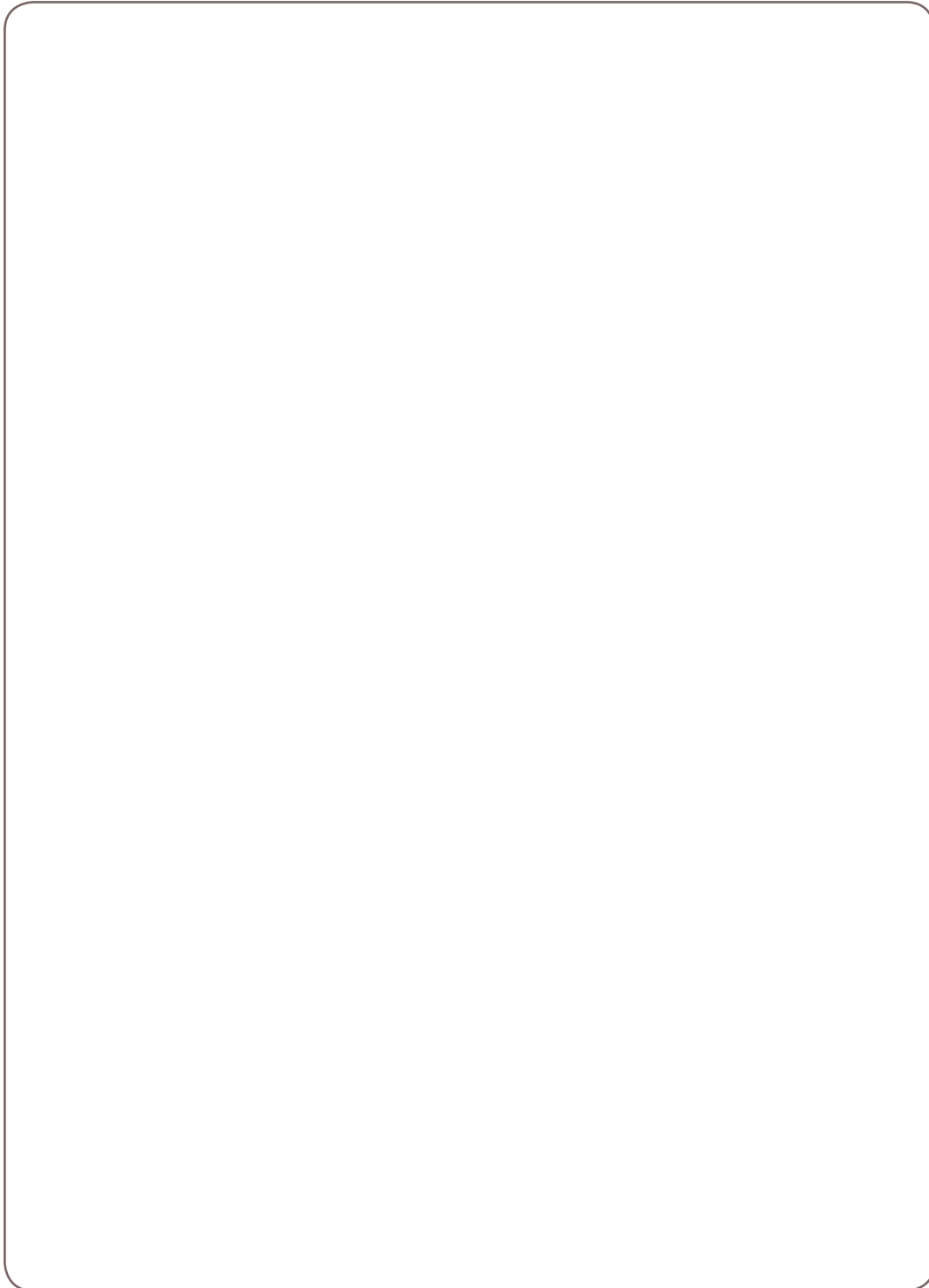
Progression in skills and capabilities is only made through their practice and application in a range of contexts and at increasing levels of challenge and demand.

Continuing Professional Development (CPD) materials have been developed to promote the infusion of Thinking Skills and Personal Capabilities across the curriculum. These materials are available at www.nicurriculum.org.uk.

Questions for Departments

- How can Mathematics with Financial Capability meaningfully develop each strand of the Thinking Skills and Personal Capabilities framework?
- Where are the key opportunities for infusion in Mathematics with Financial Capability?

Action



Section 05

Approaches to Learning and Teaching

5.1 Key Messages

Flexibility

Teachers now have the opportunity to use the statutory requirements to devise schemes and units of work in Mathematics with Financial Capability that follow the needs and interests of the pupil. This does not mean throwing out schemes of work that have been carefully developed over the years. It provides opportunities for teachers to build on those units that best engage and develop their pupils and replace or revitalise those units that did not engage the pupils so much.

Relevance

Teachers have opportunities to look for themes or issues that are real and relevant to the lives of pupils today. The skills and concepts in the first column of the statutory requirements for Mathematics with Financial Capability can be developed through current issues, that pupils express an interest in.

Integrated

Teachers have opportunities to combine different aspects of Mathematics, to integrate Financial Capability within Mathematics and to connect Mathematics with Financial Capability with other areas of learning. These connections can inform units of work which help pupils gain a better understanding of concepts within Mathematics and develop their skills in Using Mathematics across the curriculum.

Values Based

The key elements provide opportunities for pupils to reflect on moral, ethical, spiritual, social and cultural dimensions of issues in Mathematics and Financial Capability relating to real people and real places and to consider their own views and opinions about them.

Action Orientated

Through enquiry-based learning, pupils develop skills in applying their mathematical knowledge in different contexts and in making financial decisions. There are also opportunities for pupils to be challenged about individual and collective responsibilities.

Future Focused

Pupils are challenged to think about the type of world they would like to share in years to come and how best to achieve it. They will also have opportunities to explore how the skills developed through Mathematics with Financial Capability might help them in the future.

5.2 Assessment for Learning

'Assessment for Learning' (AfL) is an approach that can support effective learning and teaching. Assessment for Learning focuses on the learning process (rather than the end product) and attempts not to prove learning but rather improve it. It is formative assessment. It is a way for us to take stock of learning during the process and it can help inform us of how the learning is progressing.

In 'Assessment for Learning':

- there is a high emphasis on *transferable learning*;
- assessment becomes a much more transparent process because it is based on critical information that is shared with the learners; and
- learners are able to *take responsibility* for their own learning, and for aspects of assessment.

'Assessment for Learning' is not something extra or 'bolted on.' It integrates with existing classroom practice. Assessment for Learning involves the following key actions:

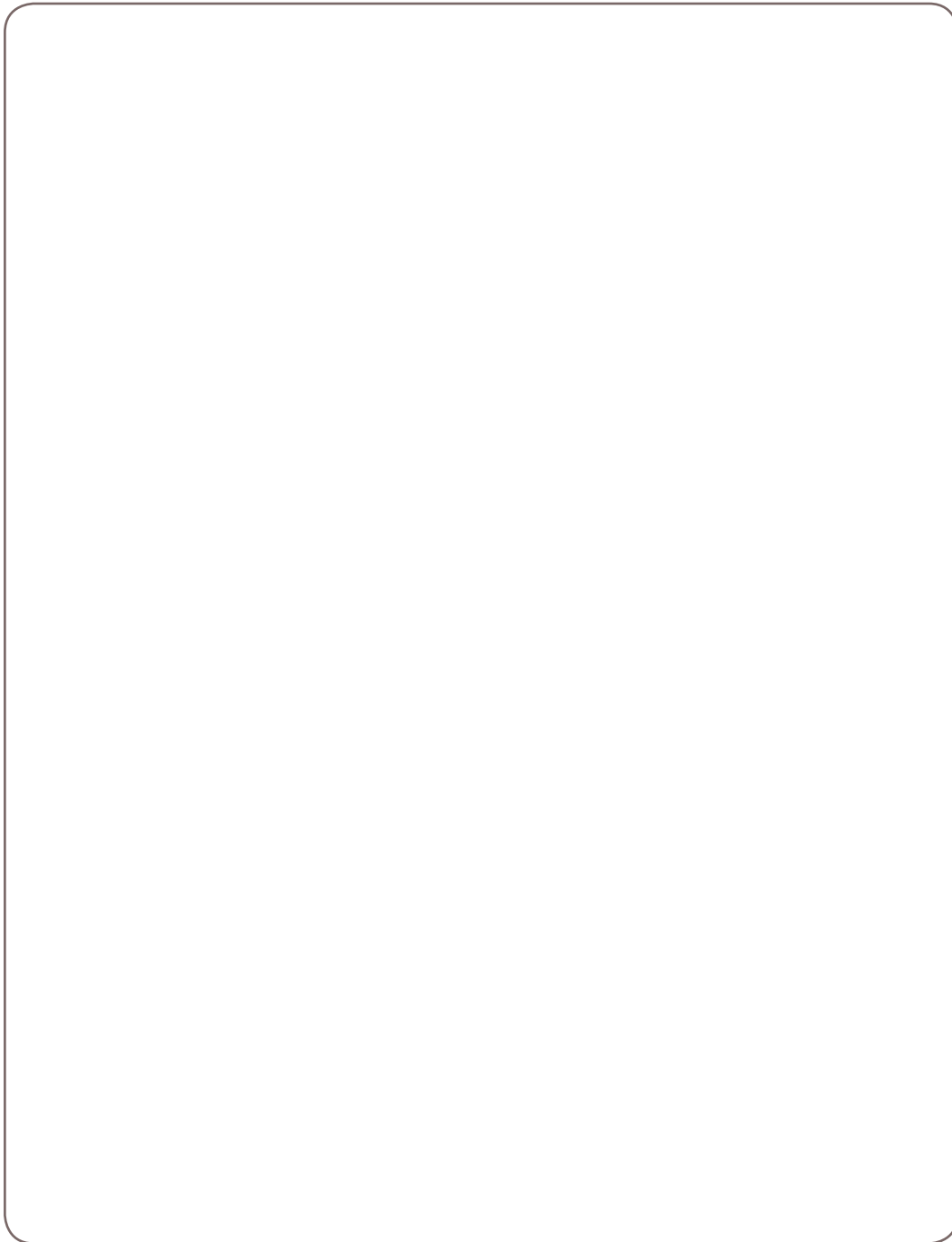
Sharing learning intentions	A learning intention is a description of what teachers want pupils to know, understand or be able to do by the end of an activity. It tells pupils what the focus for learning is going to be. It helps both teachers and pupils to focus on the learning rather than the activity, for example: Identify what pupils will be learning (We are learning to.....) Explain the reason for learning (We are learning this because.....)
Sharing and negotiating success criteria	Success criteria are statements that help pupils recognise if they have been successful in their learning. Pupils may be involved in deciding these. They summarise the processes or characteristics needed for success, and they always link directly to the learning intention. They essentially spell out the steps or ingredients required to achieve the learning intention, offering specific guidance on how to be successful.
Giving feedback to pupils	Quality feedback is essential for effective learning and teaching. Feedback can motivate pupils by building self-esteem and reinforcing the positive. To be truly formative the feedback must inform the next steps in the learning process. For example, when offering written feedback: 1.Find two occasions where they have achieved success (symbols can be used); 2.Identify an aspect of their work that they can immediately improve; 3.Provide them with a prompt or strategy on how to improve; 4.Give them time to make this improvement.
Effective questioning	Effective questioning is about asking questions in a way that elicits maximum feedback from pupils, which can then be used to evaluate, plan and extend learning, for example: • Ask better questions: ask 'open' questions or reframe questions where there is no single correct answer and pupils are rewarded for exploring options and sharing possible solutions; • Ask questions better: provide pupils with time to think; by increasing the wait time to 3 or 5 seconds between posing the question and asking for the answer, teachers can make a significant difference to the question's effectiveness.
Self and peer assessment	Pupil reflection promotes independent learning, communication and support in the classroom. Teachers can develop pupil reflection in the classroom through the use of peer and self-assessment and self-evaluation.

Continuing Professional Development (CPD) materials have been provided for schools to promote Assessment for Learning.

Questions for Departments

- What are the benefits of Assessment for Learning practice in our classrooms?
- Which of the Assessment for Learning key actions are part of our existing classroom practice?
- Which do we need to give more attention to?
- How do we do this?

Action

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5.3 Connecting the Learning

The Northern Ireland Curriculum is designed to accommodate links across subjects. Many natural links exist, although they may be under-exploited. Where these links are identified and planned for, they have the potential to make learning more meaningful, informed and purposeful. Opportunities to connect learning range from small and informal to whole school and formally planned.

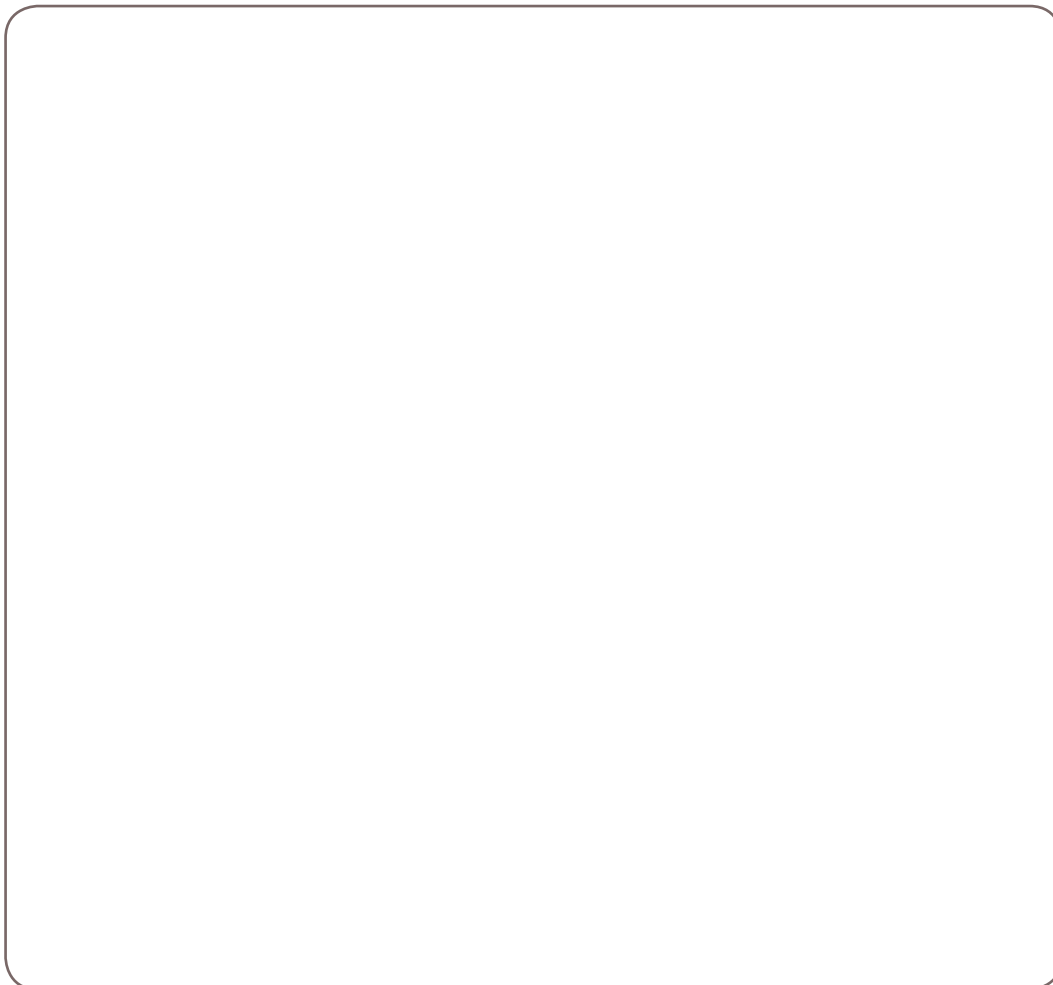
Any of the following may be used as drivers for connected learning between two or more subjects:

- Skills/Learning Outcomes;
- Key Elements;
- Themes;
- Knowledge;
- Concepts;
- Learning experiences;
- Learning for Life and Work;
- Other suitable approaches.

Questions for Departments

- Which of these could best be used as a starting point to make meaningful connections with others subjects?

Action



Connecting with Learning for Life and Work (LLW)

One way of beginning to make connections is in Learning for Life and Work.

The four strands within Learning for Life and Work (Home Economics, Local and Global Citizenship, Employability and Personal Development) contribute directly to the three curriculum objectives to develop the pupil as:

- an individual;
- a contributor to society;
- a contributor to the economy and the environment.

The other areas of learning also contribute to the curriculum objectives and Learning for Life and Work. Well planned and organised work within subjects make a distinctive and natural contribution to Learning for Life and Work and can help to strengthen and enrich its provision as a whole.

Teachers have flexibility to enhance the breadth and depth of their subject's contribution to Learning for Life and Work. Mathematics teachers can therefore:

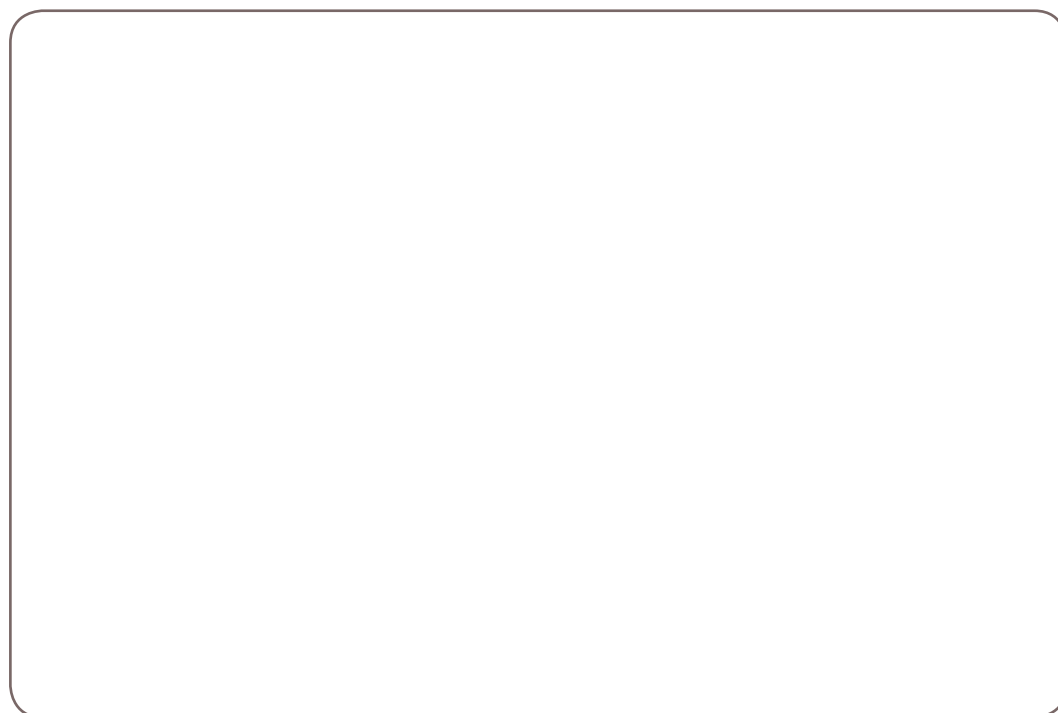
- raise awareness about Learning for Life and Work key concepts;
- develop more detailed understanding about Learning for Life and Work key concepts within their subject context;
- explore particular Learning for Life and Work key concepts. When delivered in sufficient depth, an area of learning/subject strand can take full responsibility for meeting a particular statement of requirement.

More detailed guidance in linking Mathematics with Financial Capability to Learning for Life and Work is provided in Appendix 4.

Questions for Departments

- Which aspects of our current practice promote connected learning?
- What are the issues around the management of connected learning?
- How will we know that pupils are learning to make connections?

Action



5.4 Active Learning

Engaging pupils in their learning and providing them with opportunities to demonstrate Thinking Skills and Personal Capabilities requires an approach beyond traditional didactic methods.

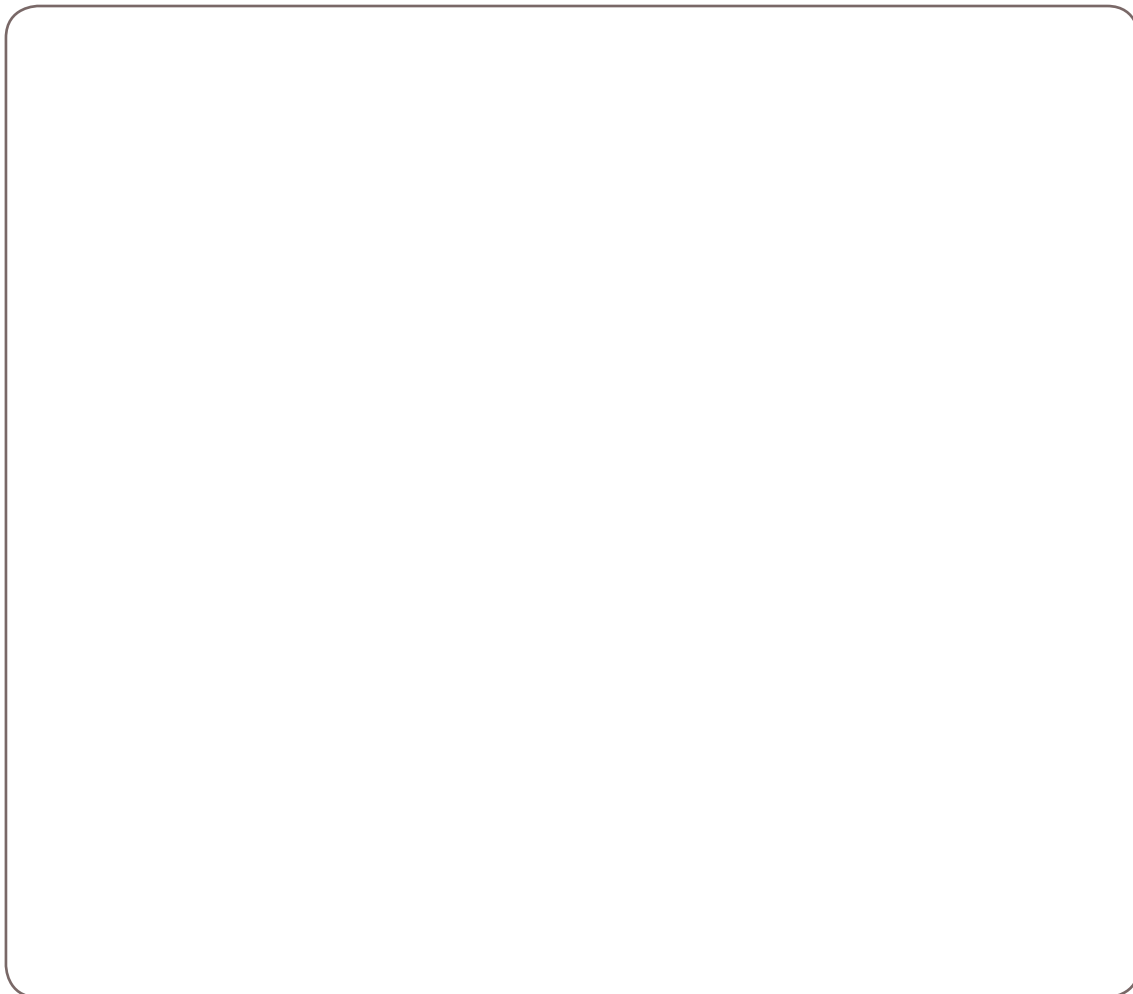
The glossary *Active Learning and Teaching Methods* is included in the Curriculum Support and Implementation box and is available from www.nicurriculum.org.uk. This resource contains a wide range of active and experiential strategies to promote pupils' participation and engagement.

Mathematics with Financial Capability provides rich contexts in which to use a range of active learning strategies.

Questions for Departments

- Which active learning strategies would work for us?
- How does the climate in our classrooms support the use of active learning?
- What are the implications for classroom management?

Action



Section 06

Auditing and Planning

6.1 Conducting a Departmental Audit

When planning to carry out a departmental audit, refer to the training materials *Planning for the Revised Curriculum at Key Stage 3*. Used in conjunction with the following guidance, departments can decide how to evaluate existing and planned provision.

Audits are a starting point for the long term planning process. There are a number of possible 'ways-in' to carrying out an audit. Some of these are outlined in the table below. Further details are available at www.nicurriculum.org.uk.

Starting Point for Audit	Description of Process
Curriculum Objectives	What do we teach and why? Look at how the topics currently taught address the broad curriculum objectives. The objectives provide a rationale for the topic. The key elements can provide the footholds into the objectives.
Key Elements	Check where units of work contain aspects of the key elements, or could be re-focused to suit. Check for coverage across the key stage. Remove excessive duplication, add material to address any omissions.
Thinking Skills and Personal Capabilities	Starting with current units of work it is possible to audit the provision of Thinking Skills and Personal Capabilities using the statements from the "From – To Progress Map". After completing an audit in this way, gaps in provision can easily be detected and it will then be possible to develop opportunities to ensure overall coverage in a year and progression across the key stage.
Learning Experiences	List the categories of learning experience from the 'Big Picture' document in a column. Beside each, match the units of work in your scheme which fit with the category. Assess the coverage: is there a good mixture and variety of experience planned?
'Blue Skies'	Begin with aspirations for a completely new scheme of work, and work up details so as to match planned experiences with Northern Ireland Curriculum requirements.

6.2 Long, Medium and Short Term Planning

Long Term Planning

In producing long term plans or **schemes of work**, you need to think about:

- how Mathematics with Financial Capability is delivered across the whole key stage;
- how Mathematics with Financial Capability links with the wider curriculum objectives;
- how and when to develop specific skills and capabilities across the key stage;
- how Mathematics with Financial Capability can actively link with other curricular areas;
- how Mathematics with Financial Capability aligns with whole school development/ circumstances.

Medium Term Planning

In planning **units of work**, you need to think about:

- identifying big questions/issues to engage pupils and support an enquiry based approach ;
- the learning and teaching activities and strategies to best develop the skills;
- how to build in time for monitoring, evaluating and reviewing.

Short Term Planning

In **planning a lesson or series of lessons**, you need to think about:

- making the learning intentions explicit to clarify what you want the pupils to know, understand and/or be able to do;
- agreeing and negotiating with the pupils what success in this task/activity will look like;
- using a launch activity to engage the pupils and develop their sense of inquiry;
- using a range of activities/challenges;
- supporting and prompting pupil performance;
- planning plenaries to feedback, reflect on thinking and learning, make connections to other learning and set up next lesson(s).

Curriculum development is a process which requires ongoing evaluation.

It is useful to think about why some lessons work, while others don't succeed as we would like.

For any scheme of work/lesson or series of lessons it might be useful to ask:

- How well did the pupils respond to that?
 - Did they enjoy it?
 - Did they see the relevance?
 - Were they motivated to learn?
- How well did they achieve?
 - What evidence of achievement was there?
 - Was there evidence of deep learning?
 - How do I know this?
 - How did I collect it?
- What modifications could I make
 - In the content?
 - In the learning resources/materials?
 - In the learning activities?
- When did I last experience a “buzz” in the classroom?
 - What theme/issue were the pupils learning about?
 - What was the big enquiry/key question?
 - What activity(ies) were they doing?
 - What was the purpose of their learning?
 - Why did I choose these particular resources to use with those pupils?

Appendices

Appendix 1

Cross-Curricular Skills

Communication Across the Curriculum

Communication is central to the whole curriculum. Pupils should be able to communicate in order to express themselves socially, emotionally and physically, to develop as individuals, engage with others and contribute as members of society.

Pupils should be given opportunities to engage with and demonstrate the skill of communication and to transfer their knowledge about communication concepts and skills to real-life meaningful contexts across the curriculum.

The modes of communication include talking and listening, reading and writing. However, effective communication also includes non-verbal modes of communication, wider literacy and the use of multimedia and ICT technologies which may combine different modes. Pupils are therefore encouraged to become effective communicators by using a range of techniques, forms and media to convey information and ideas creatively and appropriately.

The requirements for Communication are set out below.

Across the curriculum, at a level appropriate to their ability, pupils should be enabled to develop skills in:

Talking and Listening

Pupils should be enabled to:

- listen to and take part in discussions, explanations, role-plays and presentations;
- contribute comments, ask questions and respond to others' points of view;
- communicate information, ideas, opinions, feelings and imaginings, using an expanding vocabulary;
- structure their talk and speak clearly so that ideas can be understood by others;
- adapt ways of speaking to audience and situation;
- use non-verbal methods to express ideas and engage with the listener.

Reading

Pupils should be enabled to:

- read a range of texts* for information, ideas and enjoyment;
- use a range of strategies to read with increasing independence;
- find, select and use information from a range of sources;
- understand and explore ideas, events and features in texts*;
- use evidence from texts* to explain opinions.

* Texts refer to ideas that are organised to communicate and present a message in written, spoken, visual and symbolic forms.

Writing

Pupils should be enabled to:

- talk about, plan and edit work;
- communicate information, meaning, feelings, imaginings and ideas in a clear and organised way;
- develop, express and present ideas in a variety of forms and formats, using traditional and digital resources, for different audiences and purposes;
- write with increasing accuracy and proficiency.

Using Mathematics Across the Curriculum

Using Mathematics is the skill of applying mathematical concepts, processes and understanding appropriately in a variety of contexts. Ideally these should be in relevant real life situations that require a mathematical dimension.

Pupils are likely to acquire and consolidate their mathematical knowledge, concepts and skills within the area of learning for Mathematics and Numeracy. However, they should be given opportunities to transfer their understanding, as appropriate, to other contexts across the curriculum. Pupils can demonstrate their mathematical knowledge, understanding and skills in a variety of ways to communicate, manage information, think critically, solve problems and make decisions.

The requirements for Using Mathematics are set out below.

Across the curriculum, at a level appropriate to their ability, pupils should be enabled to:

- choose the appropriate materials, equipment and mathematics to use in a particular situation;
- use mathematical knowledge and concepts accurately;
- work systematically and check their work;
- use mathematics to solve problems and make decisions;
- develop methods and strategies, including mental mathematics;
- explore ideas, make and test predictions and think creatively;
- identify and collect information;
- read, interpret, organise and present information in mathematical formats;
- use mathematical understanding and language to ask and answer questions, talk about and discuss ideas and explain way of working;
- develop financial capability;
- use ICT to solve problems and/or present their work.

Using Information and Communications Technology Across the Curriculum

Using Information and Communications Technology (ICT) provides powerful tools and contexts to support meaningful learning and has the potential to transform and enrich pupils' learning experiences and environments across the curriculum. The creative use of ICT can empower learners to become independent, self-motivated and flexible, helping in turn to develop self-esteem and positive attitudes to learning, with which to realise their full potential. It also provides opportunities to collaborate within and beyond the classroom to pose questions, take risks and respond positively to 'what if' questions.

To help develop skills in researching, handling and communicating information pupils should have opportunities, using ICT, to engage in genuine research and purposeful tasks set in meaningful contexts. They should be encouraged to re-work information, present and exchange their ideas and translate their thinking into creative products and productions which show an awareness of audience and purpose.

The requirements for Using ICT are set out below.

Across the curriculum, at a level appropriate to their ability, pupils should be enabled to develop skills to:

Explore

Pupils should be enabled to:

- access and manage data and information;
- research, select, process and interpret information;
- investigate, make predictions and solve problems through interaction with digital tools;
- understand how to keep safe and display acceptable online behaviour.

Express

Pupils should be enabled to:

- create, develop, present and publish ideas and information using a range of digital media;
- create information and multimedia products using a range of assets.

Exchange

Pupils should be enabled to:

- communicate using a range of contemporary methods and tools;
- share, collaborate, exchange and develop ideas digitally.

Evaluate

Pupils should be enabled to:

- talk about, review and make improvements to work, reflecting on the process and outcome;
- consider the sources and resources used.

Exhibit

Pupils should be enabled to:

- manage and present their stored work;
- showcase their learning across the curriculum.

Links between Cross-Curricular Skills and Mathematics with Financial Capability

Cross-curricular skill	Communication	Using Mathematics	Using ICT
Purpose	To provide opportunities for pupils to acquire, develop and demonstrate the cross-curricular skill of Communication	To provide opportunities for pupils to acquire, develop and demonstrate the cross-curricular skill of Using Mathematics	To provide opportunities for pupils to acquire, develop and demonstrate the cross-curricular skill of Using ICT
Examples of processes	Discussion, presentation, demonstration, asking questions, reading text for information, using evidence from text to explain opinion, communicate information in a clear and organised way, present ideas in a variety of formats for different audiences and purposes, etc.	Use mathematical knowledge and concepts, use mathematics to solve problems and make decisions, mental mathematics, make and test predictions, data handling, using statistics, developing financial capability, etc.	Explore information using electronic tools, create, develop, present and publish ideas using a range of digital media, communicate electronically, etc
Examples of contexts in Mathematics with Financial Capability	<ul style="list-style-type: none"> • Read and interpret information from a range of sources, including graphical information • Talk about, discuss and explain their work in Mathematics. Develop skills in using mathematical language where appropriate • Present a topic related to Mathematics or Financial Capability to the class • Research information from a range of sources to find best value in terms of financial products, for example, best savings rate, best loan terms, etc. 	<ul style="list-style-type: none"> • Be aware of how the knowledge and skills they develop in Mathematics can be applied to a range of situations/ contexts • Know which mathematics to choose for a particular situation/context • Apply mathematical techniques correctly • Justify their choice of strategy • Explain their working using appropriate mathematical language • Use mathematical skills in financial contexts 	<ul style="list-style-type: none"> • Develop mathematical skills using software such as Logo • Use Spread Sheet software to process and manipulate data; know how to use formula functions such as 'sum' and 'mean' • Use presentation software to present a topic or results of research/data gathering to the class • Use the internet as a research tool: find out about famous mathematicians, different occupations which use mathematics, best value in financial contexts, etc

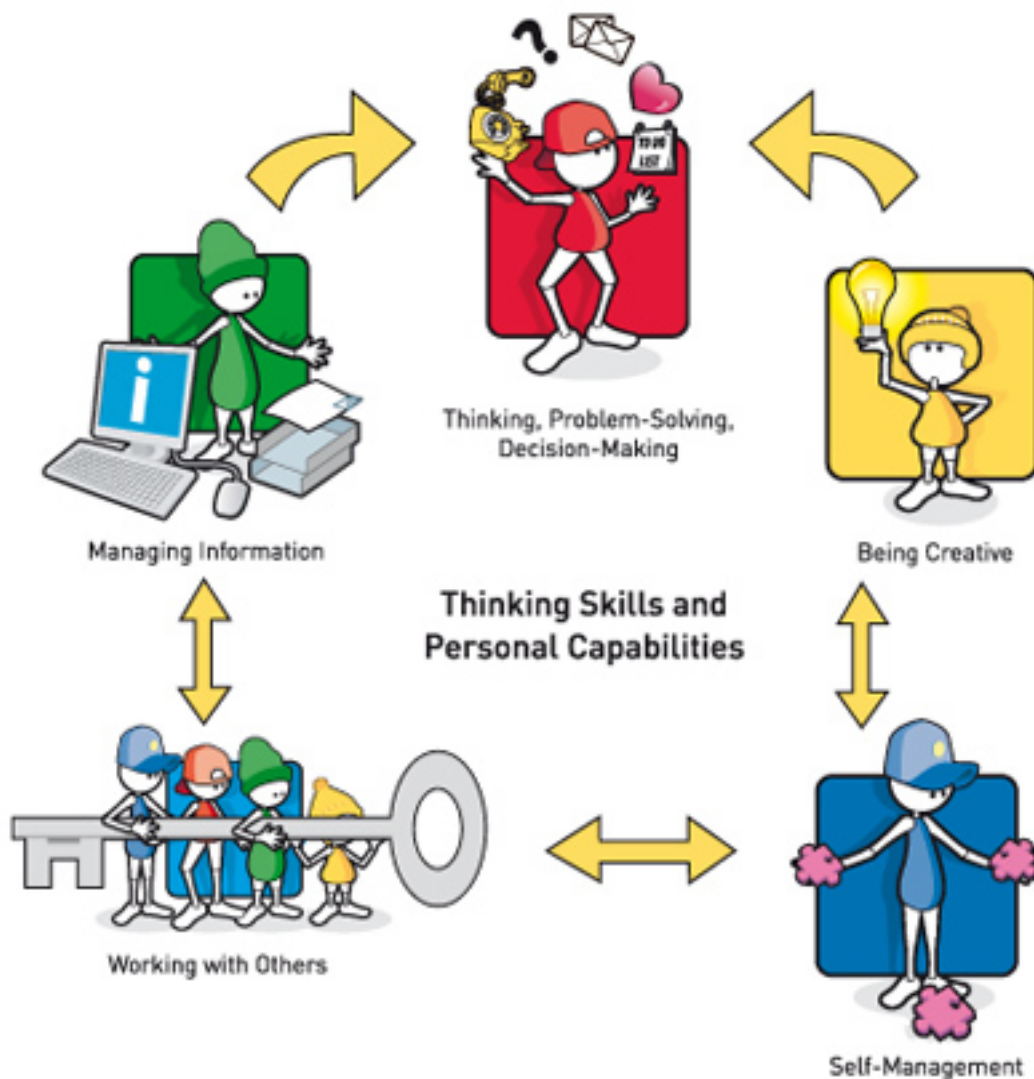
Appendix 2

Thinking Skills and Personal Capabilities

Thinking skills are tools that help pupils to go beyond the acquisition of knowledge in order to search for meaning, apply ideas, analyse patterns and relationships, create and design something new and monitor and evaluate their progress.

Personal and interpersonal skills and capabilities underpin success in all aspects of life. It is important, therefore, that pupil's self-esteem and self-confidence are explicitly fostered along with the ability to understand and manage their own emotions and to interact effectively with others.

Teachers should help pupils to develop Thinking Skills and Personal Capabilities by focusing on the following areas.



Thinking Skills and Personal Capabilities in Mathematics with Financial Capability

Thinking skills and Personal Capabilities strands	Managing Information	Thinking, Problem-Solving and Decision-Making	Being Creative	Working with Others	Self-Management
Purpose	To develop learners' abilities in an information intensive environment	To engage pupils in active learning so that they can go beyond mere recall of factual information and the routine application of procedures	To encourage personal response of the learner by promoting dispositions for curiosity, exploration, experimentation and invention	To enable learners to engage in collaborative activities and to make the most of their learning when working with others	To help learners to become more self-directed so that they can manage their learning in new situations and in the longer term
Examples of processes in which pupils are involved	Accessing, selecting, recording, integrating, communicating	Searching for meaning, deepening understanding, coping with challenges	Imagining, generating, inventing, taking risks for learning	Being collaborative, being sensitive to others' feelings, being fair and responsible	Evaluating strengths and weaknesses, setting goals and targets, managing and regulating self
Examples of contexts in Mathematics with Financial Capability	Check reliability of information. Is it reliable, current and free of bias – is it 'good' information? When selecting the most appropriate method for sourcing information, consider a range of possible sources: own measurements; collecting data using, for example, a questionnaire; an external source	When making links between cause and effect, pupils consider how the relationship would be affected if something changed When problem solving, clarify the nature of the problem; identify possible solutions and try out the best one; take steps to solve the problem which may involve practical investigative work When examining options, think through each option and weigh up the pros and cons of each; make a reasonable choice	Pupils pose questions to stimulate their curiosity Come up with ideas; debate and discuss them; test ideas out Take an idea and develop it; build on each others' ideas Consider other methods and approaches Deal with unexpected answers; be open to new challenges and face new problems See 'mistakes' as useful opportunities for learning	In group contexts, distribute tasks/roles; take turns; negotiate who does what; share information with each other; each pupil takes a role in decision making; all opinions are valued; pupils learn to deal with disagreements and reach a compromise	Lay out work in a clear and organised manner Know when to ask for help Apply new learning to own personal contexts, for example, managing their money and making spending choices

Appendix 3

Developing Financial Capability

What is Financial Capability?

Financial Capability means being able to manage money, keep track of your finances, plan ahead, choose financial products and stay informed about financial matters. It includes:

- financial knowledge and understanding – what money is, where it comes from and goes to;
- financial skills and competence – budgeting, spending and saving, risk and return;
- financial responsibility – making personal choices and understanding the implications of finance.

Why is Financial Capability Important?

Financial Capability is an essential life skill. Throughout their lifetime, pupils will be faced with increasingly complex financial decisions. Reasons for this include:

- different methods of paying for goods and services; cash back at the checkout;
- a job for life is no longer guaranteed; working on contracts is a feature of a more flexible labour market;
- accessible credit including store cards;
- managing debt including student loans and credit cards;
- increased longevity so planning for retirement is essential.

Without the ability to make sound financial decisions, today's pupils are unlikely to have the skills to cope with the financial strains of everyday life and work situations. Recent research, (Atkinson and Kempson, 2004)* has shown that young people (aged 18-24) have a very high risk of over-borrowing and of getting into financial difficulties.

Why is it included with Mathematics?

Financial decision making is an area where people draw on their mathematics and numeracy skills. When people have issues about finance and financial decision making they often cite poor mathematical knowledge as a contributing factor. By linking these two areas, it is hoped that pupils will learn to be more confident financial decision makers in the future. Financial Capability provides a motivating and meaningful context to develop aspects of mathematical skills, knowledge and understanding.

How much knowledge of finance do I need to teach Financial Capability?

Teaching Financial Capability does not require in-depth knowledge of financial products and services. It is about understanding its underlying principles and developing skills. Focusing on principles and skills provides the best approach and is more relevant to developing Financial Capability than a focus on 'products'. This approach is also less threatening for teachers and learners.

How can I cope with the range of financial experience within each class?

One way round the issue of everyone having different home experiences is to provide a common experience in the classroom which will serve as a base of shared knowledge, focusing on 'third party' rather than personal experiences.

To this end, CCEA has adapted two resources for use in Northern Ireland: 'Talk Money Talk Maths' and 'Developing Financial Capability Through Mathematics'.

What are the requirements for teaching Financial Capability?

Financial Capability is specifically referenced in the statutory requirements for Mathematics with Financial Capability as follows:

Developing pupils' Knowledge, Understanding and Skills

Pupils should have opportunities to develop:

- knowledge and understanding of personal finance issues and skills to enable competent and responsible financial decision making.

Developing pupils as contributors to the economy and environment

Pupils should have opportunities to:

Apply mathematical skills in everyday financial planning and decision making, for example, *cash and non – cash methods of payment for goods and services, to include relevant examples such as mobile phone tariffs and e-shopping; the role of banks, building societies, credit unions and the post office; sources of income; savings; dealing with debt and credit; exchange rates.* (Key Element: **Economic Awareness**)

Learning Outcomes

Demonstrate financial capability in a range of relevant everyday contexts.

As well as these specific references, many of the other statements described in the statutory requirements can also be applied to Financial Capability.

Possible Topics in Financial Capability

- Making spending decisions with a limited amount of money
- Developing an awareness of how much items cost and estimating weekly spending
- The difference between needs and wants
- Different methods of payment
- The concept of interest
- Savings, managing money and the role of financial institutions
- Credit cards and store cards
- Loans for big purchases such as cars, houses and going to college
- Insurance and risk
- Different currencies and money needs when travelling
- Earning money
- Planning for the future
- Managing debt.

* Atkinson, A., Kempson, E. (2004), *Young People, Money Management, Borrowing and Saving*, A report to the Banking Code Standards Board, Personal Finance Research Centre, Bristol.

Appendix 4

Linking Mathematics with Financial Capability to Learning for Life and Work

Within Mathematics with Financial Capability, there are opportunities to develop aspects of the four strands of Learning for Life and Work.

Local and Global Citizenship

Opportunities to contribute to the key concept of Diversity and Inclusion:

- exploring the contribution of different cultures to the development of mathematics;
- financial Capability: Financial issues faced by different communities (paying/charging interest is forbidden in Islam);
- mathematical games from around the world (such as Mancala);
- using statistics and data handling methods when investigating factors that influence individual and group identity.

Opportunities to contribute to the key concept of Democracy and Active Participation:

- explore the mathematics used in different voting systems; how different methods can give different results;
- financial decisions and responsibilities faced by governments and other governing bodies.

Opportunities to contribute to the key concept of Equality and Social Justice:

- as part of Financial Capability, investigate how inequalities can arise in society including how and why some people may experience inequality/social exclusion on the basis of their material circumstances in local and global contexts.

Home Economics

Opportunities to address the key concept of Independent Living as part of Financial Capability.

Personal Development

Opportunities to contribute to the key concepts of Self Awareness and Personal Health through the key elements of Personal Understanding and Personal Health within Mathematics with Financial Capability.

Education for Employability

Opportunities to contribute to the key concept of Work in the Local and Global Economy:

- as part of Financial Capability, investigate how technology is affecting life and work, for example, methods of payment, internet banking and online shopping.

Opportunities to contribute to the key concept of Career Management:

- use a range of ICT resources to investigate a variety of both familiar and unfamiliar jobs which use skills developed in Mathematics with Financial Capability;
- financial Capability: Explore the financial challenges posed by having several job changes during their working lives as opposed to having 'a job for life'. These would include saving for times in between jobs, becoming self employed, and pension planning;
- assess personal skills and achievements to date in the area of Mathematics with Financial Capability; identify areas of interest and set targets for self-improvement.

Opportunities to contribute to the key concept of Enterprise and Entrepreneurship:

- what skills in Mathematics with Financial Capability could be described as enterprising?
- demonstrate initiative and creativity in organising a task or resolving a problem in the context of Mathematics or Financial Capability, for example, organising a fundraising events, planning for a school trip, a maths challenge etc.

Mathematics and Numeracy: Mathematics with Financial Capability

The minimum content is set out below. The statutory requirements are set out in **bold** under Knowledge, Understanding and Skills in column 1, under the Curriculum Objectives and Key Elements in columns 2, 3 and 4 and in the Learning Outcomes at the bottom. Additional non-statutory guidance and suggestions are set out in plain text and italics.

<p>Developing pupils' Knowledge, Understanding and Skills</p>	<p>(Objective 1) Developing pupils as Individuals</p>	<p>(Objective 2) Developing pupils as Contributors to Society</p>	<p>(Objective 3) Developing pupils as Contributors to the Economy and the Environment</p>
<p>Pupils should have opportunities, through the contexts opposite, to develop:</p> <ul style="list-style-type: none"> • Knowledge and understanding of <ul style="list-style-type: none"> • Number • Algebra • Shape, Space and Measures • Handling Data; • knowledge and understanding of personal finance issues; and skills to enable competent and responsible financial decision making; • the application of mathematical skills to real life and work situations; • the creative use of technology to enhance mathematical understanding; <p>by demonstrating:</p> <ul style="list-style-type: none"> • creative thinking in their approach to solving mathematical problems; • increasing competence in mental mathematics skills; • increasing competence in pencil and paper methods; • increasing confidence in the use of mathematical language and notation; • practical skills using technology. 	<p>Young people should have opportunities to :</p> <p>Investigate a personal and class lifestyle study of time, for example, <i>time spent in school, doing homework, watching TV or taking exercise.</i> (Key Element: Personal Understanding)</p> <p>Work collaboratively in problem solving, taking account of others' viewpoints to reach consensus. (Key Element: Mutual Understanding)</p> <p>Demonstrate an ability and willingness to develop logical arguments, for example, <i>justify how they arrived at a conclusion or solution to a problem.</i> (Key Element: Moral Character)</p> <p>Explore issues related to Personal Health</p> <p>Investigate aspects of health and healthy living, for example, <i>body temperature, heart rate, breathing rate, nutritional requirements, food choices, special diets, road safety, substance misuse, life expectancy. Investigate incidence of diseases and recovery rates, for example, heart disease, cancers, chicken-pox, influenza, etc.</i> (Key Element: Personal Health)</p> <p>Explore issues related to Spiritual Awareness</p> <p>Be aware of the infinite nature of number and space and the prevalence of pattern, for example, <i>the Fibonacci series in the natural world, harmonics in music, 'golden ratio', Islamic tiles, etc.</i> (Key Element: Spiritual Awareness)</p>	<p>Young people should have opportunities to:</p> <p>Analyse and interpret information patterns relating to local and global trends, for example, <i>population profile (including age, gender, religion and ethnicity), indices of development, voting patterns, crime rates, etc.</i> (Key Element: Citizenship)</p> <p>Critically examine the use and misuse of mathematics to justify/support particular attitudes/opinions in different media, and the interpretation of data, for example, <i>advertising and opinion polls.</i> (Key Element: Media Awareness)</p> <p>Explore issues related to Cultural Understanding</p> <p>Explore how mathematics have been used and developed in other parts of the world, for example, <i>Egyptian fractions, Russian multiplication, Roman numerals; how European digits derived from Arabian numbers.</i></p> <p>Explore elements of geometry using patterns from different cultures, for example, <i>Arabic quilt designs and Islamic patterns.</i></p> <p>Apply mathematical problem solving skills to contexts faced by developing countries, including mathematical games from these cultures. (Key Element: Cultural Understanding)</p> <p>Explore issues related to Ethical Awareness</p> <p>Research and interpret statistics in relation to social and economic issues, for example, <i>compare and contrast aid versus arms expenditure or aid versus debt repayments, hospital waiting lists, child labour, etc.</i> (Key Element: Ethical Awareness)</p>	<p>Young people should have opportunities to:</p> <p>Examine the role of mathematics as a "key" to entry for future education, training and employment.</p> <p>Explore how the skills developed through mathematics will be useful to a range of careers, for example, <i>jobs involving computation, checkout operation, data analysis, education, financial services, quantitative problem solving, research, surveying, construction, etc.</i> (Key Element: Employability)</p> <p>Apply mathematical skills in everyday financial planning and decision making, for example, <i>cash and non-cash methods of payment for goods and services, to include relevant examples such as mobile phone tariffs and e-shopping; the role of banks, building societies, credit unions and the post office; sources of income; savings; dealing with debt and credit; exchange rates.</i> (Key Element: Economic Awareness)</p> <p>Explore issues related to Education for Sustainable Development</p> <p>Understand the need to manage renewable and non-renewable resources, for example, <i>investigate the savings and benefits of energy conservation measures etc.</i></p> <p>Investigate the various costs and benefits of waste management, for example, <i>by analysing the cost/benefit of recycling glass, paper, garden waste and other waste.</i> (Key Element: Education for Sustainable Development)</p>
<p>Learning Outcomes</p> <p>The Learning Outcomes require the demonstration of skills and application of knowledge and understanding of Mathematics.</p> <p>Pupils should be able to:</p>	<ul style="list-style-type: none"> • demonstrate mental mathematical capability with simple problems; • decide on the appropriate method and equipment to solve problems-mental, written, calculator, mathematical instruments or a combination of these; • demonstrate financial capability in a range of relevant everyday contexts; • research and manage information effectively to investigate and solve mathematical problems, including Using ICT where appropriate; • show deeper mathematical understanding by thinking critically and flexibly, solving problems and making informed decisions, demonstrating Using ICT where appropriate; • demonstrate creativity and initiative when developing ideas and following them through; • work effectively with others; • demonstrate self management by working systematically, persisting with tasks, evaluating and improving own performance; • communicate effectively in oral, visual, written, mathematical and ICT formats, showing clear awareness of audience and purpose. 		

NB: Teachers may develop activities that combine many of the statutory requirements, provided that, across the key stage, all of the statutory aspects highlighted in **BOLD** (including each of the Key Elements) are met.

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