

Cambridge International Examinations Cambridge International General Certificate of Secondary Education

	CANDIDATE NAME					
	CENTRE NUMBER			CANDIDATE NUMBER		
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3403	Candidates ans No Additional M		er.			

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in. Write in dark blue or black pen. Do not use staples, paper clips, glue or correction fluid. DO NOT WRITE IN ANY BARCODES.

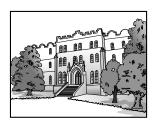
Answer all questions. Dictionaries are **not** allowed.

At the end of the examination, fasten all your work securely together. The number of marks is given in brackets [] at the end of each question or part question.

This document consists of **15** printed pages and **1** blank page.



Read the extract from a student newsletter about open days at Northtown University, and then answer the following questions.



Northtown University Volunteers needed!

Can you help?

In July, Northtown University will be holding three open days for future students, and we need more of you to help on these days. There will be hundreds of visitors – mainly teenagers in their last year of school, who are interested in studying at our university next year, but also some parents and teachers.

The open days take place on Thursday 6, Friday 7 and Wednesday 12 July. Approximately 45 student volunteers are needed on each date, although we now have sufficient numbers for the first and last of these.

In previous years, each student volunteer wore a purple sweatshirt with Northtown printed on it. From feedback, we have learned that these can be too hot, so we have ordered a red T-shirt for each volunteer instead. We will, of course, give everyone a folder containing all the necessary information as well.

On the day

Visitors will have received details about their open day in advance. They should enter the university by the South Gate, then report to the welcome desk in order to sign in. There, they will meet a student volunteer, and they will each be provided with a name badge, a map of the site and a bag which has the university logo on it. This will contain an information pack and a university key ring.

After signing in, visitors will go to the Great Hall where there will be two short talks: Professor Jameson's opening speech, 'Why choose Northtown?', followed by 'Student life', a talk by thirdyear students. Afterwards, visitors will have the opportunity to go to the department which they are interested in. Each department is running its own activities. For example, in the psychology department, visitors can contribute towards a research project set up by a postgraduate student to investigate ambition; they can also watch a short presentation on child development.

We need several volunteers in the Student Services Room to answer visitors' questions. The admissions team will be there to talk about the application process, and we will also have an information desk on money management, which many future students need advice about. There will be a big display on sports and social activities in the corridor outside, and we would like several student volunteers there to chat to visitors. In the room opposite, the accommodation officer will be present to talk about student housing options, and volunteers will show small groups around Burgess Hall. A virtual tour of two other residential buildings, Catford House and Sims Hall, will also be available.

Please contact Mira Katell (mira.katell@northtown.ac) if you are able to help in any way.

(a)	On which date in July are student volunteers still needed?
(b)	What will the student volunteers wear?
(c)	Where should visitors register at the start of the open day?
(d)	What will all visitors receive inside their bag? Give two details.
	[1]
(e)	What is the title of the first talk on each open day?
(f)	[1] What is the topic of the psychology experiment that visitors can take part in?
(ന)	
(g)	What can visitors find out about in the Student Services Room? Give two details.
	[2]
(h)	Which student house will the student volunteers take visitors to see?
	[1] [Total: 9]

3

Read the article about rollercoasters, and then answer the following questions.



My first ever rollercoaster ride

I have come to a theme park to meet rollercoaster enthusiast Jay Murray, to find out what makes these rides so popular. Jay estimates he has been on 700 rides in the past 10 years, and is surprised that I have never been on one. He says that one of the attractions of these rides is that you feel out of control, but safe. Jay really wanted to emphasise the importance of safety. "All rides are tested for 1,000 hours before they open to the public," he said. "They also do a test run on every ride each morning, and there's a thorough annual inspection too."

Rollercoasters first appeared in 17th-century Russia. These were sloping structures up to 15 metres high, built of wood, with a layer of ice on the surface which people would slide down. Rollercoasters with wheeled sledges were developed soon afterwards. Later, in Pennsylvania, in the USA, a train that had been used to deliver coal was converted to carry passengers on day trips. This gave a man called LaMarcus Thompson the idea to open a park with pleasure rides at Coney Island, New York. A school teacher by profession, he had the eye of a designer, and the mind of a businessman. In just three weeks, he raised enough money from the rides to pay for the cost of building the park.

By 1888, Thompson had built nearly 50 rollercoasters around the USA and Europe. He introduced new technologies such as cables to pull trains uphill, but it was another man, John Miller, who came up with a design for an under-friction wheel, which kept trains firmly attached to the rails. This meant that they could go faster and on steeper tracks, without falling off. This invention appeared in 1912.

The introduction of steel tracks meant that the structures were significantly stronger, making rides safer. This also enabled engineers to be more ambitious in their designs, with the knowledge that the rides would still feel smoother. The tracks became quieter too, which was another bonus.

Modern rides have a range of features, including floorless trains, free-fall drops, rolls and loops – all of which mean that if you go on a ride these days, the experience is so intense. "That's why I love them," said Jay. "You forget who you are for a minute." The names of some famous rides reflect these features – Tower of Terror, Formula Rossa and Steel Dragon are just some examples.

Name of ride:	Country:	Height:	Total cost:	Maximum speed:
Tower of Terror	Australia	115 metres	A \$ 16 million	161 kilometres per hour
Formula Rossa	United Arab Emirates	52 metres	£19.5 million	240 kilometres per hour
Steel Dragon	Japan	97 metres	US \$ 52 million	153 kilometres per hour

However, there are limits to the physical forces that a person can tolerate on a ride. People can cope more easily with the positive vertical – the feeling of being pressed into their seat – than the negative vertical, which pushes them out of it. Interestingly, Jay points out that the desire to make rollercoaster rides higher and faster is slowly being replaced by a trend towards more complex rides, which offer a more lasting experience. Jay explains: "A world-famous ride such as Kingda Ka (in the USA) is over in less than ten seconds. Although such a ride is thrilling, and gives you a rush of adrenaline, there is an alternative. You can try a ride like Helix (in Sweden), which lasts for two minutes – it's my number one at the moment." All the same, Jay was eager for me to experience 'air time' – the moment when you reach the top and hang, weightless, before plunging down the other side. And when I finally did, I had to admit that it was fantastic!

(a)	How do theme parks make sure each ride is safe every day?
(b)	What were the earliest rollercoasters covered in?
(c)	What did the railway in Pennsylvania originally transport?
(d)	What was the occupation of the man who first designed the rides at Coney Island?
(e)	What was the name of the device which was invented in 1912?
(f)	How did the use of steel tracks change a person's experience of going on a rollercoaster ride? Give two details.
	[2]
(g)	According to the table, how tall is Tower of Terror, and what is the fastest that Steel Dragon can travel?
(h)	[1] Which term refers to the force that pushes you into your seat while on a ride?
(i)	How does Jay Murray believe rollercoaster rides will change in the future?
(j)	What is the name of Jay Murray's current favourite ride?
(k)	Why is Jay Murray so keen on rollercoaster rides? Give four details.
	[4] [Total: 15]

5

Teen Chef is a national cookery competition that has taken place for the past three years in Ireland. In the first round of the competition, contestants prepare one dish of their choice, and judges choose the best cooks to go through to the next round.

Brendan Daley and his friend Mark Donohoe both love cooking. They recently took part in a local competition called Bake It. Although neither of them won, Brendan received very positive comments on his baking. Afterwards, his food technology teacher, Mrs Granger, suggested that he should think about entering Teen Chef next year. She told him that this competition is for teenagers who are up to 17 years old, and as he is only just 16, it will be the last year he can enter. She suggested that he looked online – www.teenchef2018 – to get more information about it. Brendan did this, and decided to apply. He provided his contact details – bren2001@thedaleys.ie – and he then received an application form to fill in.

Brendan decided to ask his parents for advice about what he should cook for the first round of the competition. His dad suggested that he should make a pudding that he knows he can do well, such as a strawberry cheesecake. His mum thought that he should try to show off his skills more, and try a more complicated main dish, like a fish pie with herb salad. This would let him cook with fresh, local produce, which is what he likes most of all. In the end, Brendan took his dad's advice, as he realised he would be less nervous, and he wouldn't need so much equipment. He will take his own set of individual cake tins to use, but will ask for a hand mixer to be available at the competition venue.

There is a choice of dates for the first round of the competition: January 12, 23 or 30. Brendan is going on a school trip at the very end of the month, and he has an exam in the second week, so the middle date suits him best. He can also choose between two venues: Galway and Wexford. Brendan lives at 43 Robin Lane, Kilkenny, Ireland, and this is slightly closer to the town of Wexford. However, his aunt lives at 32 Beach Road, Galway, SW4, and he could stay there the night before, so he thinks that option would be better.

Brendan has to send in a written statement with his application, saying why he wants to apply. He loves cooking because of the fact that food brings people together, and food is for sharing. His family always eats meals together, which he enjoys. He also has to send in a statement from an adult who can recommend his ability to cook. His teacher and his aunt both offered to do this, but he has decided it would probably look better if the statement comes from his school, rather than a relative.

Imagine you are Brendan. Fill in the application form, using the information above.

Teen Chef 2018

7

Application form

Section A: Personal details
Full name:
Home address:
Age:
Email address:
Have you entered any cookery competitions before? (please delete) YES / NO
If so, please give details:
Section B: First round of the competition
Which date can you attend? (please tick)
January 12 January 23 January 30
Which location would you prefer?
Would you like us to arrange accommodation for you? (please delete) YES / NO
What would you like to make? (please underline) starter / main course / dessert
List any equipment you would like us to provide:
Who has agreed to provide a reference for you: (please circle) teacher / relative / friend
Please give their name:
Section C
In the space below, write one sentence of between 12 and 20 words stating why you enjoy cooking for other people, and the type of food you like cooking best.
[Total: 8]

Read the article about the future of bookshops, and then complete the notes on the following page.

The tale of the vanishing bookshops

The number of bookshops in most towns and cities around the world is in decline – few people would disagree with this. It isn't just small, local or independent bookshops that are suffering – large chains are closing their stores too.

What is behind this trend? One of the major causes is, without a doubt, the competition from online sellers and supermarkets. These outlets can offer popular titles at a reduced price, by buying and selling books in large quantities. It suits many people with their busy lifestyles to be able to make a purchase quickly online, or to be able to put a book in their supermarket trolley while doing the food shopping. Another explanation is the fact that fewer people seem to want to read books these days. Many of those that do so think it is much easier and more convenient to carry a tablet or e-book reader with them than it is to fit a heavy novel in their bag. And of course it means they can have more than one book to read at the same time. There are, however, some reports that sales of digital books are now reaching a peak in some countries, following a rapid growth in sales, but this news may be too late for some bookshop owners. Other important causes include the high cost of rent for many bookshops, and the fact that in times of economic difficulty, people have less money to spend on 'extras' such as a good book to read.

Bookshop owners, authors and publishers are not giving up easily. They have realised that if they don't take action now, the future of the industry is at risk. The challenges have led to some creative solutions, which many hope will bring people back to bookshops and prevent some from closing down. One obvious solution is to make a bookshop more individual in style so that people want to come in. A shop should also be designed to encourage customers to spend time browsing. Many booksellers say that the best customers are those who do just this – they may have intended to buy only one book, but having looked at two or three others, decide to buy them too.

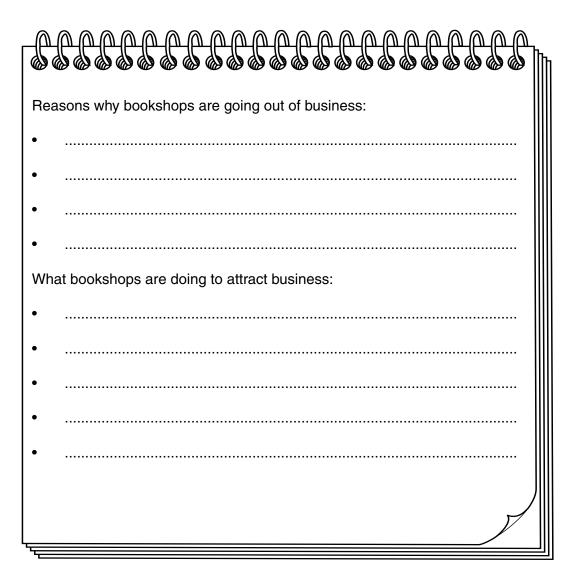
Some bookshops have introduced more innovative ideas recently. One is to hold what is known as a 'reading spa'. This is an individual consultation with a customer, where they are introduced to several new books that have been selected to meet their taste in literature. Another idea is getting people to sign up to a 'reading year' service – for an annual fee, a customer is sent a book each month which has been picked to suit their particular interests. These exciting ideas show that bookshops can develop into something which goes beyond just selling books.

Other methods designed to bring in customers include opening a cafe in the shop, and putting on events. These might include inviting an author to come in and read a section from their book, or talk about it, and sign copies that customers have bought.

Despite these new ideas and approaches, many booksellers recognise the fact that they are unlikely to get rich by selling books. They do it quite simply because they love it.

You are going to give a talk to your class about the challenges bookshops face. Prepare some notes to use as the basis for your talk.

Make short notes under each heading.



[Total: 9]

Read the following article about citizen scientists. Write a summary explaining the benefits of being a citizen scientist, and how the work of citizen scientists has helped scientific research.

Your summary should be about 100 words long (and no more than 120 words long). You should use your own words as far as possible.

You will receive up to 6 marks for the content of your summary and up to 5 marks for the style and accuracy of your language.

Could you be a citizen scientist?

From deep space to the sea shore, there's still so much for us to discover...

Imagine discovering a new planet. You probably think that you would need to be a scientist with a sophisticated telescope, but actually that is not true. Recently, a UK television series on astronomy invited viewers to look through a huge collection of images from NASA that was available online. Two amateur astronomers, Chris Holmes and Lee Threapleton, decided to take up the offer. The result was unexpected – they found a new planet, by spotting the shadow it made while passing in front of a distant star. The planet was named after them: Threapleton Holmes B.

These days we have the ability to collect data on everything. What we don't have, however, are enough scientists to study it. And that is where citizen scientists come in.

Citizen science is scientific research that is carried out by amateurs, people like Chris Holmes and Lee Threapleton, often under the direction of professional scientists. This isn't a new thing – science has relied on self-taught researchers for a long time – but now, thanks to new technology and the internet, the variety and scope of projects can be much larger. These large projects often rely on citizen scientists in order to collect and analyse enough data. One such project, known as the Big Bumblebee Discovery, was set up in urban areas of the UK. Around 30 000 people took part, and this enabled scientists to learn more about the preferred habitats of bees. This information will also hopefully encourage town planners to include more bee-friendly plants in the urban developments of the future. Another project on a similar scale aimed to monitor the spread of wireweed. This is a non-native species of seaweed that is appearing on beaches throughout the UK, and is causing concern to scientists as it is threatening the survival of many native seaweed species. The researchers turned to citizen scientists for help, and the Big Seaweed Search was the result. This required people to identify the species of seaweed that they found on various beaches, and pass on the information to the research team. The citizen scientists who took part reported feeling that they had made a contribution towards scientific research.

Another attraction of citizen science is the joy of discovery. For example, a man in New Zealand decided to keep a record of everything he saw in his garden. By making careful and detailed observations over a period of time, he found a new species of beetle. Science is all about attention to detail – that is how we spot something new. Once you realise that, you begin to understand how we know anything at all, from the age of the universe to how many stars there are. You get a greater appreciation of the world we live in. And it is important to remember that there is still so much to find out. Consider the fact that just 25 years ago, we hadn't discovered any planets around other stars, and now we have found thousands. If you become a citizen scientist, you will become a part of finding that out, and you might even make history.

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During your last school holiday, you did four weeks of paid work experience.

Write an email to your friend about your work experience.

In your email, you should:

- tell your friend about where you worked
- explain how your work experience helped you to improve your English
- say what you enjoyed about the job you did.

The pictures above may give you some ideas, and you should try to use some ideas of your own.

Your email should be between 150 and 200 words long.

You will receive up to 10 marks for the content of your email, and up to 9 marks for the style and accuracy of your language.

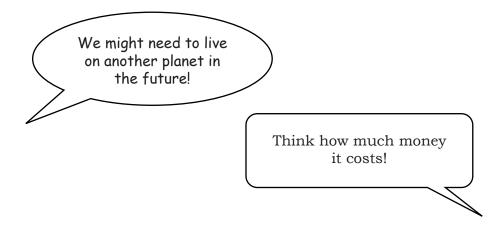
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[Total: 19]

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In your English class, you have had a discussion about whether governments should spend money on exploring space.

Here are two comments from students in your class:



Write an article for your teacher, giving your views.

The comments above may give you some ideas, and you should try to use some ideas of your own.

Your article should be between 150 and 200 words long.

You will receive up to 10 marks for the content of your article, and up to 9 marks for the style and accuracy of your language.

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