Developing Numeracy – Primary Transition Project
Year 6 Reading – Spy Fiction: Stormbreaker by Anthony Horowitz

Session	Framework Objective	Starter	Development	Plenary	Notes
1 **GCK**	Introduce the topic of Cryptography	Get students to discuss why codes are important, who uses them, who first used codes and if they can think of any famous codes	1. Watch the YouTube clip (stop at 8 mins 30), *Why do we use codes?* 2. Discuss Bletchley Park and the work of Alan Turing 3. Use the online translator tool to listen to some Morse Code messages 4. Students to work in pairs (or groups depending on ability) to crack the codes.	If time, students to write their own message in Morse Code and then swap and decode.	
2 **GCK**	To be able to write the numbers 1-31 in binary and understand how binary numbers are used.	Students shown a PigPen cipher and some information on the history of this code. Students to decipher the pigpen code.	1. Demonstrate the magic birthday cards 2. Give students a copy of the binary number sheet and demonstrate how to complete 3. Students complete the binary number sheet. 4. Students transfer the information on to 5 small cards 5. Students to try the cards out on each other.	How could be find binary version of numbers bigger than 31?	You will need the following resources: One copy of the magic cards for you to demonstrate Card for student to make their own Copies of the binary number sheet

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3 **GCK**	To explore how the Caesar Cipher was used and how to use a transposition cipher to encode messages.	Introduce the Caesar cipher and the idea of a KEY in order to decode messages. Can students think of any keys they use (email for example, public key is their email address and the private key is their password)	1. Students to make a Caesar wheel (get students to put their names on them as these will be needed again in lesson 8) 2. Students to use the wheel to decipher the messages on the PowerPoint (if they finish they can have a go at writing their own code) 3. Introduce transposition ciphers (these are quite tough so you might want them working in groups). If students are unable to access this then they can continue with the Caesar codes 4. Students to decipher the message and then try to write their own (writing their own is challenging)	Get feedback from students that tried to write their own transposition codes. What were the limitations? What things did they need to consider?	You will need a ready Caesar Cipher wheel Also copies of the Caesar wheel for students to make their own (you will need some split pins or string for the middle)
4 **GCK**	To introduce algebraic notation and substitution	Students to discuss what the word 'substitution' means and give any examples where this is used in real life	1. Introduce the expression spider, students to use mini whiteboards to draw them out and fill them in. 2. Students work through simple substitution questions. Challenge: negative numbers 3. Introduce algebraic notation. Then mini whiteboards to practise harder substitution using the expression spiders. 4. Students work through the code breaking exercise	Students to write their own substitution code on white boards and swap	Need mini whiteboards and pens

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5 **GCK**	To introduce solving equations using the bar method	Starter questions on substitution. Challenge to substitute negative numbers if possible	1. Discuss the difference between an expression and an equation. What does it mean to 'solve' an equation? 2. Introduce the bar method as shown on the slides. Go through a couple of examples 3. Use mini white boards to gauge understanding with further examples 4. Students to practise solving equations. 5. Introduce an equation with unknowns on both sides, again use mini whiteboards for questioning. 6. Students to practise solving equations. Questions on the PowerPoint.	Discuss the real life applications of equations, e.g. X-Ray machines, MRI scanners as well as cyber security	Mini white boards and pens
6 **GCK**	To learn how we can use language to decipher codes	Class discussion on how we think codes might get cracked	1. Set the scene for the Mary Queen of Scots story (details in the lesson plans) 2. Students try to have a conversation without using the letter 'e' and present to the class if possible! 3. Explain how Mary met her demise (again see detailed notes in LP) 4. Students use frequency analysis to crack the code.	Unveil the decoded message to the class and see who decoded the most	You will need the frequency analysis sheet, one per group/pair

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7 **GCK**	To practice using the frequency analysis technique	Recap on last lesson on frequency analysis and the tools used to decode the messages	1. Students to write an extended piece of writing. Challenge: To write their own short spy story. Core: Can take some text from Storm Breaker 2. They then need to write out the alphabet and assign a symbol to each letter 3. They then need to re write their piece of writing in code 4. Students then swap and decode each other's work	Students to write their codes up neatly for display work	Card for the final codes
8 **GCK**	To be use all of the code breaking skills they have learnt.	Students are told that there has been a murder in the school and they have been hired to try to solve it…..	1. The aim of today's lesson is to find out who the murderer is, which room it happened in and what the murder weapon was 2. Students into groups/pairs depending on ability 3. They have to work through the clues to solve the mystery	Announce the answers and find a winning team Feedback on the unit of work.	You will need the following: Caesar wheels Pages 2-6 for each group