

Unit 1: Rocket science

A Reading

1 Read the letter below.

Passage A: New Year's Eve fireworks

Dear Mum and Dad

Happy New Year! Hope you had a good New Year's Eve. I had the most amazing time here in Dubai, watching the biggest firework display ever – an **extravaganza** lasting six minutes, which set a new world record for a single **coordinated** display. The 500,000 fireworks were set off from 400 firing locations, **synchronised** by 100 computers. It took the **technicians** ten months to plan!

There was a countdown to midnight in fireworks in both roman and arabic numerals. Organisers said they wanted to create a burst of light to imitate a sunrise and dazzle spectators with a United Arab Emirates flag that could also break records for being the largest ever made of fireworks. They certainly did that!

I was down with thousands of watchers standing by the fountains at Burj Khalifa, the world's tallest tower, which was used as a backdrop for the display. Everyone got there early and the anticipation beforehand was **electric**; it wasn't only the children who were excited! The Burj is shaped like a rocket itself, and was the launch pad for thousands of smaller rockets. It was turned into a whole series of famous monuments, like the Eiffel Tower, by patterns of light flashing on it. And that was just a small part of it...

It was a helter-skelter, with showers of sparks sliding down it. It was an **incandescent** pine tree with thousands of starry branches. It was a castle unleashing arrows of fire. Down below there was an orchard of trees bursting into blossom; there were pulsing globes like dandelion heads sending out seeds; there were tiered birthday cakes with exploding candles. **Iridescent** rings climbed the tower. **Scintillating** fountains leapt up to meet the cascades of light. Bouquets of bright flowers of every hue filled the sky.

Everyone was holding up their phone to capture the images, holding their breath, mesmerised. It was too much to take in; there were too many places to look simultaneously. The soundtrack of sci-fi film-type music matched the display of dancing light and water, and made it a space-age experience. There was huge applause at the end, cheering and whistling that went on for ages. It was unforgettable, and I really wish you could have seen it too.

Maybe next year! I'm really enjoying the job and the lifestyle, so I'll still be here then!

Love
 Lee

B Language and style

2 Give meanings for the following words, as they are used in Passage A. Look up any words you do not know, but first try to guess from the prefix or stem of the word.

a extravaganza _____

b coordinated _____

c synchronised _____

d technicians _____

e electric _____

f incandescent _____

g iridescent _____

h scintillating _____

i mesmerised _____

j simultaneously _____

3 a Next to each of the above words, write which part of speech it is, as used in the passage.

b Study the words and then write out without looking (in a notebook) those you did not know how to spell.

C Comprehension and summary

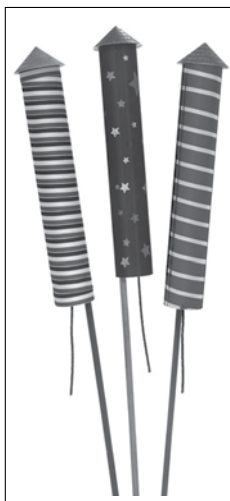
4 Re-read the fourth paragraph of Passage A and comment on:

a the sentence structure and its effect

b the vocabulary and its effect

D Reading**6** Read the following encyclopedia article.**Passage B: Facts about fireworks**

Fireworks are believed to have been invented more than 2000 years ago in China, where they were used in the form of firecrackers to accompany many festivities, in order to ward off evil and invoke prosperity. It is believed that the first firecrackers were actually accidental: chunks of bamboo thrown onto a fire. (Bamboo traps air inside the segments so that when heated it expands and bursts through the sides, and this could have started the idea.) China is the largest manufacturer and exporter of fireworks in the world; 90% of all fireworks originate from there. Firecrackers are still made by hand, and it is a hazardous job.



In 1240, the Arabs acquired knowledge of gunpowder, and in the same century firecrackers arrived in Europe, with the crusaders or Marco Polo. The key ingredient in making fireworks is gunpowder, which consists of saltpetre (potassium nitrate), charcoal and sulphur. Early fireworks were enjoyed less for the show than for the sound; simple gunpowder explodes quickly with a terrific bang but with little colour. Over time, people discovered that using chemical compounds with greater amounts of oxygen made the explosives burn brighter and longer. At first fireworks were only orange and white. In the Middle Ages, new colours were achieved by adding different minerals. They had least success with blue. This became available with the discovery of copper compounds, but this is an unstable metal and so is less frequently used.

It wasn't until the 1800s that fireworks developed into what we know today. Italy was the first country in Europe to truly master and experiment with pyrotechnics, by loading firecrackers into cannons and shooting them into the air. Multi-hued displays were an innovation of the 1830s, when metals that

burn at high temperatures and create colours, sparks and noises were added to gunpowder. The Italians are still at the forefront of pyrotechnic development, and the phenomenal New Year display in Dubai in 2014 was masterminded by the Italian-American Phil Grucci.

Every year, people in China celebrate the invention of the firecracker on 18th April. Fireworks are also an integral part of the Chinese New Year celebrations. The big occasion for fireworks in the UK is Guy Fawkes Night (5th November) to celebrate the failure of the Gunpowder Plot to blow up parliament. France uses fireworks to celebrate Bastille Day, commemorating the storming of the prison during the French Revolution. Firework displays are also a major part of Independence Day celebrations in the United States.

The world record for the largest firework display before January 2014 in Dubai consisted of 77,282 fireworks set off in Kuwait in November 2011 as part of the country's 50th anniversary celebrations. The largest firework rocket – 13 kg – was produced and launched in Portugal in 2010. The biggest annual firework display event in Europe is the International Festival concert held in Edinburgh, Scotland, in which no fewer than a million fireworks are set off in less than an hour. A string of firecrackers lasting 22 hours marked the New Year's Day celebrations in Hong Kong in 1996. The world's largest single firework was seen at a festival in Japan in 1988; the burst was over a kilometre across and the shell weighed over half a tonne. A rocket can reach speeds of 240 kph, and the shell can reach as high as 200 metres. People will always see the explosion of a firework before hearing it. This is because although they both travel in waves, light travels at 1080 million kph whereas sound travels only at 1225 kph.

In public shows today, specialists use computers to control the electronic ignition of fireworks, as well as to synchronise the aerial bursts with music. Firework displays are becoming ever more spectacular and are an established way of celebrating any global, national or local event or anniversary.

E Language and style

- 7 a Underline the passive verb forms in Passage B.
 b Explain why passive rather than active verb forms are used in certain types of text.

- 8 Look at the underlined words in Passage B and consider how they are used. Fill the blanks in the paragraph below with one of these words. (You may want to use some words more than once, and come not at all.)

few fewer fewest a few little less least a little

There are _____ signs of fireworks losing popularity as a form of entertainment. Gradually, private firework shows are becoming _____ common and are being replaced by public events. This means that the injuries caused by fireworks are _____, but they are still a cause of damage to property, unintended fires, maiming of children and traumatising of animals. _____ people argue that fireworks are destructive in many senses, and that the expense and waste of natural resources cannot be justified in return for _____ moments of pleasure, but there is _____ public debate on the subject, and unlikely to be, given that they have been around for so long.

- 9 Use *given that* (used in the last line of the paragraph above) correctly in a sentence of your own.

F Comprehension and summary

- 10 a In which century did fireworks become known in Europe?

- b Express in your own words what happened to fireworks in the 1830s.

c Which country held the world record for a coordinated firework display before New Year's Eve 2014?

d Explain in your own words why we see fireworks before we hear them.

e Express the following phrases in your own words.

i invoke prosperity

ii multi-hued displays were an innovation

iii still at the forefront

11 In one sentence each, summarise what Passage B says about:

a the Chinese and fireworks

b the Italians and fireworks

c how fireworks are made

12 Write a one-paragraph summary of the history of fireworks.

H Composition

Descriptive writing

- a** Describe the environment and atmosphere of a venue waiting for an exciting event to start.
- b** Give an account of a real or imaginary experience of witnessing a sensational show.

Narrative writing

- c** Write a story which involves an explosion.
- d** Continue this story opening: 'I was really looking forward to the coming year ...'

- 1** Discuss the competitiveness between countries to beat records and outdo each other, and say whether you think this is good for the world.
- 2** 'New Year's Eve'. Write a short story with this title.

**Coursework
topics**