loving laughing learning

Mission Statement

St. Patrick's Catholic Primary School offers distinctive education within a caring Christian community where everyone can feel valued, confident and secure.

We believe that each person is gifted, unique and loved by God.

By working in partnership we create a challenging, stimulating and effective learning environment where Christ is our inspiration.

Computing Policy

Last updated: Summer 2024	
Next Review: Summer 2025	
Headteacher Signature **Mary Jenkinson**	**Vice chair of the LAC** **Barbara Clements**

COMPUTING Policy

Diocese of Hallam

Ofsted Good Provider

This policy is to be read in combination with our e-safety, child protection, information sharing, and safeguarding and GDPR policies.

Introduction

This Policy outlines the purpose, nature and management of the computing taught at St Patrick's Catholic Primary School. The policy has been written to encourage a development in the shared understanding of how computing is taught and learned at the school as incorporated within the curriculum. The implementation of this policy is the responsibility of all school and teaching staff. The use of information and communication technology is an integral part of the national curriculum and is a key skill for everyday life. computers, tablets, programmable robots, digital and video cameras are a few of the tools that can be used to acquire, organise, store, manipulate, interpret, communicate and present information. We recognise that pupils are entitled to quality hardware and software and a structured and progressive approach to the learning of the skills needed to enable them to use it effectively. The purpose of this policy is to state how the school intends to make this provision.

Intent

In line with the 2014 National Curriculum for Computing, our aim is to provide a high quality computing education ,which equips children to use computational thinking and creativity to understand and change the world. The curriculum will teach children key knowledge about how computers and computer systems work, and how they are designed and programmed. Learners will have the opportunity to gain an understanding of computational systems of all kinds, whether or not they include computers.
By the time they leave Saint Patrick's, children will have gained key knowledge and skills in the three main areas of the computing curriculum: computer science (programming and understanding how digital systems work), information technology (using computer system to store, retrieve and send information) and digital literacy (evaluating digital content and using technology safely and respectfully). The objectives within each strand support the development of learning across the key stages, ensuring a solid grounding for future learning and beyond.

Aims

The school's aims are to:

- provide a relevant, challenging and enjoyable curriculum for COMPUTING and computing for all pupils;
- meet the requirements of the national curriculum programmes of study for COMPUTING and computing;
- use COMPUTING and computing as a tool to enhance learning throughout the curriculum;

- to respond to new developments in technology;
- to equip pupils with the confidence and capability to use COMPUTING and computing throughout their later life;
- To develop the understanding of how to use COMPUTING and computing safely and responsibly.

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles of computer science, including logic, algorithms, data representation, and communication;
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems;
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems;
- are responsible, competent, confident and creative users of information and communication technology;

Computing programmes of study:
Key stages 1 and 2: National curriculum in England

Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Buildings on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Subject content

EYFS

The new Early Years Foundation Stage curriculum came into force in September of 2021, with a few marked changes.

Many will have noticed that the 'Technology' strand has now been removed from 'Understanding the World' and has not been replaced with any updated guidance. This has caused confusion amongst many teaching professionals who are now wondering whether we should still be teaching Computing in the Early Years or whether the subject has been deemed as unimportant or unnecessary for Reception children.

Should computing still be taught in EYFS?

Yes! Computing and technology are still vitally important subjects to deliver to Reception children. Not only will teaching a well-planned Computing curriculum ensure that children enter Year 1 with a strong foundation of knowledge, but Computing lessons in the EYFS also ensure that children

develop listening skills, problem-solving abilities and thoughtful questioning — as well as improving subject skills across the seven areas of learning.
We live in a technological world and there is no escape from the reality that technology is integrated into the lives of young children. Just as we ensure the children in our care are ready for the adult world by teaching them maths and literacy, we should make sure that they are fluent in computer literacy and all-important e-safety.

Computing in Reception does not mean typing out a Word document or creating a code. In fact, teaching technology in the Early Years does not have to involve computer work at all.

Our Computing scheme for the EYFS is centred around play-based, unplugged (no computer) activities that focus on building children's listening skills, curiosity and creativity and problem solving.

Technology in the Early Years can mean:

- taking a photograph with a camera or tablet
- searching for information on the internet
- playing games on the interactive whiteboard
- exploring an old typewriter or other mechanical toys
- using a Beebot
- watching a video clip
- listening to music

Allowing children the opportunity to explore technology in this carefree and often child-led way, means that not only will they develop a familiarity with equipment and vocabulary but also they will have a strong start in Key Stage 1 Computing and all that it demands.

Assessment of Computing in EYFS

Although the technology strand has been removed from the EYFS curriculum, many other assessment opportunities arise from delivering a well-planned Computing scheme. Our Computing lessons are largely cross curricular with strong links to communication and language, mathematics, physical development and the characteristics of effective learning in particular.

As you work through the lessons within and complete observations for each child, you will be able to gather evidence towards the relevant Early Learning Goals (ELGs) for each area of learning. Our scheme includes questions to consider, things to look out for as you complete your observations and assessments of the children during each lesson, and 'next steps' are included with every plan. These will work together to help you to decide upon a best-fit picture for each child and will ultimately inform the Reception end of year profile when the child is assessed as

‘emerging’, ‘secure’, or ‘exceeding’ the ELG. While there is no longer a specific technology strand, the skills learned in computing lessons will ensure progression across all other subjects.

It is important in the foundation stage to give children a broad, play-based experience of Computing in a range of contexts, including outdoor play. Computing is not just about computers. Early years learning environments should feature Computing scenarios based on experience in the real world, such as in role-play. Children gain confidence, control and language skills through opportunities to ‘paint’ on the whiteboard or drive a remote-controlled toy. Recording devices can support children to develop their communication skills. This is particularly useful with children who have English as an additional language.

Key stage 1

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to precomputing the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go
- For help and support when they have concerns about content or contact on the internet or other online technologies.

Key stage 2

Pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks including the internet; how they can provide multiple services, such as the world wide web, and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognising acceptable/unacceptable behaviour.
- Identify a range of ways to report concerns about content and contact.

DfE Computing Programme of Study: key stages 1 and 2 National curriculum in England 2013 Reference: DFE-00171-2013

What is the nature of Computing?

Computing and new technologies play an increasingly significant role in society. It is therefore vital that our young learners are equipped to utilise technology in order to enhance their development as they become confident individuals, successful learners, responsible citizens, effective contributors and facilitate the process of lifelong learning. Computing is more than 'computers' as it embraces peripherals such as laptops, iPad, cameras, scanners, projectors, white boards, TV screens control equipment and programmable devices.
The effective use of Computing plays a central role in all the key education policies being taken forward by the Department of Education (DE), including the curriculum and the literacy and numeracy strategy. Ensuring that young people acquire the skills to use Computing effectively, confidently and safely is a key priority for DE.

The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content.

Computing also ensures that pupils become digitally literate, able to use and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world. These three core aspects will be addressed within our curriculum through four core skills strands as outlined below.

Through these strands the aim is that by the time children leave Key Stage 2 they will be able to:

- Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. (CS) Analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems. (CS)
- Evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems. (IT)
- Be responsible, competent, confident and creative users of information and communication technology. (DL)

Use relevant sources and techniques including:

- Microsoft Technologies
- Ipads
- Video cameras
- Data Handling software
- Email/ social media
- Research engines
- Sound and music equipment
- Data logging
- Beebots and probots
- BBC Microbits
- Enriches children's knowledge and understanding of other areas of the curriculum.
- Contributes to pupils' knowledge and understanding of the wider world.
- Encourages children to work independently in a variety of ways.
- Teaches children relevant skills.

Organisation

Teaching and Learning

Implementation

In the last two years, we have invested heavily in our computing offer. Children now can have a Chromebook each during their lessons so that their skills and knowledge are developing. Computing is taught using a blocked curriculum approach. This ensures children are able to

develop depth in their knowledge and skills over the duration of their computing topics. We have invested heavily in ICT this year with the purchase of a full class set of chrome books, which will enable all of the children to access the full ICT curriculum. It is the intention to use these within our English and other lessons to enable our children to improve their word processing skills. Likewise in maths to develop their use and understanding of spreadsheets. In a cross curricular manner, the children will have full and safe access to the internet for independent research as well. Employing cross-curricular links motivates pupils and supports them to make connections and remember the steps they have been taught.

The implementation of the curriculum also ensures a balanced coverage of computer science, information technology and digital literacy. The children will have experiences of all three strands in each year group, but the subject knowledge imparted becomes increasingly specific and in depth, with more complex skills being taught, thus ensuring that learning is built upon. For example, children in Key Stage 1 learn what algorithms are, which leads them to the design of programming in Key Stage 2, where they design, write and debug programs, explaining the thinking behind their algorithms.

We have also created a google classroom, which we will use to engage our children in how they can communicate on many levels with a range of people. They will learn how to formulate emails, share information, upload files and create their own storage areas. We will be using this platform for teams meetings with other schools and regions

Why use our Teach Computing Curriculum?
https://teachcomputing.org/curriculum

As a school, we use the above computing curriculum as it offers links for our children into KS3 computing. It also has a lot of CPD for our staff to develop our own skills and subject knowledge

- Resources include lesson plans, slides, activity sheets, homework, and assessments
- Each key stage has a teacher guide and curriculum map to help you get started
- Built around an innovative progression framework where computing content has been organised into interconnected networks we call learning graphs
- Created by subject experts, using the latest pedagogical research and teacher feedback
- All of the content is free for you to use, and in formats that make it easy for you to adapt it to meet the needs of your learners

Impact

Our approach to the curriculum results in a fun, engaging and high-quality computing education. The quality of children's learning will be evident within our google classroom, a digital platform where pupils can share and evaluate their own work, as well as that of their peers. Evidence such as this is used to feel into teachers' future planning and as a topic-based approach continues to be developed, teachers are able to revisit misconceptions and knowledge gaps in computing when

teaching other curriculum areas. This supports varied paces of learning and ensures that all children make good progress.

Much of the subject- specific knowledge developed in our computing lessons; equip pupils with experiences, which will benefit them in secondary school, further education and future work places. From research methods, use of presentation and creative tools and critical thinking, computing at Saint Patrick's gives children the building blocks that enable them to pursue a wide range of interests and vocations in the next stages of their lives.

Planning

What our children will learn in computing lessons

As a half form entry school, the following is on a two-year programme. Cycle a Years 1, 3 and 5 and Cycle B Years 2, 4 and 6

The Teach Computing curriculum is structured into units for each year group, and each unit is broken down into lessons. Units can generally be taught in any order, with the exception of programming, where concepts and skills rely on prior knowledge and experiences. Lessons must be taught in numerical order.

Year 1

- 1. Computing systems and networks – Technology around us
- 2. Creating media – Digital painting
- 3. Programming A – Moving a robot
- 4. Data and information – Grouping data
- 5. Creating media – Digital writing
- 6. Programming B - Programming animations

Year 2

- 1. Computing systems and networks – IT around us
- 2. Creating media – Digital photography
- 3. Programming A – Robot algorithms
- 4. Data and information – Pictograms
- 5. Creating media - Digital music
- 6. Programming B - Programming quizzes

Year 3

- 1. Computing systems and networks – Connecting computers
- 2. Creating media - Stop-frame animation
- 3. Programming A - Sequencing sounds
- 4. Data and information – Branching databases
- 5. Creating media – Desktop publishing
- 6. Programming B - Events and actions in programs

Year 4

- 1. Computing systems and networks – The Internet
- 2. Creating media - Audio production
- 3. Programming A – Repetition in shapes
- 4. Data and information – Data logging
- 5. Creating media – Photo editing
- 6. Programming B – Repetition in games

Year 5

- 1. Computing systems and networks - Systems and searching
- 2. Creating media - Video production
- 3. Programming A – Selection in physical computing
- 4. Data and information – Flat-file databases
- 5. Creating media – Introduction to vector graphics
- 6. Programming B – Selection in quizzes

Year 6

- 1. Computing systems and networks - Communication and collaboration
- 2. Creating media – Web page creation
- 3. Programming A – Variables in games
- 4. Data and information - Introduction to Spreadsheets
- 5. Creating media – 3D Modelling
- 6. Programming B - Sensing movement

Evidence Base – Monitoring of Computing

The majority of the children's work will be stored electronically but it is the expectation of all class teachers to retain files of work and create/ maintain a scrapbook of computing work that can be used as part of the monitoring and evaluation schedule.

Assessment

The teaching of Computing, in all year groups, is incorporated within daily lessons and focused skills based sessions. Assessment of pupil progress in Computing aims to assist pupils in understanding their own progress, aid teachers with their planning, as well as informing the school is monitoring of progression and attainment. Therefore, children should assess their work in accordance with the school's policy for self-assessment, as they would do for any other written work. Teachers should ensure that children strive to meet the skills, whilst also building up their knowledge and understanding of Computing, inclusive of knowledge of unplugged learning and key vocabulary.

Staff are to use STEM end of Year Expectations and NC statements to make judgements on the progression of skills and knowledge and at the end of each unit of work. (See Appendix 1)

The assessments made throughout the academic year are recorded and used to inform the end of year reports to parents/guardians. The co-ordinator with support from the wider management team will also carry out annual Computing drop ins, work scrutinies, evaluations of lesson planning, conducting pupil interviews, discussions with pupils, staff and parents as well as carrying out formal lesson observations. These will be recorded and tracked on our data tracking system OTrack.

Assessment can be broken down into;

- Formative assessments are carried out during and following short focused tasks and activities. They provide pupils and teaching staff the opportunity to reflect on their learning in the context of the agreed success criteria. This feeds into planning for the next lesson or activity.
- Summative assessment should review pupils' capability and provide a best-fit level. Use of independent open-ended tasks, provide opportunities for pupils to demonstrate capability in relation to the term's work

Teacher Assessment Criteria

- Teachers assess against the Learning Objectives specified on our whole school Computing curriculum map
- At the end of each unit of work, teachers assess pupils attainment, identifying pupils Working Towards ARE, Working at ARE and Working at Greater Depth. Marking adheres to the school's marking policy.
- Assessment for learning based on observations, key questioning and discussion, used to inform lesson planning and evaluate attainment at the end of each unit.
- Accurate and regular assessments of individual attainment, which are used to shape future learning.

- Opportunities for children to evaluate their own work and that of other pupils through self and peer-assessment.
- The teach computing programme used across school has inbuilt in unit assessments to track children's progress

Resources

Computing and new technologies is financed from the school budget. It is the responsibility of the Head teacher, Coordinator and ACS (UK) Ltd, should resources need updating or replacing.

The subject leader will

- Regularly assess the available resources and ensures they are being used effectively.
- With regards to plans, the subject leader has access to termly plans (which will include resource requirements) and through this can monitor and review the delivery of Computing throughout the school. Wherever possible shared Computing resources should be kept in the Computing trollies. It has been agreed the full class set will remain intact with a timetable in place.

Pupils with Special Needs

Computing is taught in mixed ability classes and all pupils are taught the knowledge, skills and understanding of Computing in ways that suit their individual abilities. Work is adapted for children of all abilities and provision is provided for those who are unable to access their year group curriculum. Pupils may be supported in Computing lessons by teaching assistants as well as the use of various resources. The language demands of computing work will be adapted to allow equal opportunities of access to the Computing skills. Pupils that are more able will receive activities, which are open ended, require a greater level of skills and higher order skills. Class teachers are responsible for ensuring that all pupils can access learning in Computing across the curriculum.

Equal Opportunities

During the incorporation of Computing, insight is given to the promotion and use of positive images. This balance is supported with suitable language, computingional and non-computingional texts, computingures, internet and resources. Activities are adapted to ensure equal access for all pupils with special educational needs.
We advocate co-operative work to enhance social skills. We will endeavour to ensure that all children are given the necessary support to access learning in line with other school policies.

Wi-fi in schools

Wi-Fi is being used in more schools as computing use for teaching and learning continues to grow. We have invested in six new wi- fi boosters to ensure that the children retain and maintain signal access during whole class computing lessons.

On 12 October 2007, the former Health Protection Agency (HPA) (now called Public Health England) announced an extended programme of research into wireless local area networks and their use, including measurements of exposures from wi-fi networks. The data gathered during the project continued to reinforce the position adopted by the HPA at the beginning of the project that there is no consistent evidence to date that exposure to radio signals from Wi-fi and WLANs adversely affects the health of the general population.

Guidance on wi-fi radio waves and health was published on 1 November 2013 by Public Health England, an executive agency of the Department of Health in the UK, and may be accessed on the Public Health England website(external link opens in a new window / tab).

The Department of Education will continue to monitor the position regarding wi-fi.

Resources and access

The school acknowledges the need to continually maintain, update and develop its resources and to make progress towards a consistent, compatible computing infrastructure by investing in resources that will effectively deliver the strands of the national curriculum and support the use of Computing and computing across the school. Teachers are required to inform the Computing and computing coordinator of any faults as soon as they are noticed.

Computing and computing network infrastructure and equipment has been sited so that:

- Every classroom from EYFS to Yr6 has a computer connected to the school network and an interactive whiteboard with sound and DVD facilities
- There are two charging trollies in school containing 30 Chrome Books with internet access available to use in classrooms.
- Pupils may use computing and computing independently, in pairs, alongside a TA or in a group with a teacher.
- The school has an computing and computing technician Jasmine COMPUTING, who maintains and updates both the hardware and the software
- Each class teacher has an ipad to facilitate the use of photographs and rewards system using Class Dojo.
- Adults who work with 1:1 children also have an ipad to facilitate learning in an adapted way
- There will be central access to a half class set of Bee bots to aid programming
- All of the required software will be available on the Chrome Books

- During lockdown, 27 laptops, 10 tablets and 12 ipads were secured from the department of education and these continue to be loaned out to children to access their home learning. Help is also still available with data cards and Wi-Fi codes to ensure computing access for all our children.

Monitoring and evaluation

The subject leader is responsible for monitoring the standard of the children's work and the quality of teaching in line with the school's monitoring cycle. This may be through lesson observations, workbook scrutiny of looking at other data for the subject. The subject leader is also responsible for supporting colleagues in the teaching of computing, for being informed about current developments in the subject, and for providing a strategic lead and direction for the subject in the school. We allocate special time for the vital task of reviewing samples of children's work and for visiting classes to observe teaching in the subject.

The role of the co-ordinator

- To produce a computing development plan and for the implementation of the computing and computing policy across the school.
- To offer help and support to all members of staff (including teaching assistants) in their teaching, planning and assessment of computing. CPD links to be shared with the staff on a regular basis
- To maintain resources and advise staff on the use of materials, equipment and books.
- To monitor classroom teaching or planning following the schools rolling programme of monitoring.
- To monitor the children's computing work, looking at samples of different abilities.
- To lead staff computing training on new initiatives.
- To attend appropriate in-service computing training and keep staff up to date with relevant information and developments in computing
- To have enthusiasm for computing and encourage staff to share this enthusiasm.
- To keep parents and governors informed with the implementation of computing in the school.
- To liaise with all members of staff on how to reach and improve on agreed targets in computing
- To help staff to use assessment to inform future planning in computing teaching.
- To use the class files and floor books to monitor the ongoing learning and progression across all stages

Security

- The computing and computing technician /coordinator will be responsible for regularly updating anti-virus software.
- Use of computing and computing will be in line with the school's 'acceptable use policy/E-safety policy'.
- Parents will be made aware of the 'acceptable use policy' at school entry and KS2.
- All pupils and parents will be aware of the school rules for responsible use of computing and computing and the internet and will understand the consequence of any misuse.
- Within the provision from Whizz Kids, there is an inbuilt range of security measures in place to ensure that the google classroom will be able to be used safely and securely.
- Children have individual log ins to ensure that their data and work is securely stored and this is linked to Sims and our google classroom.

Cross curricular links

As a staff, we are all aware that computing capability should be achieved through core and foundation subjects. Where appropriate, computing should be incorporated into all subjects. Computing should be used to support learning in other subjects as well as develop computing skills.

Parental involvement

Parents are encouraged to support the implementation of computing where possible by encouraging use of computing skills at home during home-learning tasks and through the school website. They will be made aware of e-safety and encouraged to promote this at home. A parent workshop will be held regularly in the Autumn term to inform parents on how to keep their children safe whilst using technology. Regular updates re the use of apps and safety alerts will be shared using our school community network Class Dojo as well as on our school website and twitter (with consent in place)

Appendix Maths links to computing PoS

Year 1 Geometry position and direction
Statutory requirements

Pupils should be taught to:

- Describe position, direction and movement, including whole, half, quarter and three-quarter turns.
- Pupils use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside.
- Pupils make whole, half, quarter and three-quarter turns in both directions and connect turning clockwise with movement on a clock face.

Year 2 Geometry position and direction
Statutory requirements

Pupils should be taught to:

• order and arrange combinations of mathematical objects in patterns and sequences
• use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).

Notes and guidance (non-statutory)

- Pupils should work with patterns of shapes, including those in different orientations.
- Pupils use the concept and language of angles to describe 'turn' by applying rotations, including in practical contexts (for example, pupils themselves moving
- in turns, giving instructions to other pupils to do so, and programming robots using instructions given in right angles).

Year 3 Geometry – properties of shapes
Statutory requirements

Pupils should be taught to:

- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
- recognise angles as a property of shape or a description of a turn
- identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.

Notes and guidance (non-statutory)

- Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedral. Pupils extend their use of the properties of shapes. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle.
- Pupils connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.

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Year 4 Geometry position and direction

Statutory requirements

Pupils should be taught to:

• describe positions on a 2-D grid as coordinates in the first quadrant
• describe movements between positions as translations of a given unit to the left/right and up/down
• plot specified points and draw sides to complete a given polygon.

Notes and guidance (non-statutory)

- Pupils draw a pair of axes in one quadrant, with equal scales and integer labels. They read, write and use pairs of coordinates, for example (2, 5), including
- Using coordinate-plotting COMPUTING tools.

Year 5 Geometry – properties of shapes

Statutory requirements

- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees (o)
- identify:
- angles at a point and one whole turn (total 360o)
- angles at a point on a straight line and ½ a turn (total 180o)
- other multiples of 90o
- use the properties of rectangles to deduce related facts and find missing lengths and angles
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Notes and guidance (non-statutory)

- Pupils become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles.
- Pupils use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, for example using dynamic geometry COMPUTING tools.
- Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.

Year 5 Geometry – position and direction
Statutory requirements
Pupils should be taught to:

• identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.
Notes and guidance (non-statutory)

- Pupils recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant.
- Reflection should be in lines that are parallel to the axes.

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Year 6 Geometry – properties of shapes
Statutory requirements
Pupils should be taught to:

- draw 2-D shapes using given dimensions and angles
- recognise, describe and build simple 3-D shapes, including making nets
- compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Notes and guidance (non-statutory)

- Pupils draw shapes and nets accurately, using measuring tools and conventional markings and labels for lines and angles.
- Pupils describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements.

- These relationships might be expressed algebraically for example, d = 2 × r; a = 180 – (b + c).

Year 6 Geometry – position and direction
Statutory requirements
Pupils should be taught to:

• describe positions on the full coordinate grid (all four quadrants)
• draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
Notes and guidance (non-statutory)

- Pupils draw and label a pair of axes in all four quadrants with equal scaling. This extends their knowledge of one quadrant to all four quadrants, including the use of negative numbers.

Appendix Resources

Strand	Hardware	Software	Apps	Useful Websites
Communicating	Digital Still Camera Digital Video Camera Scanner MP3 Sound Recorder Microphones Headphone Talking Photo Albums	Windows Movie Maker IWB Software Sound editing software e.g. Audacity i-tunes MS Word MS Publisher MS Powerpoint PhotoStory 3 2 Create a Story 2 Animate Clicker 6	Puppet Pals Sock Puppets Book Creator Story Creator Our Story Morfo Garageband Imovie Istopmotion Prezi	http://www.britishpathe.com/
Finding out	Data loggers	2Count 2 Graph Excel Database software e.g. 2Question 2 Investigate Information Workshop i-tunes	Weather Pro	
Computing	Remote control toys Programmable toys e.g. Beebot, Probot, Roamer Control Hardware e.g. Flowgo	2go 2 Logo 2DIY 2code MSW Logo Kodu Scratch Flowol	Daisy the Dinosaur A.L.E.X Beebot Kodable Tynker Hopscotch Cargobot Move the Turtle 2DIY	**Scratch** – http://scratch.mit.edu/scratch_1.4/ **Kodu** – http://www.microsoft.com/engb/download/details.aspx?id=10056 **Blocky** http://code.google.com/p/blockly/

Appendix Support

- Programmes of study and links to resources: – https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study
- Computing at school (CAS) network : – http://www.computingatschool.org.uk/
- Expert group resources: – https://sites.google.com/site/primarycomputingitt/ –
- https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxwcmltYXJ5aWN0aXR0fGd4OjE2ZTMyM2Y1NTM0ZjdiNTE – https://sites.google.com/site/primarycomputingitt/home/research
- Code Academy Resources – http://www.codecademy.com/schools/curriculum
- The Royal Society, Shut Down or Restart? The Way Forward for Computing in UK Schools (London, 2012), –
- http://royalsociety.org/ uploaded Files/Royal_Society_Content/education/ policy/computing-in-schools/2012-01-12- computing-in-Schools.pdf
- Code Club provides detailed plans and resources for extra-curricular clubs, which might be adapted for use within the school curriculum. – http://www.codeclub.org.uk
- CAS Primary Master Teachers; for example, one teacher has shared detailed lesson plans for computer science and digital literacy topics via his website at: – http://www.code-it.co.uk
- Digital Schoolhouse project, a large collection of lesson plans and other resources based at Langley Grammar School: – http://www.digitalschoolhouse.org.uk
- Naace (the COMPUTING association) and CAS have developed joint guidance on the new computing curriculum: – http://naacecasjointguidance.wikispaces.com/home
- Childnet – E-safety – http://www.childnet.com/teachers-and-professionals
- Think u know – E-safety – https://www.thinkuknow.co.uk/teachers/

Learn about computing from home

Alongside our home teaching resources above, we have collated a variety of useful websites that can support parents and students with learning about computing from home.

- **Barefoot** (KS 1 and 2)
  Downloadable activities and games for children, links to live lessons and a guide for parents - includes cross-curricular lesson plans and resources that unpack computational thinking in a range of subjects.
- **Code Club** (KS 2)
  Projects and activities for home learning and a parent guide.
- **Computing at School - Home Learning** (KS 1 and 2)
  Information and links to a range of at home computing activities.

- **Raspberry Pi Foundation – Digital making at Home** (KS 2)
  Join the weekly code-along using open projects based on a weekly theme, with different levels available for all abilities, allowing you to be open-ended with opportunities for making and creativity.
- **Raspberry Pi Foundation - Projects** (KS 2)
  Projects and activities for home learning. Programme computers and make things with technology and electronics.
- **STEM Learning e-Library** (KS 1 and 2)
  an online resource bank, which links to resources on external websites. The site features a live chat function offering support from subject experts. New home learning resources are being developed.
- **UK Safer Internet Centre** (KS 1 and 2)
  Online safety resources aimed at 3 -11 year olds.