



High Flyers

To seek, to learn, today...to shape, to lead, tomorrow



May 2021 Highsted Grammar School Issue 5

Sustainable Architecture



Could you design the buildings of the future?

Secrets of screenwriters



Pedal Power!
Try cycling.



Enter the Photography competition or Maths challenge to win prizes!!!

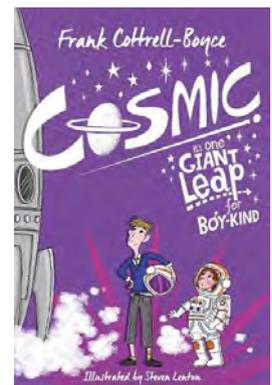


Also inside this issue:

Author of the Term: Frank Cottrell-Boyce



The Oboe



Marvellous Maths!
Can you break the code?

Learn about the Countryside code.



Contents



Welcome to our fifth issue of High Flyers. This term the Highsted Virtue we have been focusing on is being Community Conscious.

Which subject inspires you to unlock your potential?



Pages 3 & 4 Special Feature: Technology: Sustainable Architecture.



Page 5 & 6 Maths Codes and Computers.

Page 7 Biology Nature.



● **Page 8 Biology** Classification. The species which roar.

● **Page 9, 10, 11 Film** Secrets of screenwriting.

● **Page 12 Musical Notes** The Oboe.



Page 13 Sport Cycling, could it be the sport for you?

Page 14 Challenge 5 Test your knowledge on our Maths challenge.

Page 15 Photography Challenge Enter our "green" competition.



Page 16 Recommended Reads Be inspired by our author of the term, the hilarious Frank Cottrell -Boyce.

Page 17 Challenge 4 The answers to the Maths challenge from Issue 4.

Page 18 Acknowledgments.





Sustainable architecture? I am sure you know what sustainability is and why it is so important for future generations. As a designer it is even more necessary to design with sustainability at the centre. An architect is a design professional who plans and designs buildings such as homes, schools, offices and stadiums.

Sustainable architecture is all about designing buildings in a way that limits human's impact on the environment. It is an eco-friendly approach to modern-day buildings and includes the planning and construction process. Key points in sustainable architecture are:

- Choice of building materials
- Energy generation
- Heating and cooling systems
- Plumbing and waste
- Combing the natural landscape



Below we will look at some of the important features of sustainable architecture.

Building materials : A sustainable architect will choose environmentally-friendly building materials which are recycled or renewable. It is also good to focus on using locally sourced materials such as wood which will reduce the distance materials will be transported. Recycling is at the heart of a sustainable architect's design and materials that are non-toxic and will not harm the environment.

Energy generation: Sustainable architecture focuses on using sustainable energy sources such as wind, geothermal and solar. A sustainable architect understands the importance of energy for buildings and how to take advantage of seasonal changes in the sun's position, and energy-efficient lighting and eco-appliances can be installed.

Examples of sustainable architecture around the world

1. Pixel Building (Melbourne, Australia): The energy-saving features and eye-catching panels provide shade and maximize daylight as needed. The roof captures rainwater and there is a series of vertical wind turbines.
2. Bosco Verticale (Milan, Italy) : Bosco Verticale translates to Vertical Forest. It's one of the most intensively green facades you'll find anywhere in the world. There are a series of deluxe apartments in the sky with plenty of spaces to accommodate large, full-grown trees, and a variety of ground cover plants and shrubs.



Pixel Building (Melbourne, Australia)

Can you find any examples of sustainable architecture in the UK?



Bosco Verticale (Milan, Italy)

Credit: Mairo Cinquetti/NurPhoto/Getty Images
<https://edition.cnn.com/style/article/green-buildings-world-sustainable-design/index.html>



Design Technology : Sustainable Architecture

Discover how you could help the Planet!

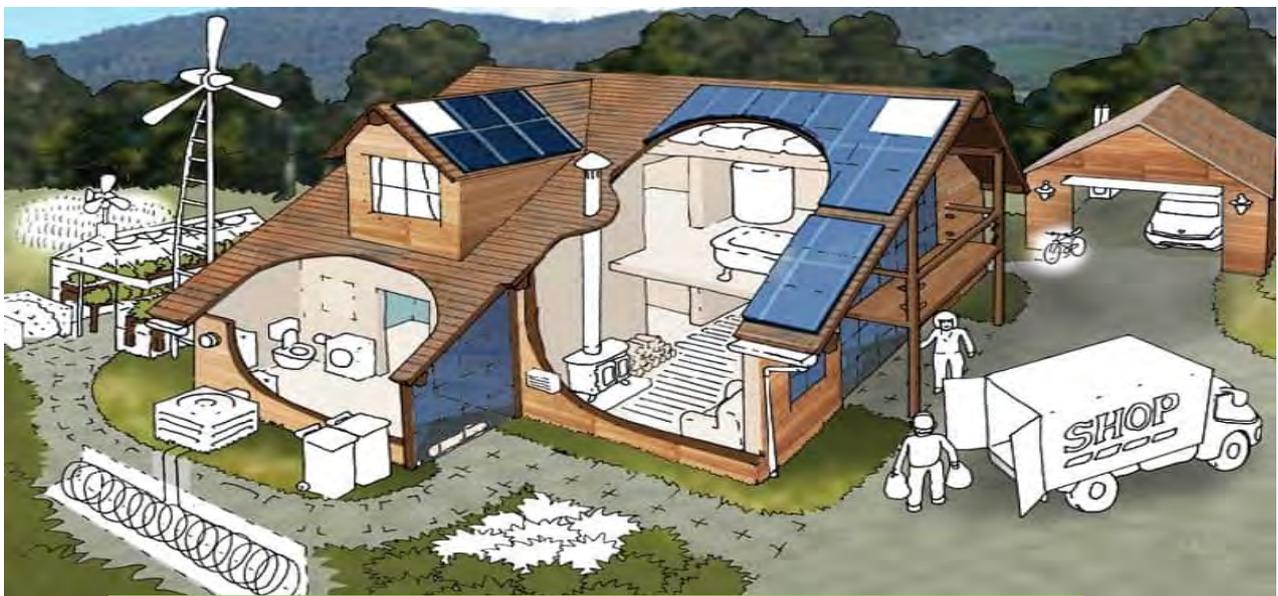
Design your own sustainable home

Sustainable design challenge

Imagine you are a sustainable architect and you have been asked to redesign your family home. Try your hand at designing a sustainable home.

Things to consider:

1. What materials will your house been made from? Are they renewable, upcycled or recycled?
2. How will you generate energy for your home?
3. Where will you get your water supply?
4. How will you get food for your home?
5. What can you used from your surrounding environment? Plants, trees?
6. How big does your home need to be? Micro homes, multifunctional rooms?



Facts about green architectural design

1. Consumes less energy: According to Leadership in Energy and Environmental Design (LEED), they consume 25% less energy and 11% less water compared to the average commercial building.
2. Costs less in the long run.
3. Occupants are healthier.

Images: <https://www.designrulz.com/design/2017/03/10-eco-friendly-houses/>





Morse Code and Modern Coding Systems

Codes have been used over the centuries to pass on information or encrypt messages. Before modern computers and the internet, messages could be passed over long distances using a device known as a telegraph and a special code called Morse code. Before the telegraph, most long distance messages were written or memorised and carried by messengers travelling by horse. This meant that messages could take days to get delivered.

A Telegraph-used for Morse code.



The invention of the telegraph meant that messages could be sent and received almost instantly. Messages were sent over the telegraph by tapping a code for each letter using long and short signals. These signals were converted into electrical impulses and sent over telegraph wires. The receiver at the other end converted the impulses into a series of dots and dashes which were decoded to represent letters. Short signals are referred to as dits (represented by dots). Long signals are referred to as dahs (represented by dashes). Morse code was invented by an American named Samuel Morse, born in 1791. He chose the shortest codes for letters which were used more frequently so that messages could be passed as quickly as possible. He noticed that 'e' was the most commonly used letter in the local printing press and gave 'e' the shortest code, 'dit'. The 'dits' and 'dahs' each lasted a specified amount of time so the message could be read clearly.

A	.	-	N	-	.				
B	-	.	.	.	O	-	-	-	
C	-	.	.	.	P	.	-	-	.
D	-	.	.	Q	-	-	-		
E	.	R	.	-	.				
F	.	.	.	S	.	.	.		
G	-	-	T	-					
H	U	.	-		
I	.	.	V	.	.	-			
J	.	-	-	W	-	-			
K	-	-	X	-	-	-			
L	.	-	.	Y	-	-	-		
M	-	-	Z	-	-	.			

A Dit (dot) takes - 1 unit of time
 A Dah (dash) takes - 3 units of time
 Pause between Dits/Dahs - 1 unit of time
 Pause between letters - 3 units of time
 Pause between words - 7 units of time

Challenge:

Can you tap out your name in Morse code?



Alan Turing Statue at Bletchley Park - Credit geograph.org.uk

In World War II, German soldiers sent encrypted (coded) information to each other. An English Mathematician, Alan Turing, supported by a team of mathematicians at Bletchley Park, created a special machine that was able to break the code (known as the Enigma Code). This enabled British forces to intercept messages and discover secret information held within, which helped shorten the length of the war. The creation of machines to break encrypted codes led to the development of modern computers.



Nature – Countryside Code



This past year has seen a vast increase in the number of visitors exploring the British countryside. The Countryside Code provides advice for visitors allowing people of all ages and backgrounds to enjoy the health and wellbeing benefits that nature offers, while giving it the respect it deserves. It includes the rules visitors must follow when they are enjoying parks and waterways, coast and countryside. This year marks the 70th anniversary of the code. The code was updated on 21 April 2021, highlighting three key aspects to visitors: Respect, Protect and Enjoy.



If you are venturing into the countryside it is important that you understand the rules of the Countryside Code.

Respect everyone

- be considerate to those living in, working in and enjoying the countryside
- leave gates and property as you find them
- do not block access to gateways or driveways when parking
- be nice, say hello, share the space
- follow local signs and keep to marked paths unless wider access is available



Protect the environment

- take your litter home - leave no trace of your visit
- do not light fires and only have BBQs where signs say you can
- always keep dogs under control and in sight
- dog poo - bag it and bin it - any public waste bin will do
- care for nature - do not cause damage or disturbance

Enjoy the outdoors

- check your route and local conditions
- plan your adventure - know what to expect and what you can do
- enjoy your visit, have fun, make a memory

Know the signs and symbols of the countryside. Below are a few examples.

Footpath



Bridleway



Restricted Byway



Byway open to all traffic





Biology – Classification



Kingdom
Phylum
Class
Order
Family
Genus
Species

Every living organism is classified using the same system, initially designed by Carl Linnaeus in 1758. It was to group species of similar characteristics together and provide a uniform system for naming species. In this issue we explore how animals are classified by their Species.

All of the animals below belong to the same **Family—Felidae**, often referred to as the Cat Family. The genus separates the different groups of cats. The **Genus Panthera** contains animals that can roar.



Panthera leo

Lion



Credit: Andrew Paul Deer | Shutterstock.com

Panthera tigris

Tiger



Credit: World Wildlife Fund

Panthera pardus

Leopard



Credit: World Animal Foundation

Panthera onca

Jaguar



Credit: World Animal Foundation

A Species is a group of living organisms that can breed together to produce fertile offspring.

Kingdom:	Animalia	Organism belongs to the animal Kingdom.
Phylum:	Chordata	It is a vertebrate (contains a backbone).
Class:	Mammalia	It is a mammal (produces milk for its cubs).
Order:	Carnivora	It is a carnivore, eats meat.
Family:	Felidae	Feline family.
Genus:	Panthera	Animals within this genus can roar.





Film: *Secrets of Screenwriting*



What is Cinema?

We've all watched a movie before, whether in the cinema, on TV or even on our mobile phones. But have you ever wondered how they are made? In this column we explore the wonderful world of cinema!

So... just what are films? And who are the people that make them?

The Screenwriter

Every movie needs a script. The script – or screenplay, as it's also known – is the foundation of a good film. A house built on soft, muddy ground will soon become lopsided. Equally a film can have the flashiest modern special effects, but if the plot doesn't make sense, or the characters or the dialogue are not believable the whole thing will fall down.

Enter the screenwriter. It is the screenwriter's job to construct the story, offering up a blueprint (a plan) of what the film will be like. This includes dialogue, as in a play or a novel, but it also needs to consider the visual elements of cinema. In fact one of the golden rules of screenwriting is: **show, don't tell!** What this means is that the screenwriter takes as much care to imagine how their characters will act and what their setting will look like as what the characters will say. The way the characters act physically will also often tell you as much about their personality as the things that they say.



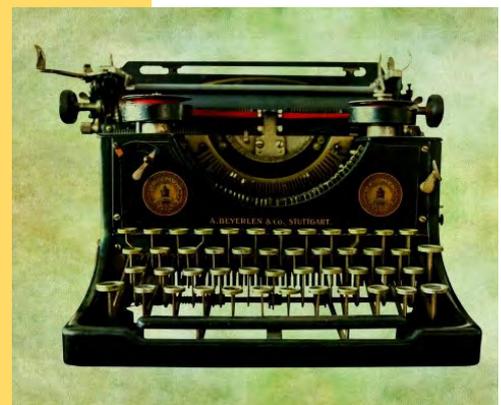
Do you have what it takes to be a screenwriter? Can you write a scene for your own script? Why not get a pen and paper out and give it a try!

Remember:

'Show, don't tell!' – Try as much as possible to describe the appearance of your story's setting and your characters' physical behaviour. This will help to make your story more engaging.

Choose a setting – What kind of story do you want to tell? What would be the best place to set your story?

Choose your characters – Try to make your characters different from one another. If one character is funny, the other could be serious; if one gets angry easily, the other could be very patient. And when you write their dialogue (what they say) try to write it the way you imagine those characters would be likely to speak (rather than just in your own voice).





Take a look at these two pages from screenplay of the film *Shrek*. Can you mark on them examples of where the writer has followed this golden rule of 'show, don't tell'?:

EXT. WOODS OUTSIDE DULOC - DAY

Shrek continues on his way, not noticing the little donkey following at a distance behind him, trying to work up the courage to speak. Whenever Shrek turns the Donkey darts behind a tree. Finally, Shrek spins and sees him.

DONKEY
(ingratiating)
Can I say somethin' to you? Listen, you was really really something back there! Incredible!

Shrek stops and turns.

SHREK
(A little annoyed)
Are you talking to -- me?

Somehow, Donkey is gone. Shrek turns back. Donkey is right in front of him, beaming.

DONKEY
(fast)
Yes! I was talkin' to you. Can I just tell you, you was really great back there, man those guards they thought they was all that! Then you showed up and ...BAM! They were tripping over themselves like babes in the woods. See that, that really made me feel good to see that.

SHREK
Oh, That's great.
(disinterested)
Really.

DONKEY
Man, it's good to be free.

SHREK
Now why don't you go celebrate your freedom with your own friends...hmm?

DONKEY
But uh... I don't have any friends. And I am not going out there by myself. Hey, wait a minute I got a great idea, I'll stick with you. You're a mean, green fighting machine. Together we'll scare the shit out of anybody that crosses us!



(CONTINUED)





Film: *Screenwriting*



Shrek is finally fed up. He stops, a deep sigh then he turns on Donkey waving his arms and trying to scare him off, roaring in his face.

SHREK
Roaaaaarrrr!

Donkey is terrified for a beat, then collects himself.

DONKEY
(nervous laugh)
Oh Wow! That was really scary. And, if you don't mind me saying, if that don't work your breath certainly will get the job done. 'Cuz you definitely need some tic tacs or something 'cuz your breath stinks! Man! You almost burned the hair off my nose. Just like the time--

Shrek grabs Donkey's muzzle holding it shut, but Donkey continues trying to talk nonetheless.

DONKEY (cont'd)
-- mime mi benb binbo be moods manm mi mied bo mgo --

Shrek lets go and tries to walk away but Donkey continues and follows.

DONKEY (cont'd)
--and then I ate some rotten berries. Man I had some strong gasses eeking out of my buttthat day.

Shrek can't take it anymore he spins around to face the Donkey.

SHREK
Why are you following me?!!

DONKEY
I'll tell you why.

Shrek is speechless with horror as Donkey sings:

DONKEY (cont'd)
(to "You Gotta Have Friends")
'Cause I'm all alone.
There's no one here beside me.
My problems have all gone.
There's no one to deride me.
But you gotta have friends --



(CONTINUED)

The screenwriters could have included dialogue of Shrek telling Donkey: 'You are annoying me!' But it surely works better (and is funnier too!) to have Shrek sigh, wave his arms around in the hope of scaring Donkey off and then give out a loud 'Roaaaaarrrr!' Poor Shrek!

Another key element needed for a screenplay is a setting. In the scene from *Shrek* this is a wood, which makes sense for a film based on fairy tales, but the setting can be anywhere. Along with a setting – and at least as important – a script also needs recognizable characters. For instance, in this early scene in the film Shrek is a big, strong ogre who is very grumpy, doesn't talk much and likes to be left alone. Quite the contrast to Donkey who is much smaller, can't stop talking and clearly wants to make friends with Shrek.

If you want to write your own script see pg 9 for more tips!





Musical notes



Secret Musician

How would you describe your job?

I teach music in a Primary school, planning the music lessons for all the classes in the school and running the music groups.

Which instrument do you play?

I play the oboe and piano.

How old were you when you started learning? I started learning piano aged 8 and oboe aged 10 after learning the recorder at school.

What did you enjoy most about learning to play? I always enjoyed performing with other people, from recorder group at primary school to orchestra at university.

How did you train for your career? I studied for a degree in Music then qualified as a teacher.

What is your favourite piece of music? Brahms Hungarian Dance no 1.

Your top tip for young performers? Practice is the key to success. Join a music group you enjoy and it will motivate you to keep playing and get better.

Welcome to the Music page. Here you will learn about careers in music, unusual instruments and some of the signs and symbols that enable musicians from around the world to communicate through the universal language that is Music.

Lesser spotted instruments...

The Oboe

Habitat: the oboe is often found in orchestras.

Played: blowing into the mouthpiece, made from two flattened pieces of bamboo which vibrate together.

Looks: a very distinctive instrument, the oboe is made out of wood with metal keys.

Sounds: the oboe is high pitched and capable of sustaining very long notes.

Claim to fame: Many oboists make their own reeds out of bamboo canes.



Can you find a recording of an oboe being played?

Next time you are listening to a piece of music, try to describe the tempo using an Italian term.

Have you considered learning to play an instrument?

Tempo Musical signs and Symbols

Tempo Marking	Definition
Prestissimo	Very Very Fast (>200bpm)
Presto	Very Fast (168-200bpm)
Allegro	Fast (120-168bpm)
Moderato	Moderately (108-120bpm)
Andante	Walking Pace (76-108bpm)
Adagio	Slow and Stately (66-76bpm)
Lento/Largo	Very Slow (40-60bpm)
Grave	Slow and Solemn (20-40bpm)

Did you know...

Tempo is the speed of the music.

We use Italian terms to describe how fast the music should be.

BPM=beats per minute.



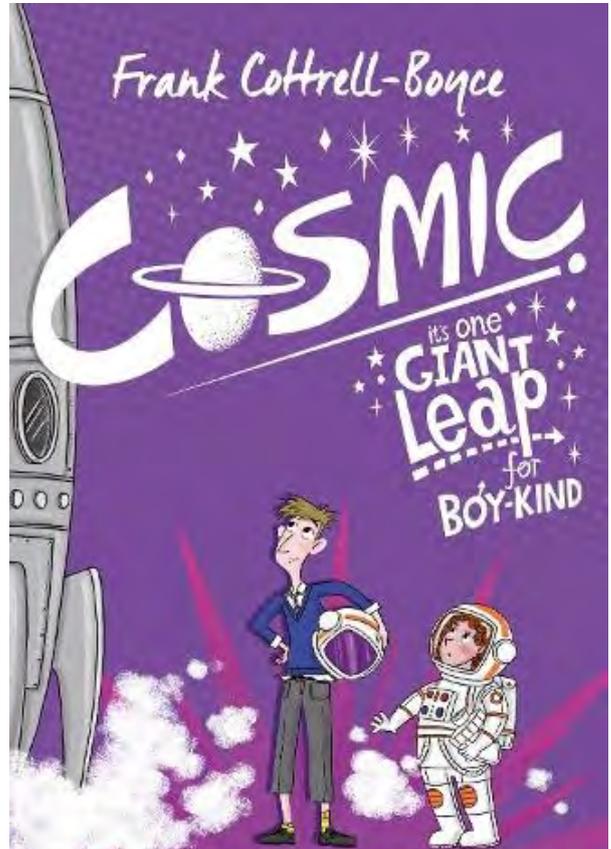


An out of this world Adventure!

12 year old Liam is a big lad, but does that mean he should know better? This is a hilarious but heart-warming story by multi award winner Frank Cottrell -Boyce.

Liam discovers that being tall has its advantages especially when people think he is an adult. Whenever he gets into trouble he knows his dad will always be there to help him out. Liam loves theme parks and can't believe his luck when he wins a competition to test the world's best rollercoaster. However things gets complicated when he has to pose as his friend Florida's dad! It's not long before they are in deep trouble, the rollercoaster is really a rocket! This might be one situation that even his dad can't get him out of!

Even though it sounds unbelievable the story is so well written you follow the characters along on their amazing adventure. A lovely story about the relationships between parents and kids and our expectations of adults and children. A modern classic that will make you laugh and cry all in one book!



“The thing that makes you different from everyone else—that's your superpower”
— **Frank Cottrell Boyce**, [The Astounding Broccoli Boy](#)

Author of the Term: Frank Cottrell -Boyce

Frank Cottrell -Boyce was born in Liverpool and studied English at the University of Oxford. He was a screenwriter for film and TV and in 2004 he wrote a book for children based on his own screenplay - *Millions*. He has won many awards including the Carnegie Medal, The Blue Peter Award and the Roald Dahl funny Prize. Frank is a judge for the 500 Words competition and the BBC's *One Show* “As You Write It” competition. Along with Danny Boyle, he devised the Opening Ceremony for the London 2012 Olympics. He has written for the hit TV series *Dr Who* and was the screenwriter for the hit film *Goodbye Christopher Robin*.



What advice would you give to anyone who wants to write a novel?

Two things: First, read, read, read, read read. And second, live, live, live, live, live (with your eyes and ears open).



Scrambled Eggs

Each egg contains a different number, 1-11.

Number 1 is below 3 and left of 9.

Number 6 is below 10 and right of 7.

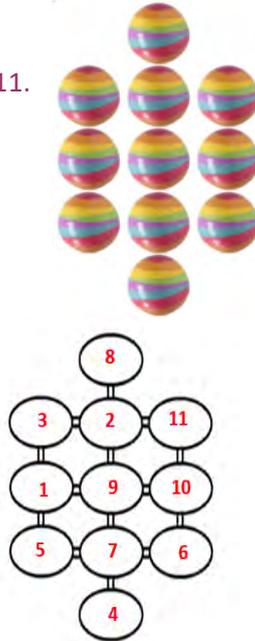
Number 2 is below 8 and left of 11.

Number 7 is above 4 and right of 5.

Number 3 is left of 2.

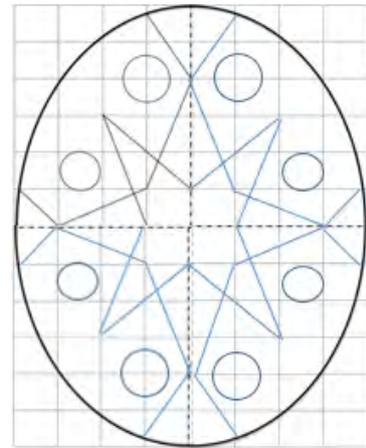
Can you find which egg is which?

Write your answer in this grid.



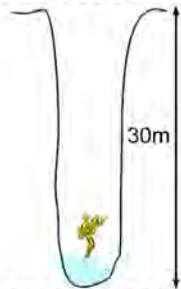
Reflect and Reflect

Use the grid lines to complete the symmetrical pattern.



The Jumping Frog

A frog has fallen into a pit that is 30m deep.



Each day the frog climbs 3m, but falls back 2m at night. How many days does it take for him to escape?

It will take him 28 days to escape. After 27 days and nights the frog has only 3 metres to go. On the 28th day the frog is able to jump clear.

The Jumping Frog © Duncan Keith (CC license)

Sudoku

Can you complete this Sudoku so that every column, row and 3x2 rectangle contains 1-6 only once?

3	6	2	4	1	5
4	5	1	3	2	6
6	2	3	5	4	1
1	4	5	2	6	3
2	3	6	1	5	4
5	1	4	6	3	2





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