



The
GCHQ
Christmas
Challenge

17 December
2024



Christmas Challenge School Pack

Welcome to the GCHQ Christmas Challenge 2024!

This pack will guide you through how to take part in the challenge on Wednesday 11 December.

Included within this pack are lesson plans, activities, and teaching materials to enable you to run sessions on GCHQ history, and the skills essential to our mission. You will also find a lesson plan for the Christmas Challenge itself suitable for Key Stage 3 and Key Stage 4.

The Christmas Challenge card, hint sheet, worksheet, and a video from Director GCHQ will be shared with you on Monday 9 December.

You are free to run your Christmas Challenge lesson from Wednesday 11 December onward. Please do not share the card until this date.

If you have any questions, you can contact us on:
xmaschallenge@gchq.gov.uk





Overview of GCHQ

The Government Communications Headquarters (GCHQ) is one of the three UK Intelligence and Security agencies. We work alongside MI5 and SIS (also known as MI6).

Our brilliant people use cutting-edge technology, ingenuity, and wide-ranging partnerships to identify, analyse, and disrupt threats to the UK. We work across several missions from counter-terrorism and serious crime, cyber security and support to defence, through to protecting the NHS and improving the nation's economic resilience.

In short, we work to keep the country and its people safe from harm.

To learn more about our work, visit our website:
<https://www.gchq.gov.uk/>





The Christmas Challenge

The GCHQ Christmas Challenge is a series of puzzles aimed at school children, ages 11 – 18.

The mission for your students, should they choose to accept it, is to solve all seven puzzles in our Christmas Challenge and use the card front cover to reveal our secret hidden message. The challenge is not designed to be solved alone. Students will need to work together as a team to complete the challenge. It's okay if they get stuck and ask for help. We will be providing hints for all puzzles, and we encourage your students to make use of them.

At GCHQ, we hugely value diversity of thought. We bring together people with lots of different skills and perspectives in our mission to keep the country safe. From codebreaking to maths, from languages to analysis, it's our diverse mix of minds and teamwork that enables us to solve seemingly impossible problems every day.





Teacher Resources

This year we have teamed up with education charity Education and Employers to produce lots of resources to support you in running lessons on GCHQ and its history, and key skills covering history, languages, mathematics, and computer science. These resources include starters and plenary activities.

[Click here to access the School Resources](#)

The document titled Teacher Guide is the best place to start to get a full overview of the materials provided.

In addition to these resources, you can find the Christmas Challenge lesson plan covering Key Stages 3 and 4 on our webpage, along with a set of printable certificates you can give students who complete the challenge.

[Click here to access our School Pack webpage](#)





Preparing for the Challenge

The next time you will hear from us will be on Monday 9 December. On this day we will give teachers exclusive early access to this year's Christmas Challenge. This will include:

- The GCHQ Christmas Challenge
- A sheet of hints
- A printable worksheet
- A video from Director GCHQ

We recommend beginning your lesson with the video as a scene setter for the class. The hints will give students a better idea of how to approach each of the seven main puzzles.

The answers for the puzzles will be posted on our website on Thursday 12 December. However, as we are sharing our challenge with the public on Wednesday 11 December, it is likely eager solvers begin posting their solutions online before the official answers appear.





Join us on Social Media

We would love for you to let your networks know that your school is taking part in the GCHQ Christmas Challenge. Perhaps even challenge other schools in your area. Who can be first to solve the challenge?

You can tag us @GCHQ on Instagram and X and use the hashtag #GCHQChristmasChallenge to join in the fun. We will be posting hints on our channels throughout the day. If you would like to include a message on your website or newsletter, here is some suggested wording you are welcome to use.

We're taking part in the annual #GCHQChristmasChallenge on Wednesday 11 December. Students will be set the task of cracking seven fiendish puzzles and then using their answers to uncover a hidden message. You can have a go at home too! The challenge will be available for anyone to download on the GCHQ website from 11 December.





Frequently Asked Questions

What ages are the Christmas Challenge suitable for?

The challenge is aimed at students aged 11 – 18 but may be suitable for some primary pupils aged 10 – 11. Plenty of adults enjoy having a go too, which is why we also release our challenge to the public every year.

Can I take part on another day?

We keep our challenge top secret until 11 December, so we're asking teachers to keep all details secret until then. You are welcome to take part in the challenge any time from 11 December onwards.

Where can I find the answers?

The answers will be published on our website on the morning of 12 December. Watch out for spoilers though as some eager solvers may share answers on social media on 11 December itself.

Where can I find more puzzles like these?

Check out our website for more puzzle content, or one of our three bestselling puzzle books!





Frequently Asked Questions

Why does GCHQ create puzzles?

Using different skills and teamwork to solve impossible problems is a key part of how we work at GCHQ in our mission to keep the country safe. Many of our workforce like to keep their minds sharp by creating and solving puzzles for fun, and we like sharing these with you!

How do I get in touch or give feedback?

We will be sending out feedback forms to all schools who registered for the challenge and indicated they would be happy to be contacted for this purpose. If you would like to contact us or share additional comments, you can reach us by email at:

xmaschallenge@gchq.gov.uk



Lesson Title: GCHQ Christmas Challenge – Key Stage 3 / Key Stage 4		
Subject: Multiple Applicable	Year Group: KS3 / KS4	Lesson 1 of 1. However up to 1-2 hours so can be split into two.
Learning Objective		Resources
<p>This lesson focusses on the GCHQ Christmas Challenge. The challenge requires students to attempt seven puzzles requiring different skill sets. Students will learn about each other’s problem-solving strengths and how each puzzle requires a different approach.</p> <p>This lesson teaches problem solving skills and enables students to practice working effectively as a team.</p>		<p>Hint sheet provided Work sheet provided Certificate provided Video from Director GCHQ</p>
Teaching Input		
<p>There are seven puzzles in total, with one additional final puzzle to reveal the hidden final message. Each puzzle should take an average of 10 minutes to complete, in a mixed ability group of four. There are also three additional hidden messages included in the design of the card front cover.</p> <p>Given the nature of the puzzles, it is likely as they are solved that the method will spread quickly across the classroom. If this is not the outcome you want, you can set different groups to solve different questions.</p> <p>It is suggested that the teacher either sort groups into mixed abilities or vary the size of the groups. The suggested group size for the challenge is four students with the challenge broadly aimed at upper KS3 of mixed ability therefore regulate group size as appropriate to ability and Key Stage.</p> <p>The main difference between the suggested approach for Key Stage 3 and 4 is group size to tackle the puzzles. As these puzzles are written for an age range of 11-18, group size and time to solve are likely to be the largest point of variance.</p>		
Main Activity		
Lower Ability	Middle Ability	Higher Ability
<p>Should be paired with a higher ability pupil who is able to explain their thought process.</p> <p>If the group is of lower KS3/4, and/or not engaging in small groups well, it may be more appropriate to tackle the puzzles as a classroom approach.</p>	<p>This group of pupils will make up most groups and should be able to tackle the puzzles with good teamwork.</p>	<p>This can be a useful task for high ability users to focus not only on the task but on their team working ability.</p> <p>If the classroom consists of a lot of high ability pupils, it may be better to allow them to attempt the task solo.</p>

Each of the puzzle questions are different in nature, some are logic based some are language or mathematics based. The puzzles have been selected to appeal to a wide range of skill sets.

Plenary

Engage with the class and ask them questions about GCHQ. Examples may include:

- What do the letters GCHQ stand for?
- What is the purpose of GCHQ?
- How old is GCHQ?
- GCHQ is one of three UK intelligence agencies. Who are the other two?

Assessment Questions

The teacher should do an understanding check on not only the answers obtained but how they were achieved, and how the teams worked together.

National Curriculum Links

Teamwork
Mathematics
Languages
Science

Note:

Also included in the school resources pack is a selection of certificates that may be provided to students that complete the Challenge.

Also in this year's pack are a number of additional lessons and activities focussing on the history of GCHQ, and topics within mathematics, computer science, and languages.



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for successfully completing the
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