

Computing KS3 Department: Curriculum Overview 2024-25

Curriculum Intent:

In Maths, IT & Computing, our aims are for all students;

- To have a passion for and resilience towards Maths, IT and Computing
- To develop strong problem solving, digital literacy and numeracy skills
- To be able to communicate their learning in Maths, IT and Computing effectively
- To be aware of E-Safety and how to report concerns and keep themselves safe & healthy online
- To gain qualifications to best prepare students for life after Fullbrook

Year 7	Term 1		Term 2		Term 3		End Points
	Half Term 1 [4 lessons]	Half Term 2 [4 lessons]	Half Term 3 [3 lessons]	Half Term 4 [3 lessons]	Half Term 5 [3 lessons]	Half Term 6 [4 lessons]	
Topic	E-Safety	MS Office	Block Based Programming	Computing Theory	Spreadsheets	Digital Graphics	

<p>Skill</p>	<p>Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.</p>	<p>Be able to use word processing, spreadsheet and presentation software to solve a range of tasks.</p>	<p>Be able to use block-based programming to solve programming problems.</p>	<p>Understand different hardware & software, data & binary, internet & networks.</p>	<p>Be able to search, collect & record data. Write basic formulas and functions in Excel. Be able to format a spreadsheet. Use Publishing software to create a promotional flyer.</p>	<p>Be able to make use Adobe software package to create a range of different digital graphics which combine a range of tools and techniques.</p>	<p>Be able to create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability</p>
<p>Content</p>	<p><u>Lesson 1</u> Be able to use the Fullbrook software and hardware to access, attach & send emails, access IT Student Share drive, SLE & class charts. Create folder structures. Save work effectively.</p> <p><u>Lesson 2</u> To understand what cyberbullying is. To understand the impacts of cyberbullying on the individual To learn how to protect yourself from cyberbullying. To know how to report cyberbullying</p> <p><u>Lesson 3</u> To understand the terms sexting and grooming To understand the consequences of sexting To learn how to protect yourself from sexting To be able to identify the different types of grooming To be able to explain the impacts of grooming and methods you can follow to stay safe</p> <p><u>Lesson 4</u> To understand what a phishing email is and how they work To understand what they warning signs of a phishing email are. Be able to complete an assessment on what you have learnt so far. To learn about the potential career pathways in E-safety</p>	<p><u>Lesson 1</u> Be able to use a range of formatting skills in MS Word. Know keyboard shortcuts. Be able to do screenshots. Develop understanding of folder structure.</p> <p><u>Lesson 2</u> Understand what spreadsheets are used for. Be able to format a spreadsheet. Understand cell referencing. Be able to carry out basic operations (+, -, *, /)</p> <p><u>Lesson 3</u> Be able to create and format a power point. Be able to use transitions, hyperlinks and animations in power point. Be able to print multiple slides on one page.</p> <p><u>Lesson 4</u> Be able to combine multiple applications to complete a task, based on a business scenario</p>	<p><u>Lesson 1 – Sequencing</u> Translate movements into a series of commands using sequencing.</p> <p>Identify and locate bugs in a program.</p> <p><u>Lesson 2 – Sprites & Events</u> Create sprites and objects and assign them costumes and behaviours.</p> <p>Create an interactive animation using events. Develop programs that respond to timed events. Develop programs that respond to user input.</p> <p><u>Lesson 4 – Loops & Conditions</u> Use a combination of sequential and looped commands to reach the end of a maze.</p> <p>Identify the benefits of using a loop structure instead of manual repetition.</p> <p>Determine whether a condition is met based on criteria.</p> <p>Understand that programs can make decisions (selection)</p>	<p><u>Lesson 1 – Hardware & Software</u> Computer systems; Input, Storage, Processor, Output. Input & Output devices. System Software Application Software</p> <p><u>Lesson 2 – Data Representation & Binary</u> Know that all computer data is stored as binary. Know the increments of data sizes; bit, nibble, byte, kilobyte, megabyte, gigabytes, terabytes.</p> <p>Understand that binary values are used to represent many kinds of data, namely numbers, text, images or sound.</p> <p>Be able to convert binary (base2) to decimal (base10) and decimal to binary.</p> <p><u>Lesson 3 – Internet & Networks</u> Be able to define the internet. Know the difference between the internet and www. Understand characteristics of LAN and WAN.</p>	<p><u>Lesson 1</u> Be able to edit search filters online to collect information and record sources. Understand what makes a reliable source.</p> <p><u>Lesson 2</u> Be able to use basic to advanced formula and functions (SUM, MIN, MAX, AVE, MODE, IF) in Excel.</p> <p><u>Lesson 3</u> Be able to model different scenarios in spreadsheets. To use Publishing software to create a flyer for different target audiences.</p>	<p><u>Lesson 1</u> Be able to develop simple shapes and combine paths to develop new designs in Adobe Fireworks. Be able to apply these skills to create new digital graphics and logos.</p> <p><u>Lesson 2</u> Understand the difference between bitmap and vector graphics.</p> <p>Be able to design and then use advanced tools to create a digital product.</p> <p><u>Lesson 3</u> Be able to use advanced techniques to manipulate photographs using selection, layers and transforming tools.</p> <p>Be able to export the digital graphics into suitable file formats.</p> <p><u>Lesson 4</u> Be able to use multiple layers to create animated banners and export as GIF files.</p>	<p>Understand the hardware and software components that make up computer systems, Be able to use block-based programming languages Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns. Students will be able to use Fullbrook’s network effectively including folder structure, emails, accessing student shared drive, SLE and class charts.</p>

				Identify advantages and disadvantages of different connection methods; wired, Wi-Fi, cellular & satellite networks.			
Prior Knowledge Required	Any KS2 E-Safety SoW Use of desktop PCs @ home or schools.	Use of file explorer and Email, attachments, E-Safety, MS Office experience.	Use of file explorer & folder structures. Scratch at KS3. Paper based computational thinking skills.	Use of file explorer & folder structures. KS2 computing theory. base number systems in maths.	Use of file explorer & folder structures. MS Office SoW.	Use of file explorer & folder structures. MS Office keyboard shortcuts	
Feedback Points	Peer assessment of posters Verbal feedback Lesson 4 Assessment (Forms)	Verbal feedback. Self and peer assessment.	In class verbal and peer feedback. Kahoot Quiz.	Self & Peer assessment Verbal feed-back Forms quiz results & feedback	Verbal Feedback Quizizz.com	Self-Assessment, Peer Assessment Verbal Feedback	
Key Questions	Why is folder structure important? What are some dangers online? What can you do to ensure your identity is safe? Who do you report concerns to? How can you report concerns?	Why should we use formatting in documents? What are the benefits of keyboard shortcuts? How can spreadsheets save time? How can you make power point presentations interactive?	What is an Algorithm? What is sequencing? What is iteration? Why is it best to use iteration to reduce lines of / blocks of code?	What are the benefits of using block-based programming languages over text-based programming languages? What steps can I take to help with the design of computer programs?	How can you filter searches in Google? How do you reference cells in spreadsheet software? What makes data reliable? Why is modelling scenarios useful?	What is the difference between bitmap & vector graphics? What is a suitable image file format for the web and for print. What is resolution? What jobs make use of digital graphics editing?	
Direct Vocab Instruction	Cyberbullying Sexting Grooming Phishing	Formatting Formula Spreadsheet	Algorithm Sequencing Sprites Events Iteration (loops) Selection (decisions)	Input Output Binary Internet WWW Latency	Spreadsheets Formula Cell Reference Functions Target Audience	Bitmap Vector Resolution PPI DPI	
Standardised Homework	1- E-Safety Quiz, Email & Screen prints. 2- Online Safety Quiz 3- Interland 4- Careers.	1. Formatting in Word & Careers. 2. PRH update 3. PRH update	1. Identify functions of a computer. List input & output devices. 2. Origami Programming Task. 3. Computing constructs sheet	PRH to update	1. Parts of a spreadsheet & questioning a model. 2. Tools and formulas 3. RAD to update	1. Logo design 2. Digital Graphics research 3. Principles of design 4. Update	

Year 8	Term 1		Term 2		Term 3		
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6	End Point

	[4 lessons]	[3 lessons & 1 assessment]	[3 lessons]	[3 lessons]	[3 lessons]	[3 lessons & 1 assessment]	
Topic	App Development (MIT App Inventor)	Python (Text Based)	HTML (web Design)	Theory (Computing)	Game Making (Click Team Fusion)		Understand the 3 main constructs of computing. Be able to apply computational thinking in block based, object oriented and text-based programming languages.
Skill	Learn how to use external devices (Eg. Tablets) to test online applications simulating website access	Be able to solve problems by developing programs that make use of variables, calculate numerical values, selection, iteration, boolean variables and logical operators.	Be able to use word processing, spreadsheet and presentation software to solve a range of tasks.	<p><i>NOTE for PRH: Already covered Binary in Year 7 so start lesson 1 with remember task and activity.</i></p> <p><i>(They did not cover binary addition – this could be added in L1.)</i></p>	Be able to develop understanding of a range of video games from multiple genres and export them for use at home. ~Shoot Em Up style game. ~Choco-break (pong style) ~Maze game ~ Platform Game Be able to Plan, Develop, Test & Review an original digital game		
Content	<p>Lesson 1 – Getting started Understand what is an app? Understand why we use apps. Understand how blocks are used and linked together when creating apps. Learn how to create and test a simple App on an external device (Eg. A tablet)</p> <p><i>Outcome:</i> A working application that can be tested in real time. The app will allow user to change screen colour based on button selection.</p> <p>Lesson 2 – Paint pot Learn the role of a storyboard when designing apps. Understand the layout if MIT app inventor (Incl. Palette, designer and components). Learn how to create a simple app from a design and then test it using a tablet.</p> <p><i>Outcome:</i> Have a working app that makes use of drawing canvas, touch screen & drag screen,</p>	<p>Lesson 1 – First Steps Describe what algorithms and programs are and how they differ Recall that a program written in a programming language needs to be translated to be executed by a machine Write simple Python programs that display messages, assign values to variables, and receive keyboard input Locate and correct common syntax errors</p> <p><u>Homework:</u> Research 3 apps made using Python. Explain what do they do? How much are they worth?</p> <p>LESSON 2 – CRUNCHING NUMBERS Identify syntax errors in python programs. Use simple arithmetic expressions in assignment statements to calculate values. Receive input from the keyboard and convert it to a numerical value</p> <p><u>Homework:</u> Answer questions in booklets. Tasks 1 – 3.</p> <p>LESSON 3 – AT A CROSSROADS</p>	<p>Lesson 1 Be able to create a web page using HTML in Notepad. Be able to define HTML, The Internet and the WWW. Know the difference between internet & www. Homework</p> <p>Lesson 2 Be able to use more advanced tags in HTML to add tables, images, hyperlinks and CSS styles.</p> <p>Lesson 3 Be able to create multiple pages that link together to make a working website. Use AI to generate</p>	<p>Lesson 1:</p> <p>Lesson 2:</p> <p>Lesson 3</p>	<p>Lesson 1 Shoot Em Up Be able to make a Shoot Em Up style game. <u>Understand CTF workspace</u> -Events Editor -Frame Editor -Storyboard Editor</p> <p>Be able to create & edit assets, Adding movement Interaction, Generate position events (bounce on walls) & collision events (other assets) Incorporate variables (lives & score.) Generate events to launch objects. Be able to export as a stand alone .exe and save to OneDrive</p> <p>LESSON 2: Maze Game Be able to import animated objects. Incorporate timers in click team. Be able to navigate the library for assets. Create events for movement controls, and object collisions.</p> <p>LESSON 3: Bat & Ball Be able to make a pong style game. (Choco-break)</p> <p>Be able to navigate the library Be able to source audio files and import into click team. Be able to Export to OneDrive</p> <p>Lesson 4: 2D Platform game Design a level for a 2D platform game. Be able to create motion paths for platforms. Examples of platform games. Adjust application and frame dimensions (to add unseen level content) Be able to implement scrolling (frame camera to follow P1) Be able to make use of backdrops (platforms & ladders) Generate storyboard control events.</p> <p>LESSON 5: Planning booklet for game ideas using the ‘Code a Game Booklet’</p>		

<p>camera and buttons</p> <p>Lesson 3 - Quiz Understand the different components in the Tool bar (within app inventor) Learn how to use the canvas to design apps. Learn how to use simple logic operations in apps. Learn how to use variables, and other components such as the timer, scores, noise, speed, direction.</p> <p><i>Outcome:</i> Develop an interactive quiz with multiple screens and variables.</p> <p>Lesson 4 Learn how to display app code using general purpose applications. Understand the benefits of commenting app (program) code Understand the difference between iterative and final testing (of apps) Learn how to write, edit and test simple block-based apps.</p> <p><i>Outcome:</i> Have a working app that makes use of sensors and the three computing constructs.</p>	<p>Use relational operators to form logical expressions Use selection (if, else statements) to control the flow of program execution Generate and use random integers</p> <p><u>Homework:</u> Plan / create an RPG game in Trinket using selection (if then else)</p> <p>LESSON 4 - MORE BRANCHES</p> <p>Use multi-branch selection (if, elif, else statements) to control the flow of program execution</p> <p>Describe how iteration (while statements) controls the flow of program execution</p> <p><u>Homework:</u> Q & A (PG Book)</p>	<p>HTML, JavaScript and CSS.</p> <p>Improve the code and compare to the code made.</p>			<p>Be able to plan a 2D digital game. Understand that game making depends on game designers and games developers, and they rely on each other. Be able to plan the following elements of own game design; Genre, Aim of game, Choose Environment, Story / Overview & Develop original game artwork. (Player, Enemy, Obstacles, Collectables.) Plan event controls in game.</p> <p>Lesson 6: Develop original game. Be able to import and format buttons. Be able to use events to control button functionality. Be able to source and create game backdrops and objects. Be able to independently develop and test own game.</p> <p>Prior Knowledge: Block based programming Text based programing Digital Graphics SoW</p> <p>Feedback: Verbal Feedback Peer Assessment Self Assessment</p> <p>Key Questions: What are different genres of games? What is a games engine? What are features of various genres of video games?</p> <p>Can you explain the purpose of a testing table? What is the purpose / objective of the game?</p> <p>DVI's: Games Engine, Genres, Evenst, Conditions, Assets, Obstacles, Events, Frames, Storyboards.</p> <p>Homework:</p> <ol style="list-style-type: none"> 1. Complete an input output table for snake game. 2. Create a MIND MAP for a new digital game based on a brief. 3. Answer questions on game developer interview. (Careers) 4. Characteristics of different types of digital games homework. 5. Complete booklet artwork and source 3 assets for the title screen. 6. Complete a review of game developed.
<p>Prior Knowledge Required</p>	<p>Block Based Programming in Scratch</p>	<p>Block Based Programming in Scratch or other block-based programming languages</p>	<p>Python, MS Office, Fireworks, Photoshop / Photopea.</p>		
<p>Feedback Points</p>	<p>1 to 1 verbal feedback. Peer feedback. Kahoot results from Plenary.</p>	<p>Kahoot quiz feedback.</p>	<p>Teacher feedback (Verbal) based on tasks End of topic quiz/progress based on techniques.</p>	<p>Verbal Feedback Peer Assessment Self Assessment</p>	

Key Questions	What is an algorithm? What is a variable? How can you assign different data types for string and integers? How can I import a random integer? What is an example of selection?	Why should we use formatting in documents? How can spreadsheets save time? Why are some presentations less effective than others?		
Direct Vocab Instruction	Algorithm, program, programming language, syntax, data types, input, output, variables, assign, conditions, selection.			
Standardised Homework	<ol style="list-style-type: none"> Windows in MIT Components & Code Questions based on existing code. 	Research Tasks. Booklet based tasks. Problem solving Python programming tasks.	<ol style="list-style-type: none"> Complete the missing HTML code (worksheet) Quiz (in forms) AI based task. 	

Year 9	Term 1		Term 2		Term 3		End Points
	Half Term 1 [4 lessons]	Half Term 2 [4 lessons]	Half Term 3 [3 lessons & assessment]	Half Term 4 [3 lessons]	Half Term 5 [3 lessons]	Half Term 6 [4 lessons]	
Topic	Photoshop / Photopea	VB	Flowcharts		2D Animation	Databases	
Skill	Be able to use Photoshop to solve a range of design	Learn how to use a Text based Integrated Development			Be able to create and export a range of animations that make		

	problems. Develop understanding of the use of digital graphics. Know the suitability of different image file formats.	environment (IDE) and all associated tools			use of; frame by frame animation, tweening, creating and animating assets.		Be able to undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.
Content	<p><u>Lesson 1 – Getting Started</u></p> <p>Be able to use a range of techniques to create an original image.</p> <p>Be able to understand the suitability of different image file types.</p> <p>Be able to export images in a range of different formats.</p> <p><u>Lesson 2 – Digital Graphics & Purpose.</u></p> <p>Understand why digital graphics are used, including:</p> <p>to entertain, to inform, to advertise, to promote and to educate</p> <p>Understand how digital graphics are used, including:</p> <p>magazine covers, CD/DVD covers, adverts, web images and graphics, multimedia products, games.</p> <p><u>Lesson 3 – Making a MOVIE poster.</u></p> <p>Understand features of graphic products such as:</p> <ul style="list-style-type: none"> ○ Rule of thirds ○ Margins <p>Create a new document with correct properties</p> <p>Compile an image using basic techniques such as:</p> <ul style="list-style-type: none"> ○ Crop and move ○ Text ○ Eraser ○ Layers <p><u>Lesson 4 – Designing a CD cover</u></p> <p>Understand how to make effective choices and uses of images</p>	<p><u>Lesson 1</u></p> <p>Understand the difference between form based and console-based applications</p> <p>To learn about the three programming constructs</p> <p>Understand what variables are and how to use them</p> <p>Understand what a ‘Sequence of instructions’ comprise</p> <p><u>Lesson 2</u></p> <p>To learn about repetition (Iteration) and apply it within simple programming scenarios.</p> <p><u>Lesson 3</u></p> <p>Learn how to incorporate variables into simple procedures using images</p> <p>Learn how to use simple animation and graphics</p> <p>To understand how to modify control properties</p> <p><u>Lesson 4</u></p> <p>Learn how to combine the 3 programming constructs (Sequence, selection and Iteration) to make simple programs</p>			<p><u>Lesson 1</u></p> <p>Learn how to convert numbers between different number systems (Binary, Decimal and Hexadecimal)</p> <p>Understand how computers perform simple arithmetic in binary (such as addition and multiplication)</p> <p><u>Lesson 2</u></p> <p>Understand the key components of computer systems.</p> <p>Understand how computers represent sound and images in digital format.</p> <p>Learn how to maximise storage capacity using compression algorithms (Lossy / Lossless), and RLE (Run length Encoding) when applied to dictionaries.</p> <p><u>Lesson 3</u></p> <p>Understand the importance of Boolean Logic when processing instructions on computer systems.</p> <p>Learn about the different logic operations (AND/OR/NOT/EXOR) and their corresponding truth tables</p> <p>Learn how to draw simple logic circuits using logic diagram notation</p>	<p><u>Lesson 1</u></p> <p>Data vs Information</p> <p>Benefits of databases</p> <p>Creating tables in Access</p> <p>Importing data.</p> <p>Be able to create a form in Access using Wizard.</p> <p><u>Lesson 2</u></p> <p>Be able to sort data in a table; Alphabetical, Largest to smallest, Date</p> <p>Be able to run a query in Access; select, wild, conditional, dates, parameter.</p> <p>Be able to generate reports in Access.</p> <p><u>Lesson 3</u></p> <p>Demonstrate how to make a form in Access.</p> <p>Create multiple tables in Access.</p> <p>Add buttons to forms to carry out macro actions.</p> <p>Understand relationships and primary keys & foreign keys.</p> <p><u>Lesson 4</u></p> <p>SQL</p>	<p>Be able to create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability</p> <p>Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]</p> <p>understand how instructions are stored and executed within a computer system;</p> <p>understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits</p> <p>use two or more programming languages, at</p>

	<p>Be able to change the brightness and contrast of an image</p> <p>Be able to add shapes and change their stroke and fill</p> <p>Make use of the paint brush tool and change brushes</p> <p>Apply filters to a layer</p>						<p>least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions</p>
Prior Knowledge Required	<p>Fireworks</p> <p>File Formats</p>	<p>Python</p> <p>Code.org</p> <p>Theory</p>	<p>MS Office</p> <p>Code.org</p> <p>Python</p>		<p>Understanding of text and block-based programming languages</p> <p>Understand how to use a tablet</p>	<p>Understanding of text and block-based programming languages</p> <p>Understand how to use a tablet</p>	
Feedback Points	<p>Verbal Feedback</p> <p>Peer Assessment</p> <p>Self-Assessment</p>		<p>Verbal Feedback (teacher)</p> <p>Peer Assessment</p> <p>Self-Assessment</p>	<p>Verbal Feedback (teacher)</p> <p>Peer Assessment</p> <p>Self-Assessment</p>	<p>Verbal Feedback (Teacher)</p> <p>Peer Assessment</p> <p>Self-Assessment</p>	<p>Verbal Feedback (teacher)</p> <p>Peer Assessment</p> <p>Self-Assessment</p>	
Key Questions	<p>How are digital graphics used?</p> <p>Why are certain image file types suitable for one purpose but others are not?</p> <p>How can you make a digital graphic more appealing to a target audience?</p>		<p>What are the advantages of using a database to store data?</p> <p>What is the difference between data and information?</p> <p>What are data types?</p> <p>What are records?</p>	<p>What is the importance of testing computer programs before they are used?</p>	<p>What is hexadecimal?</p> <p>What are the main components of computer systems?</p> <p>How do I record sound on computers?</p> <p>How are images saved on computer systems?</p> <p>How are circuit diagrams used to create circuit boards?</p>	<p>How do I get mobile applications to run on different types of hardware?</p> <p>Why do I need to test phone applications on external devices?</p>	
Direct Vocab Instruction	<p>Importing, Layers, Selection, Transforming, Typography, Brush, Rubber/Eraser, Magic wand tool, Cropping, Brightness & Contrast, Hue & Saturation, Black & White, Pen Tool, Clipping Mask, Exporting (file formats), PNG, JPEG, PSD.</p>		<p>programming, coding, text, loop, constructs, repetition, selection, sequence, variable, parameter, background, Foreground, image, library, flow, movement, direction, degrees, path, values, execute, run, evaluate, reverse, integer, data, string, print, read, output, display</p>	<p>Forms, controls, buttons, label, textbox, font, font size, colour, indent, alignment, centre, left, right, justify, top, character, data, data type, integer, Boolean, decimal, real, float, long, short, on, off, positive, true, false, syntax, logic, error, testing, incremental, iterative, final, team, logical, concept, planning, flowchart, digit, binary,</p>	<p>Binary, decimal, hexadecimal, conversion, addition, multiplication, number systems, bits, byte, megabyte, integer, tens, hundreds, thousands, power, columns, image, bit depth, audio, sample, resolution, modify, colour depth, sample rate, seconds, sampling, pixel, width, height, CPU, LAN, WAN, Processor, memory, RAM, ROM, Virtual, router, hub, switch, logic, gate, circuit, operation, function, AND, OR, NOT, EXOR, truth table, input,</p>	<p>Block, app, testing, execution, planning, programming, coding, text, loop, constructs, repetition, selection, sequence, variable, parameter, background, Foreground, image, library, flow, movement, direction, path, values, execute, run, evaluate, reverse, integer, data, string, print, read, output, display, tablet, testing, canvas, palette, designer, buttons, points, direction, noise, storyboard,</p>	

					output, display, operation, combined,	template, internet, testing, iterative, final testing	
Standardised Homework	Research based task Exam style questions. Design Based Tasks		Research Tasks. Booklet based tasks. Problem solving Design based	Research Tasks. Booklet based tasks. Problem solving Design based	Research Tasks. Booklet based tasks. Problem solving Design based	Research Tasks. Booklet based tasks. Problem solving Design based	