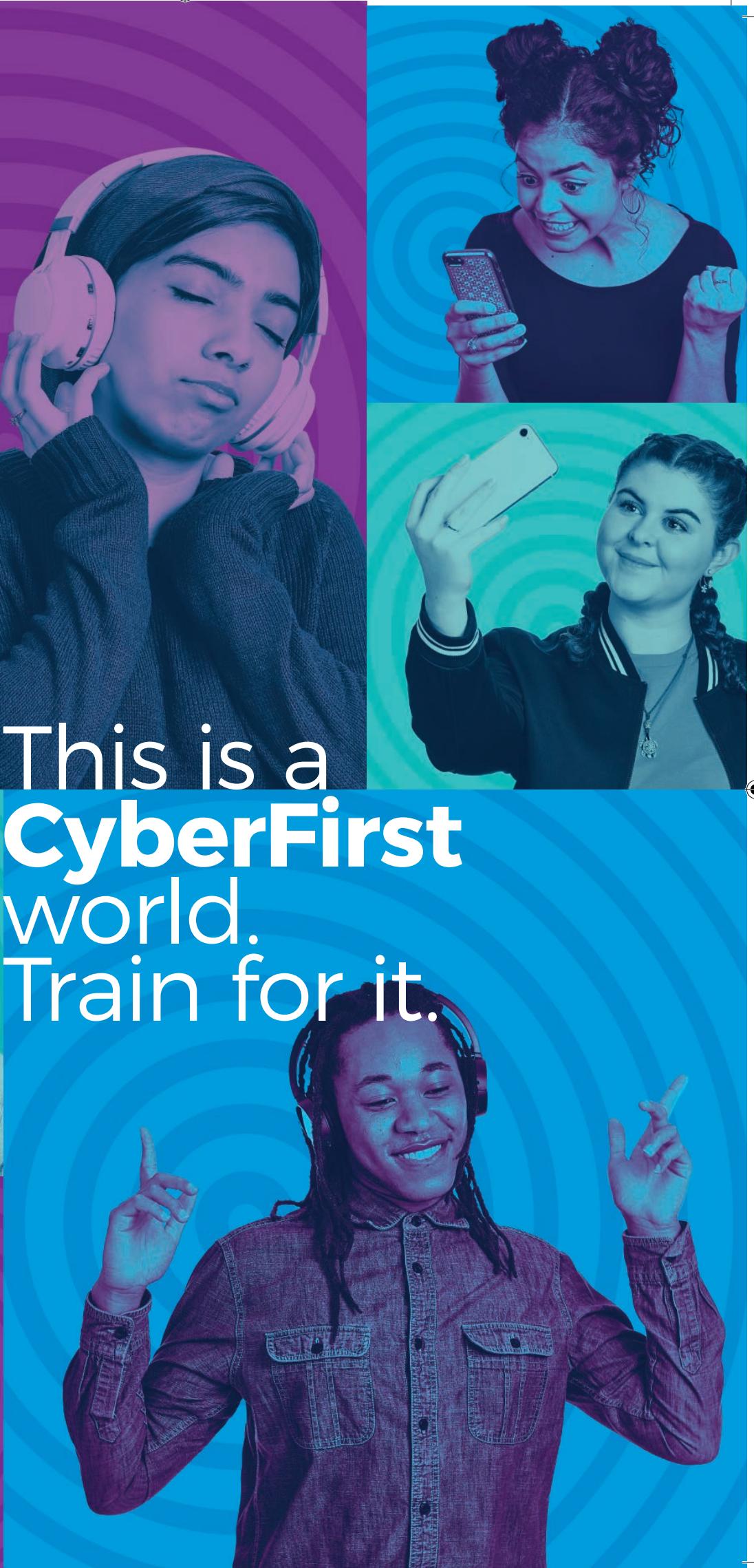
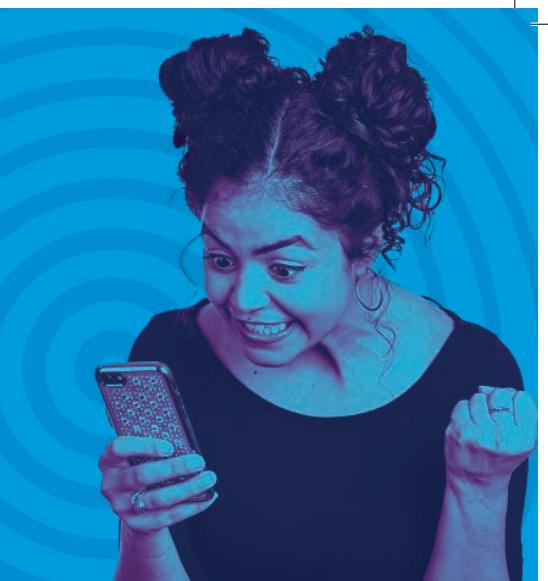




Cyber
First



This is a
CyberFirst
world.
Train for it.

This is a world where technology is everywhere.
It's smooth-running trains and safe flightpaths for planes.
It's power to the grid, and power to the people.
It's where #twowords can start a movement.
And where two lonely hearts can meet.
Technology means news travels fast – and rockets travel faster.
It's language translation.
Film and music creation.
It's the life-or-death surgery that goes without a hitch.
Technology is everywhere.
And it means everything.
So it needs protecting.
At every age, from every walk of life,
we'll come together to safeguard our digital planet.
Because when tech touches lives in a million different ways,
we know that cyber security is our first line of defence.
This is being a modern citizen.
This is finding a calling with purpose.
This is a CyberFirst world.
So defend it.



From the moment you wake in the morning, technology touches your life in all sorts of ways – some big, some small, some you may not even realise. It delivers train timetables and traffic lights. It powers homes. It protects your medical records and your bank account. It's in everything from gaming to music streaming; getting on a plane to calling a friend.

Life wouldn't be the same without technology – so it's up to us to protect it. In this modern age, when attacks on our digital infrastructure are more and more frequent, cyber security has to be our first line of defence if we want to keep our way of life safe. That's why we need CyberFirst. Working with schools, universities, businesses and government bodies, our initiative is training tomorrow's cyber security community; people from all walks of life, all ages, all backgrounds, who want to learn the skills to safeguard our digital planet.

#CyberFirst
ncsc.gov.uk/new-talent

What is **CyberFirst**?

2]

Launched in May 2016, and inspired and led by the National Cyber Security Centre (NCSC), a part of GCHQ, CyberFirst is a programme of opportunities helping young people explore their passion for tech by introducing them to the world of cyber security.

We're not here just for the genius coders either; we're open to all sorts of tech and computing passions. Livestreamers with their own gaming vlogs. Instagrammers who could find the perfect angle in their sleep. You really don't have to be fluent in Javascript to be the kind of mind we need.

What's more, we've opened our options up for more people than ever. It now covers a broad range of activities: comprehensive bursary and apprenticeship schemes, a girls-only competition, and schools development courses at UK universities and colleges. There's even Cyber Discovery; our online extracurricular programme. Each activity is designed to seek out people like you with potential, offering the support, skills, experience and exposure you need to be the future first line of defence in our CyberFirst world.

What are the student courses like?

We don't just focus on the theory behind cyber security. We let you experience it. The CyberFirst student courses are all about practical, hands-on learning and applied teamwork – with a promise to cut through jargon.

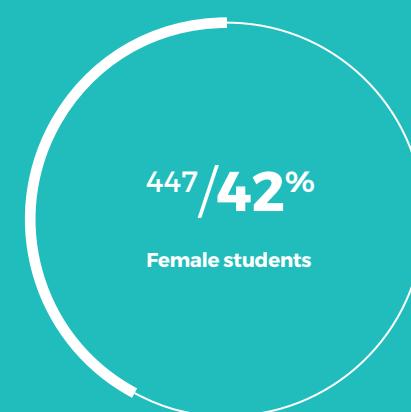
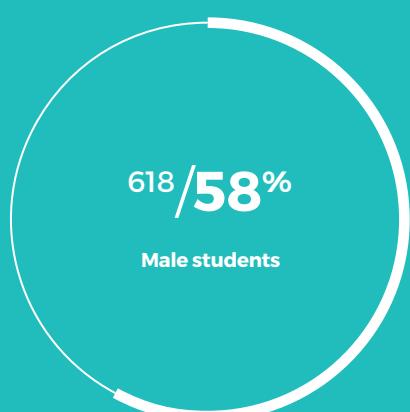
All of the courses are carefully designed to bring out every student's potential. You'll delve into how everyday technology really works; how the systems and software that surround us are connected to each other; how information flows through networks; and how we can take sensible steps to protect our digital world.

Perhaps most importantly, everyone who does CyberFirst gains a strong sense of responsibility – to act safely, legally and ethically. Integrity is an underpinning principle of everything we teach and something that defines the cyber security profession.

While you learn, you can also expect excellent pastoral care from the Smallpeice Trust, who have provided courses in science and engineering for over 50 years.

It all adds up to an eye-opening experience.

Summer courses attendance



CyberFirst Trailblazers

4



Locations: Selected UK universities and colleges



Duration: Half a day, taking place on a Saturday from 09:00-12:20



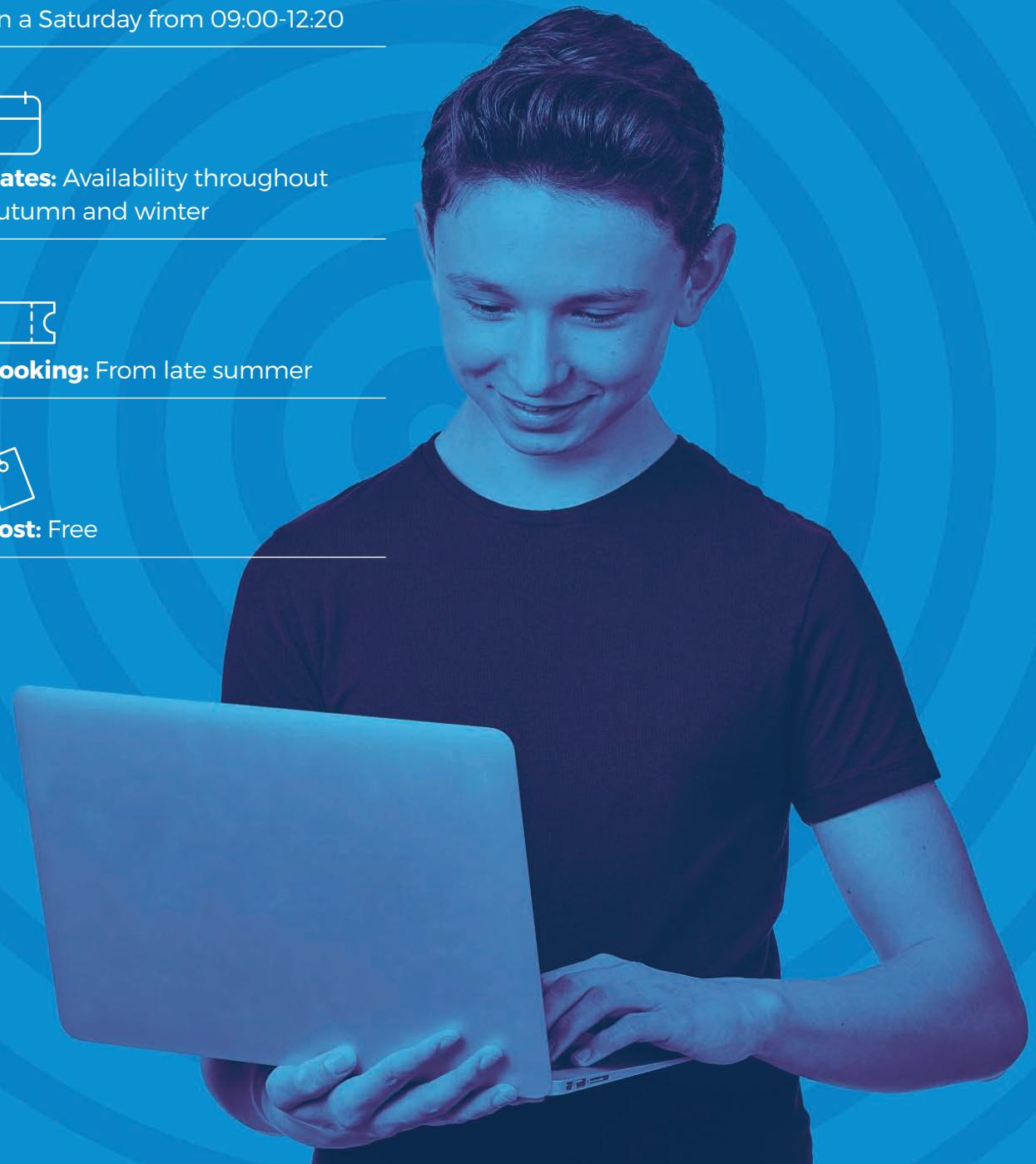
Dates: Availability throughout autumn and winter



Booking: From late summer



Cost: Free



CyberFirst Trailblazers is a free half-day event created for Year 8 (England and Wales), Year 9 (Northern Ireland) and S2 (Scotland) students. This is the first in a series of CyberFirst events designed to guide students as you start on the exciting path of deciding which GCSEs to take, helping you see how Computer Science can play a key role in your future career prospects. An accompanying parent or guardian is welcome to attend, with a talk that's designed for them too, as well as some light refreshments. Tasks and topics at the event include:

Go Create

Learn the basics of how to customise a website and get excited for how you can contribute to the global online community.

Digital Detective

Learn how to use digital forensics to identify the source of a disease outbreak – and see how open source intelligence can help us find out more.

Media Mogul

Explore how creative design and technology can work together, take a closer look at how the advertising and media industries combine the two, and even work in teams to create your own stop motion advert.

For full details and how to book, visit ncsc.gov.uk/new-talent

5

CyberFirst Adventurers

6]

CyberFirst Adventurers is a free half day event created for Year 9 (England and Wales), Year 10 (NI) and S3 (Scotland) students. Following on from CyberFirst Trailblazers (see the previous page), this second event highlights the varied careers you could have either directly in technology, or involving technology in the workplace.

The course is aimed at students who haven't made their GCSE choices yet, so that you get the opportunity to see how studying Computer Science could set you on an incredible career path, even giving you the edge if you've already got a specific career in mind. An accompanying parent or guardian is welcome to attend too, with a talk designed for them, as well as light refreshments.

Tasks and topics at the event include:

The Data Games Crack the Code 3D Modelling

Understand and use big data to create the perfect team using a set of sports results, then compare with others and learn all about data interpretation.

Work in teams against the clock to unlock various devices, getting a taste of cryptography, language analysis and even some cyber security terms. Don't get distracted though: the timer won't stop until you Crack the Code.

Learn how 3D printers are revolutionising the engineering industry; explore how technology and engineering are evolving together; and even create your very own model using 3D design software.

For full details and how to book, visit ncsc.gov.uk/new-talent



Locations: Selected UK universities and colleges



Duration: Half a day, taking place on a Saturday from 13:30-16:50



Dates: Availability throughout autumn and winter



Booking: From late summer



Cost: Free



7

8]



Locations: Selected UK universities and colleges



Duration: 5 days (residential and non-residential)



Dates: Summer holidays



Booking: April



Cost: Free



CyberFirst Defenders

A free five-day residential and non-residential course aimed at 14 to 15 year-olds.

The course is a valuable introduction to how to build and protect small networks and personal devices. It helps increase your awareness of cyber security, whilst also equipping you with a set of relevant practical skills you can apply in your own life. Then we go a step further, to help you visualise yourself in a cyber security career, guiding you to the technology-related qualifications you'll need.

On our CyberFirst Defenders courses, you'll learn about:

- Identifying the source and impact of common cyber security threats
- Defining and applying first-line cyber defences
- Constructing, configuring and securing a home network
- Taking steps to manage personal digital footprints.



"This has been an exciting opportunity with plenty of challenges, from which I have gained many things, confidence, teamwork and skills in the field."

Warwick Girls Defenders



"I feel that this course made me realise that this is something I seriously want to do for a career."

Paisley Defenders

For full details and how to book, visit ncsc.gov.uk/new-talent

[9]



This learning programme has been SCQF credit rated by SQA



CyberFirst **Futures**

10]

A free five-day residential and non-residential course aimed at 15 to 16 year-olds.

Here, you'll explore advanced cyber security threats to devices, apps and software, then discover ways to prevent them. The course is an insight into not just the method but the motivation for cyber threat. You'll explore legislation, study typical behaviours of likely cyber attackers, and apply your understanding of how to protect networks. You'll even learn to secure personal devices too – and how to do it for the businesses you could work for in the future.

Students on the CyberFirst Futures Course will cover:

- Exploring the motivations for cyber attacks
- How to protect yourself from cyber attacks
- Developing knowledge and understanding of networks
- How to protect a network from attack
- How to make resources available and secure to others.



"Expected to learn a bit but this has been the opportunity of a lifetime!"

Cardiff Futures



"Gained an insight into cyber security industry despite not much knowledge about it beforehand."

RHUL Futures

For full details and how to book, visit ncsc.gov.uk/new-talent



This learning programme has been SCQF credit rated by SQA



Locations: Selected UK universities and colleges



Duration: 5 days (residential and non-residential)



Dates: Summer holidays



Booking: April



Cost: Free



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12]



Locations: Selected UK universities and colleges



Duration: 5 days (residential and non-residential)



Dates: Summer holidays



Booking: April



Cost: Free



CyberFirst Advanced

A free five-day residential and non-residential course aimed at 16 to 17 year-olds.

On this course, you'll hone the skills and behaviours you need to enter the cyber security or computing workplace for real. The course is designed to expand the knowledge of students already studying computer science or who have an interest and aptitude for computers.

You'll gain Advanced skills in some of the key areas of cyber security, notably:

- Implementing digital forensics
- Understanding encryption technologies
- Using open source intelligence techniques
- Penetration testing.



"One of the most insightful and interesting weeks of my life in relation to cyber security. This week I have learnt far more than I ever expected and I would definitely recommend to fellow students."

Imperial Advanced



"By far the most useful and in-depth cyber related course I have been on. It has really motivated me to pursue a career in this area."

Imperial Advanced

For full details and how to book, visit ncsc.gov.uk/new-talent

13



This learning programme has been SCQF credit rated by SQA



CyberFirst Girls' Competition

14

Many young women rule themselves out of a career in cyber security – and that means we're missing out on an extraordinarily talented group of people. We want to change that.

Growing year on year, this phenomenally successful initiative from CyberFirst is aimed at school girls like you in Year 8 (England and Wales), Year 9 (Northern Ireland) or S2 (Scotland), offering a unique opportunity to tackle a fun and challenging competition. Assembling a team of four, you'll work your way through a series of online cyber challenges, each designed to test your ingenuity to the limit. And, if you do well, you might even get the chance to take on cyber security challenges in person, at our semi-finals and grand final.

Tricky? That's the idea. Along the way, however, we'll offer many hints and tips to help you progress through the competition. We'll also provide the all-important 'Teachers' Guide' so that your teachers can help mentor you too.

You'll find out more on how to enter the competition, and hear more from previous entrants, on page 16 and 17.



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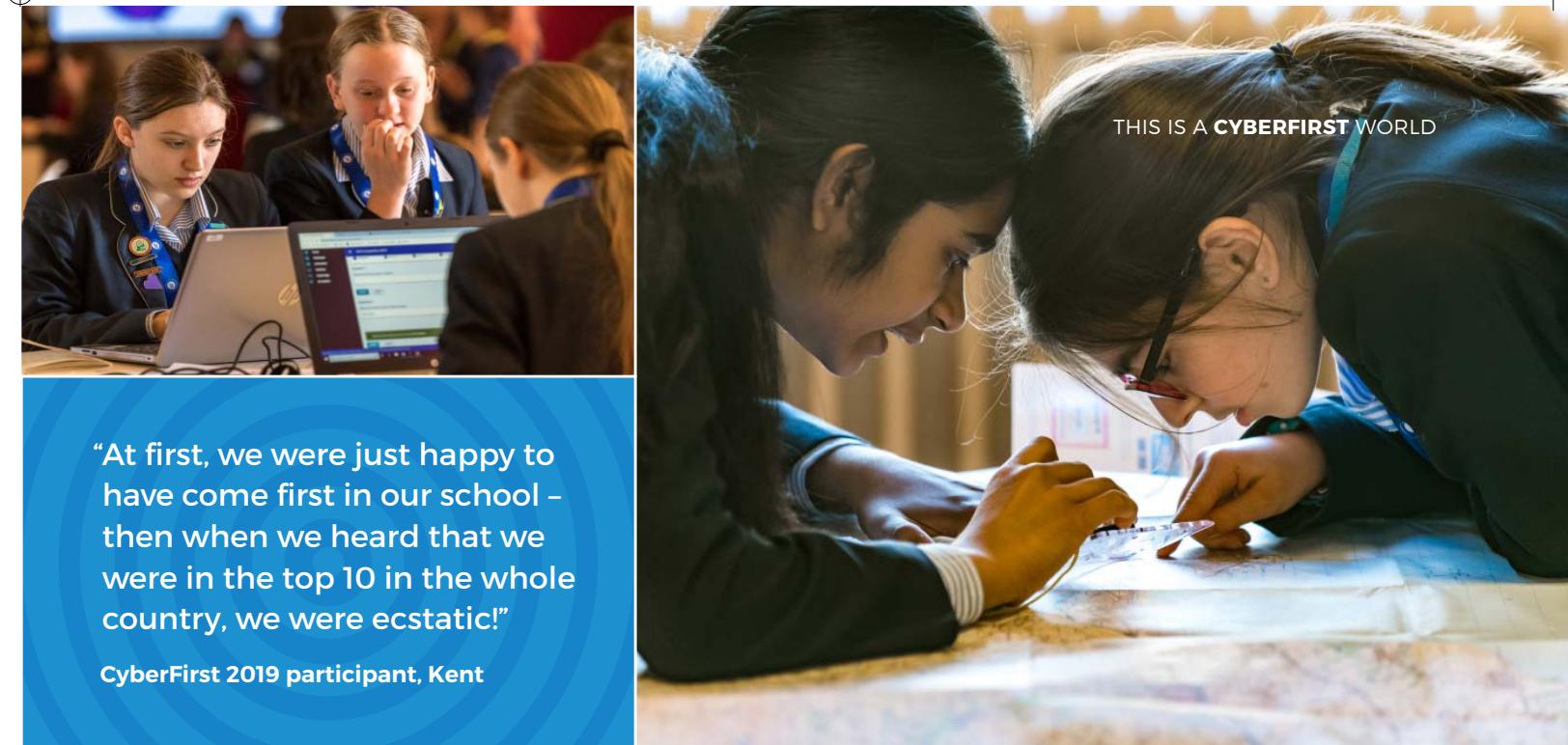
female-identifying participants since 2016



3,389

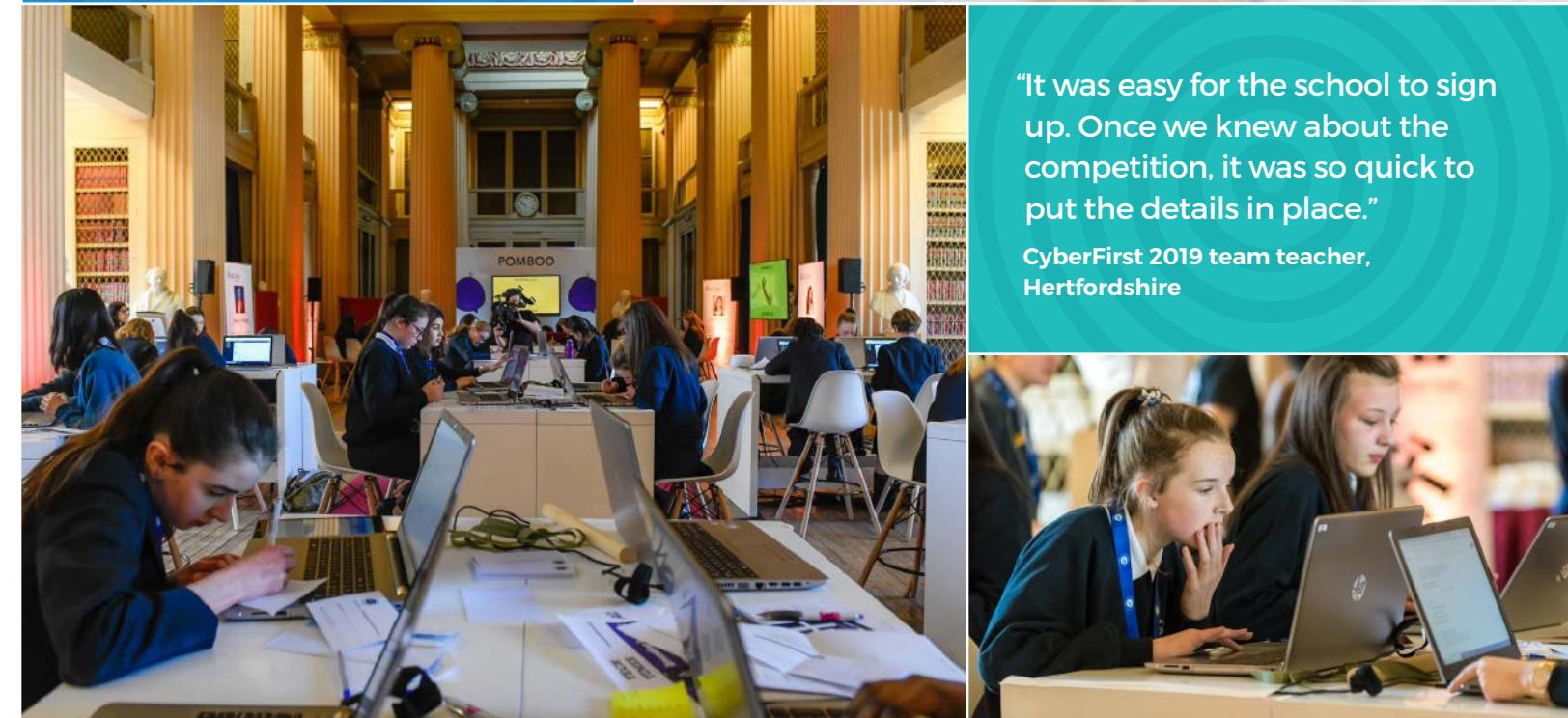
teams in 2019 – from 841 schools

To find out more visit ncsc.gov.uk/new-talent



"At first, we were just happy to have come first in our school – then when we heard that we were in the top 10 in the whole country, we were ecstatic!"

CyberFirst 2019 participant, Kent



"It was easy for the school to sign up. Once we knew about the competition, it was so quick to put the details in place."

CyberFirst 2019 team teacher, Hertfordshire



"You don't have to be amazing at cyber skills to enter. I didn't know anything about code breaking when we entered, and we have made it to the final."

CyberFirst 2018 participant, North London

15

How to enter the CyberFirst Girls' Competition

16

Taking part in the competition is free, and it's really easy to enter. If you're a student, you'll need a teacher who can register your school, and they can do that at ncsc.gov.uk/cyberfirst/girls-competition

The teacher will act as your team's guardian, and they don't even need to have IT or cyber security knowledge – they're simply there to register you, help you find space to work, and accompany you if you make it to the semi-finals or grand final.

Once you've got a teacher, all you need to do is find your teammates – with up to four girls per team – and get your teacher to register your group. There's no limit to the number of teams per school, and you can all be registered by one teacher.

Got that? Great. Now it's time for the online qualifier round, which you'll complete online as a team, either at school or at home. With tasks designed to teach you all about cyber security, you don't even need experience.

The highest scoring teams in each region then reach the semi-finals, and from there, you might even make it to our grand final and prize-giving. Each year, we rotate the UK location of the grand final – with previous events held in London, Edinburgh and Manchester – and we always look to create a memorable experience for all our participants.

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1,000+ places

on free specially-commissioned
girls-only development days



Top 100

teams published on
the NCSC website

Find out more about when the next registration opens at
ncsc.gov.uk/cyberfirst/girls-competition



'The competition helped me learn all sorts of new things, and opened my eyes to what cyber security is really like. It's so important to get more girls involved.'

CyberFirst 2019 participant, Chester



'This competition is a lot of fun; very exciting. The girls get so much out of it. And it's very little teacher effort – so it's a win on all sides.'

CyberFirst 2019 team teacher, Armagh



'Not only did we get to glimpse a bright future for girls in technology – we also made new friends and learned from other people.'

CyberFirst 2019 participant, Hertfordshire



18]



Cyber Discovery

Cyber Discovery is an extracurricular learning programme for students aged 14-18 across the UK, aiming to ensure that many more young people enter the cyber security profession in the coming years.

Whether you know a bit about coding, have heard of Linux, or you've never even considered a career to do with computers, Cyber Discovery is the place to have a go; no experience needed.

With free and accessible materials, the programme offers support to gradually build knowledge, guiding you gently through unfamiliar concepts and advanced security topics, like exploitation and penetration testing tools.

Plus, since everything is online, you can get to grips with Cyber Discovery outside of lessons and work through it in your own time.

There are four levels of participation:

- **Registration and CyberStart Assess**

Through a handful of fun online challenges, Assess identifies if you've got the right mindset for the programme's later stages.

- **CyberStart Game**

If you score highly enough in Assess, then you'll get access to CyberStart Game.

- **CyberStart Essentials**

If you get through to Game in any intake, then you'll get access to a new and expanded CyberStart Essentials.

- **CyberStart Elite**

Become one of our best participants, and you could be picked to attend CyberStart Elite, our in-person camps.

For further information, visit joincyberdiscovery.com

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Department for
Digital, Culture,
Media & Sport

Why is a career in cyber security so important?

20

We live in a modern world, where our phones are rarely out of our hands and computers make all sorts of tasks easier. It's this reliance on technology that makes cyber security so important. You might not realise it, but it touches all our lives – and it's not limited to your email password either. With a global shortfall of cyber security professionals measuring 2.93 million, there has never been a better time to train for our CyberFirst world.*

Whether it's registering your heart rate on your smart watch, shopping online through a secure connection, or even handing over your details at the doctor or the dentist, all that data has to be protected. That's where cyber security comes in.

With an ever-changing digital society that's showing no signs of slowing down, cyber security needs to adapt with it. Our cyber security specialists have to be versatile, moving at a pace that can keep up with the rapid technical advances in our society.

That's what makes them so valuable – and so increasingly needed. They've got an important job to do, but an exhilarating one too. Because without even thinking about it, people, businesses and institutions all over the UK are relying on cyber security professionals.



of all UK businesses and charities
have a basic technical cyber security skills gap**



21

22



"If I was to meet someone considering the apprenticeship scheme, I would definitely say go for it. You get a full degree as part of the apprenticeship and unlike going to university, you won't end up in thousands of pounds of debt; not to mention the opportunities and experience you can gain whilst on the apprenticeship can't be matched by any university course."

Current degree apprentice



Your route to a career in cyber security: **Degree apprenticeship**

We want to make careers in cyber security as accessible as possible. That's why we've introduced our degree apprenticeship.

On this programme, school leavers like you can dive straight into the world of work, getting a full degree in the process. You'll undertake a level 6 degree apprenticeship, learning about everything from code to emerging technologies, with a potential full-time role at the end. And you'll work alongside cyber security experts at GCHQ and NCSC, gaining the kind of knowledge that will change your career for the better.

It's the kind of straight-out-of-school opportunity that so many people wish for. And we're giving you the chance to grasp it with both hands. For our degree apprenticeship scheme, we're looking for school leavers like you who have:

- UK national or dual national status (subject to security clearance)
- At least BBC (or predicted) in your A Levels (or equivalent to 112 UCAS points*) in any subject
- A GCSE in Maths at 5 or above (or equivalent)
- A passion for all things computing and digital
- The curiosity to explore and master cyber security.

For full details, visit ncsc.gov.uk/new-talent



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*Visit ucas.com/ucas/tariff-calculator to see how many points your qualifications are worth.

Your route to a career in cyber security: University bursary

24]

With our university bursary, you can enjoy the full university experience, safe in the knowledge that you've got a cyber career ready and waiting for you afterwards.

The programme is split into three chunks:

- University:** we'll pay you a £4k bursary per year, tax-free, to support your course
- Each summer:** you'll complete either CyberFirst Academy training or an eight-week training placement in government or industry, with a summer placement payment of £2k
- After graduation:** we'll aim to place you in a graduate-level cyber security role. It's an opportunity that will lead you into a future where you can influence vital cyber security decisions. It's a chance to play a pivotal role in our digital society.

For our university bursary scheme, we're looking for students who have:

- UK national or dual national status (subject to security clearance)
- At least BBB (or predicted) in your A Levels (or equivalent to 120 UCAS points*) in any subject
- A GCSE in Maths at 6 or above (or equivalent)
- An aptitude for computers, how they work and how to secure them – and the willingness to learn more
- Dedication, team spirit, and the drive to protect our technology

Plus EITHER of the following:

- You have a place or intend to apply for an undergraduate degree or integrated Masters in any subject at a UK University
- You're currently studying for an undergraduate degree or integrated Masters, with a minimum of two years of full-time study left on your course from the start of the Bursary, and you're on course for at least a 2:1 in your grades.

For full details, visit ncsc.gov.uk/new-talent

*Visit ucas.com/ucas/tariff-calculator to see how many points your qualifications are worth.



"Before CyberFirst, I came from a background with minimal to zero cyber knowledge. So I know it might feel to you as if sometimes other people know way more, but remember that you have different skills and experience to offer. Embrace that and be confident in your ability: you can thrive here."

Take my first cyber security experience: the CyberFirst Bursary Scheme Academy. It was eight weeks of teaching from experienced industry experts, living in halls together. We spent our weekends exploring the area and our evenings discussing what we'd learned – and I'm not exaggerating when I say I left the academy knowing I'd been part of something amazing.

I think our need to employ passionate, hardworking people in cyber security becomes more and more evident each day. It's easy to take for granted that all the things we do online are relatively safe, but that's mostly down to some very talented, driven individuals dedicating their careers to keeping people safe behind the scenes.

So, don't just assume that there will always be some clever people around to make sure that social media platforms aren't hacked or that the bank's voice recognition can't be beaten. You've got to get involved, because it's accessible now to actually become one of those clever people – by joining CyberFirst."

CyberFirst bursary student



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#CyberFirst
ncsc.gov.uk/new-talent



National Cyber
Security Centre
a part of GCHQ



smallpeice
Dare to imagine

