

TIME EXPLORERS

Here be dragons



CONTENTS

Here be Dragons	3
How to be a 'Dragonologist'	5
Seven Kinds of Dragon	7
The Littlest Dragon (story for younger children)	12
Dragon Hunt	13
Recreating the Kew Dragons	14
The Blacksmith's Daughter (story for 9-12 year olds)	18
How to draw a Dragon (step by step guide)	21
Teacher/parent notes	24
Glossary	25
Reading list	26
Dragons and Pagodas game (snakes and ladders game redesigned)	27
More places to find Dragons	28



HERE BE DRAGONS

In the Middle Ages, the words *hic sunt dracones* (here be dragons) were written on maps to indicate dangerous or unexplored territories, often accompanied by a picture of a strange and terrifying creature.

Some people think that dragons don't exist but even today we can hear their stories and see their images all over the world. This short pack aims to introduce you to the world of dragons and help you to invent, draw and design your very own dragon.



hic sunt dracones

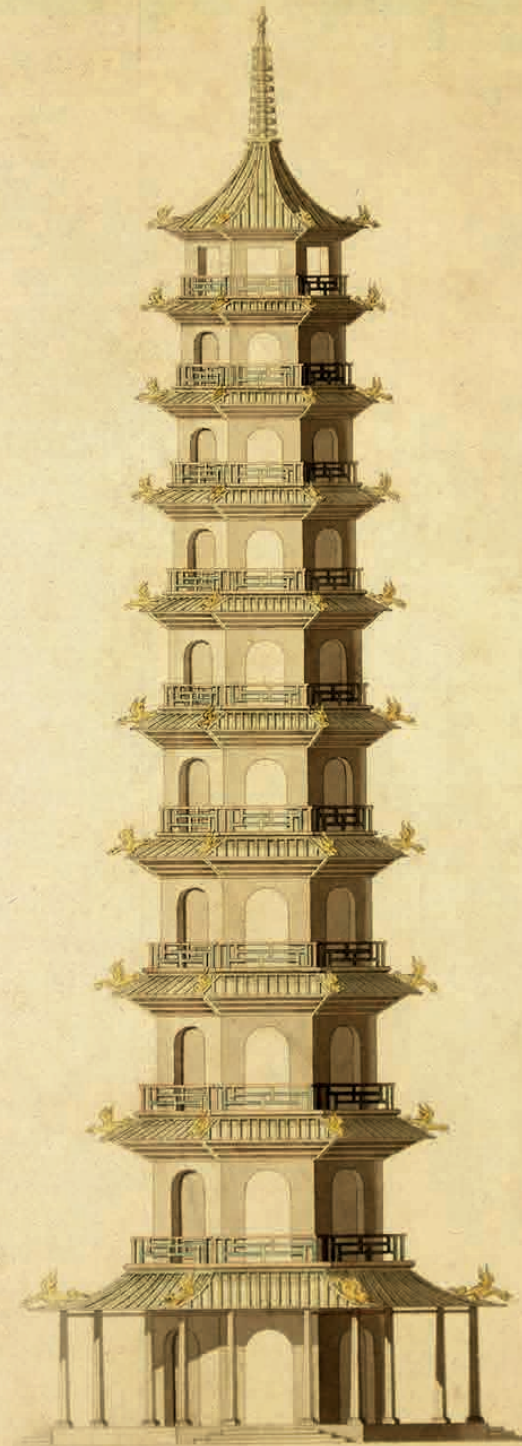


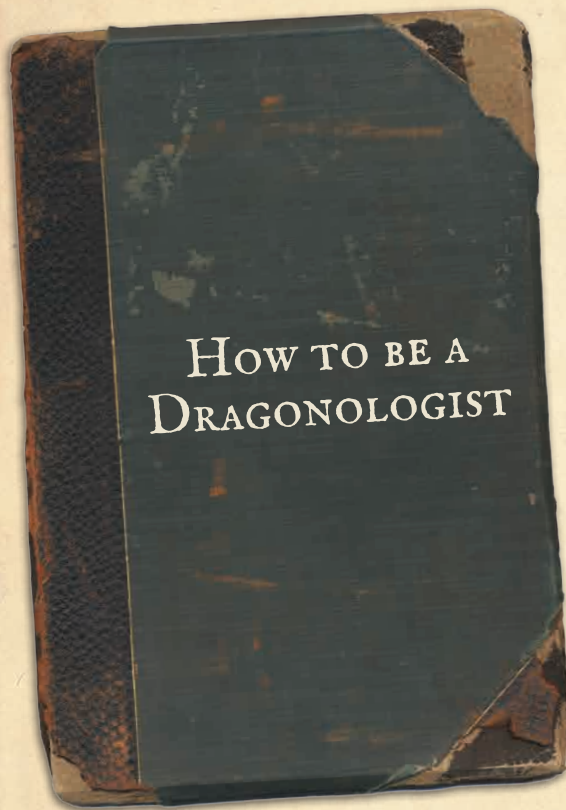
BLUE PETER DESIGN A DRAGON COMPETITION

Here Be Dragons' is a family learning programme and trail from Kew Palace to Kew Pagoda that celebrates the history of dragons in design and decoration in the UK and in China. Working in partnership with Blue Peter and through our family learning programme, we will explore the science, art and technology involved in creating sculptures that last and will create six models to form a physical trail that leads from the palace to the Pagoda in 2018. A Blue Peter competition will help us find the final dragon for the pagoda. This short learning pack offers some ideas and background to help children and families explore the stories of dragons in many cultures, providing inspiration for storytelling and story writing, craft activities, art and design.

THE GREAT PAGODA AT KEW

The towering Pagoda is nearly 50 metres in height and was designed and built by the architect Sir William Chambers (1723-96) between 1761 and 1762 for Augusta, Dowager Princess of Wales and mother of King George III. William Chambers designed more than two dozen ornamental buildings in the garden and surrounding grounds. Most were not meant to last and were removed within twenty years of being built, but the Pagoda has survived. In 2018 it will be restored and the dragons will return to the Kew Pagoda for the first time in nearly 250 years.





In order to find your own particular dragon you will need to think carefully about the kind of dragon you are creating.

You will need a 'Dragonologists' notebook to help you research and create your dragon. This notebook should have blank pages for sketching and be small enough for you to carry around with you whilst you hunt for dragons.

Think about the things your dragon does; is it a peaceful dragon, or a ferocious one? Does your dragon eat plants, cows or even princesses? Does your dragon fly around the countryside breathing fire, or is your dragon a sneaky, slithering creature that comes up from a deep, dark well?

Once you know what your dragon does, you can then describe what it looks like. For example, if your dragon eats cows it will probably have very sharp teeth and long claws, a bit like a Tyrannosaurus Rex. If your dragon flies and breathes fire it's going to need some very large, fireproof wings. Think about the dragon's colour. Would a peaceful dragon be red or white? Does your dragon have scales, feathers or slimy fish skin?

Sometimes when people are designing or creating something they find it helpful to describe it to someone else. Try to describe your dragon to a friend, teacher or family member. You could use your Dragonology notebook to collect adjectives that describe what your dragon looks like, and adverbs to describe how it moves. Here are a few examples:

ADJECTIVES - DESCRIBE THE DRAGONS APPEARANCE

It is a **BIG** Dragon

His breath is **HOT**

Her eyes are **FIERCE**

ADD TO THE LIST

Happy, Noisy, Scaly, Strong, Glorious, Beautiful,
Shimmering, Ferocious, Enormous, Vicious

ADVERBS - DESCRIBE THE DRAGONS ACTIONS

It unfolded its wings **GRACEFULLY**

He **CAREFULLY** guarded his treasure

She **RUTHLESSLY** chased the cows

ADD TO THE LIST

Quickly, Cheerfully, Cruelly, Eagerly, Silently,
Slowly, Lazily, Happily

SO YOU HAVE YOUR
NOTEBOOK AND
SOME IDEAS ABOUT
DRAGONS; IT'S NOW
TIME TO START
YOUR RESEARCH.

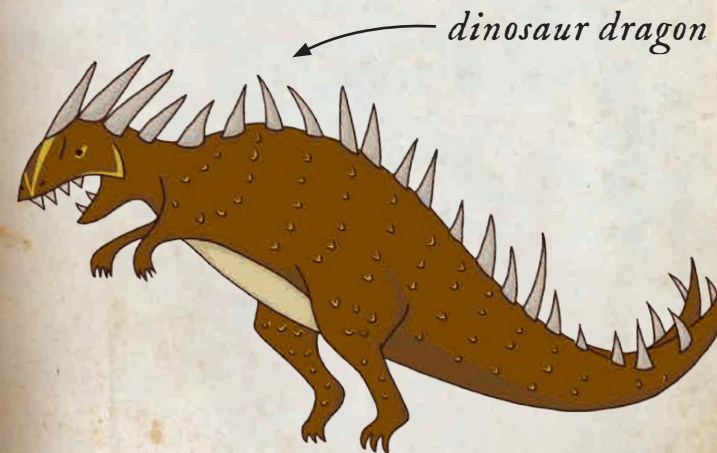


SEVEN TYPES OF DRAGON

Dragons are all around us. If you begin searching you will find them in books, pictures, stories and sculptures. Tales about dragons go back further than the Vikings, Roman Empire and Greek Mythology and there are stories about dragons and mythical beasts from all over the world. To help you design your dragon, here is a brief explanation of where some of the dragon myths come from.

DINOSAUR DRAGONS

It's easy to understand why people may have thought dinosaur fossils were the bones of great dragons, particularly as the Pterodactyl does have wings. Whales and whale bones might also explain the stories of sea monsters and water dragons. A humpbacked whale can be over 12 meters long. Visiting a museum or looking at dinosaur books could help you find a great shape and size for your dragon.



REPTILE DRAGONS

Some people think that Nile crocodiles from Africa may have inspired European dragon legends by swimming across the Mediterranean to Italy or Greece. Nile crocodiles can reach five meters in length and they 'walk' rather than slither like other reptiles. Monitor lizards, such as the Goanna, may be the dragons in Australian stories. A dragon based on the natural world might be very fitting for the Pagoda in Kew Gardens, so you could look for pictures of snakes, frilled lizards, komodo dragons, alligators and water dragons. The word dragon comes from the Latin word draconem which means huge serpent or giant sea fish.



reptile dragons

THE FEATHERED SERPENT

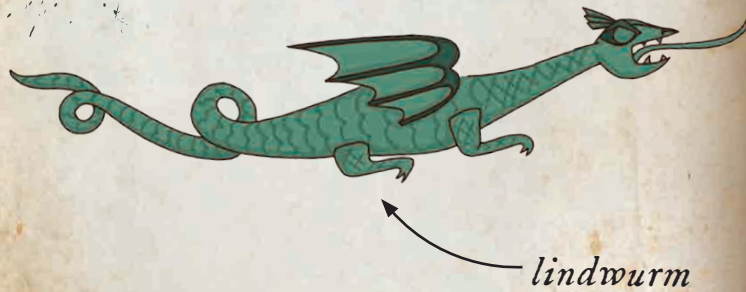
Not all Dragons have scales. The Aztecs of America had a dragon God called Quetzalcoatl. He was brightly coloured, shaped like a snake and covered in feathers. The Mayan name for this dragon was Kukulcan and he was a boy who was born a snake. As he grew older he became a plumed serpent and his sister cared for him in a cave. He grew to such a size that his sister was unable to continue feeding him, so he flew out of his cave and into the sea, causing an earthquake. To let his sister know that he is still alive, Kukulcan causes earth tremors every year in July.

feathered serpent



THE LINDWURM

The Lindwurm is the Scandinavian dragon associated with Viking and Celtic myths. This dragon has a long snake-like body, long tongue & short wings. It can't fly and instead it slithers or swims. The Lindwurm often decorated the prow of a Viking ship, and according to some eyewitness accounts was also depicted on Viking sails. The Scandinavian folk tales of Ragnar say his nickname 'Lothbrook' came from the 'hairy trousers' he wore to protect him when he killed a Lindwurm. In *Voyage of the Dawn Treader* the writer CS Lewis based his dragon on the Swedish story of King Lindwurm who was cursed as a child and grew up to be a dragon. Eventually he married a fair maiden who peeled away his dragon skins and so the Lindwurm became good, and was appointed King.



CHINESE DRAGONS

The dragons that were on the Kew Pagoda were most probably chinoiserie dragons. This means in the style of a Chinese dragon.

There are many depictions of dragons in China, Japan and Korea and they are an important part of New Year celebrations.

There is a Year of the Dragon in China. Some Chinese dragons are like the Lindwurm or feathered serpent, appearing snake-like but with feathers. Others are more like the stone guardian lions from the Forbidden City or Imperial Tombs in China.



FEARSOME FIRE BREATHING DRAGON

Over two thousand years ago, the book of Job in the Old Testament of the Bible describes a really ferocious dragon. This creature is called the Leviathon, a terrifying monster that has inspired many of the images and ideas of Dragons we have today. 'Its eyes are like the rays of dawn. Flames stream from its mouth; sparks of fire shoot out. Smoke pours from its nostrils as from a boiling pot over burning reeds.' Dragons like this that feature in folk stories and are meant to reassure us that good always conquers evil. The Lambton Wurm and St George and the Dragon are songs and stories of how a brave knight saved a whole village and a princess from a horrible dragon. There are many paintings of George slaying the dragon, including one from 1460 by Paolo Uccello in the National Gallery in London. The Jabberwocky in Lewis Carroll's 'Alice' stories is a fantastic beast drawn by John Tenniel. There is a fire-breathing statue of Smok Wawelski in Krakow, Poland. This was a ferocious beast with six heads that required ten cows a week to stop him eating people and princesses. He was finally defeated by a trick. The King's sons fed him a calf skin filled with sulphur, causing him to explode. In the epic tale Beowulf we meet a dragon who sleeps in a cave, hoards treasure and breathes fire.

Tolkein, the writer of *The Hobbit* based his fearsome dragon 'Smaug' on the beast in *Beowulf*. Lludd, the king of Britain, dug a pit and filled it with mead, and covered it with cloth in order to trap two terrifying red and white dragons that were disrupting the country with their fighting. The dragons drank the mead; fell asleep and Lludd imprisoned them under the mountain Dinas Emrys in Snowdonia.

fearsome fire breathing dragon



FRIENDLY DRAGONS

The final kind of dragon is the helpful, friendly kind of dragon that can be found in many children's stories.

*These dragons often demonstrate great bravery and whilst they look like dragons they often have lovely human personalities. Examples include Toothless in *How to Train your Dragon*, and Mushu from *Mulan*. Watching these films might inspire you to create a friendly dragon.*

friendly dragon



THE LITTLEST DRAGON

*Very high up, right at the top of the Pagoda,
there was a dragon, the Littlest Dragon.*

*Smaller than a cat but bigger than a mouse,
The Littlest Dragon could not even breathe fire,
just a teeny, tiny spark.*

*The Big Dragons were shimmering and shiny.
They were blue and green and red and silver.
The Littlest Dragon was grey, with just five freckles of glitter.*

*At night the Big Dragons went out to eat trees.
'You are too small to eat trees,' they said.*

*At night the Big Dragons flew and swooped.
'You are too small to fly with us,' they said.*

*At night the Big Dragons shone in the moonlight.
'You are too small to shine brightly'*

*One night the Big Dragons had a party.
'You are too small for parties,' they said.*

*So the Littlest dragon ate his tiny leaves, and flapped his tiny
wings, and sighed a tiny sigh as he tried to glow in the dark.*

*It was the Biggest Dragon's birthday. They made her a birthday cake.
One of the Big Dragons tried to light it but his flame was too big,
and too strong. The flame burnt up all of the cake and all of the table
and a big patch on the ground.*

*They brought another cake. Just before another Big Dragon
burnt it all up, they had an idea.*

*They flew up and lifted the Littlest Dragon down.
They sat him on top of the cake.
They asked him to breathe fire.*

*His little spark was just enough to look like a birthday cake candle.
They all sang Happy Birthday and blew the candle out
and blew the Littlest Dragon over.
He landed on the floor all covered in cake.*

*The Littlest Dragon had the biggest smile.
'I'm not too small for parties after all!' he said,
and licked all the cake off his tiny wings.*

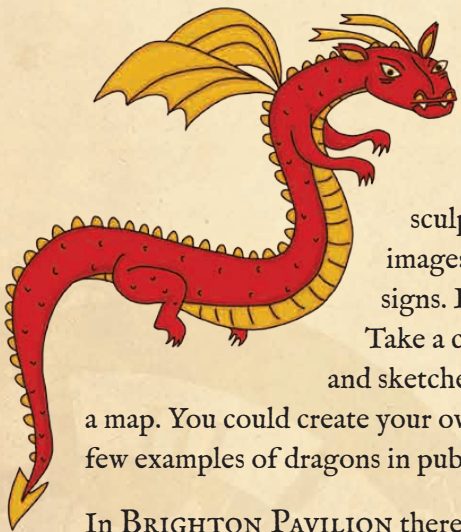


DRAGON HUNT

We challenge you to go on a local dragon hunt

Things you will need:

- Dragonology notebook or sketchbook and pencil
- Map
- Camera & Binoculars
- An adult to help you find dragons on the internet or library
- Dragon picnic



There are many dragons to be found in the countryside, towns and cities in the United Kingdom. Look up to see where architects have placed dragons on buildings as corbels, water spouts and gargoyles. Try to find dragon sculptures in parks and gardens. You might find images of dragons on flags or George and Dragon pub signs. Local museums might even have dinosaur bones. Take a camera and your dragon notebook, make notes and sketches of dragons and mark the dragons you find on a map. You could create your own dragon trail for others to follow. Here are a few examples of dragons in public places in the UK;

In BRIGHTON PAVILION there are many dragons, even on the ceiling and chandeliers. See just how many dragons you can find.

On top of CARDIFF CITY HALL you will find a spiky serpent dragon and the Red Dragon Y Ddraig Goch on the Welsh Flag.

There are drawings of Dragons in the illuminated manuscript of the Book of Kells, in TRINITY COLLEGE Dublin, Eire (Republic of Ireland).

Dorchester in Dorset is an ideal place to discover the fossils of dinosaurs.

In Dundee, Scotland, there is a dragon in the main shopping street. There is a legend that a dragon tried to eat all nine daughters of a farmer in Pitempton, but a brave man called Martin slayed the dragon. A carved stone near Bridgefoot marks the spot where the Pitempton dragon was slain.

The entrance to the CITY OF LONDON is marked in ten locations by statues of dragons. The dragons are painted silver with red wings and tongues. These dragons hold a shield which bears the City of London's coat of arms.

The CHINESE ARCH in Manchester is covered in dragons, and more Chinese dragons can be seen in the shops and building in the China Town area.

At HAMPTON COURT PALACE, Surrey, there are stone dragons guarding the entrance to the Palace and a huge dragon in the Magic Garden.

There are many more dragons to be found. They might be chiselled from stone, carved from wood or cast in metal. They might be big or small. They might be very old, or made very recently. They could be up high, on the ground or hidden inside buildings. They might be painted on fabric, wood or glass or even carved into a hillside. There is plenty of inspiration to help you design your own dragon and a list at the end of this pack. A dragon hunt is great fun for all the family.





RECREATING THE KEW DRAGONS

In 1784, the Pagoda dragons disappeared. No one really knows what happened to them or what they looked like. Trying to solve the mystery of what the dragons might have looked like has been a long and painstaking search. Lee Prosser is one of the curators at Historic Royal Palaces and he began the investigation into what happened to the Pagoda dragons, and how to re-create them.

We know that when the Pagoda was first built in 1761 it was astonishing. Imagine people who had never been outside of London, and who had never seen such an extraordinary building before. How might they have felt? People would have come just to stand and marvel at it. There were many other buildings in the gardens of Kew Palace, including a mosque with gold minarets. These buildings were not really built to last. They were more like stage sets, created to impress people and be removed later. Perhaps because it is so big, the Pagoda was a much stronger building and has therefore lasted over two hundred years, rather than just twenty years like the mosque. Many of these garden structures were built by William Chambers and the first step in the investigation was to look at the drawings he made for the design of the Pagoda. One of his sketches shows some very rough outlines of dragons, and was a clue that the Pagoda dragons had wings. This sketch told us two other very important things: there were eight dragons at each level and ten levels - so eighty dragons in total - and the dragons at the bottom were larger than the ones on the top.

The sketches also suggested that the dragons were made in a style which today we call 'chinoiserie', which means inspired by Chinese art. The other clue as to the kind of dragons that were on the Pagoda comes from William Chambers' description of the Pagoda when it was new: *'All the angles of the roof are adorned with large dragons, eighty in number covered with a kind of thin glass of various colours, which produces a most dazzling reflection.'*

In order to recreate these dragons the curator and the craftsmen had to do some more research. First they looked around for lots of examples of chinoiserie dragons from 1740 onwards. It seems that at the time of George III, dragons were

designed as scary winged birds, with feathers, coiled tails and fierce, roaring mouths. They looked at dragons which had been put on a four-poster bed at the V&A museum in London as well as dragons on some Chinese buildings in Potsdam near Berlin. They found 18th century chinoiserie dragons on picture frames, plasterwork, table legs and even a sauce boat in the Ashmolean museum. All of this helped them to finally decide on a design for the Kew Pagoda dragons.

As a result of all the research we now knew that the original dragons were large; that there were 80 of them; and that they were chinoiserie style. If they were like other dragons of the time they had wings, two legs and a tail with a curly point. They had feathers, not scales and they shone with iridescent colours. They must have been beautiful. To work out how big the dragons should be they created two dimensional 'cut outs' and placed them onto the pagoda.

Although he could not be absolutely certain, the curators were now inspired to come up with a 'best fit' which was as close as possible to what the dragons may have looked like. They worked with a specialist team to develop a number of prototype dragons, and used a 3D printer to create models. They tested things like the wing span and shape in a wind tunnel so that they didn't create dragons that would take off if it got windy. The sculptor, Tim made a clay model, called a maquette, which could be adjusted till it matched the illustrations and took all the research into account. Once this was finished the master carver, Paul, began carving the dragons from wood.

The final piece of the puzzle was to work out how the dragons were painted. There were two ways to get iridescent colours in the 18th century. The first was to enamel the dragons, but this would have been heavy and expensive, so the

curators and craftspeople chose to use a thin glossy varnish, like nail varnish over the top of a silver base, coloured with pigments. Pedro, an expert in historic paint finishes, used gold leaf and copper verdigris varnish to create the iridescent green and gold colours. When they are finished the dragons will shimmer with many colours and be almost as stunning as the original ones.

As to what happened to the original ones, we may never know. Records tell us that in 1784 a blacksmith, by the name of John Smith, was paid to remove the iron slates and the dragons from the roof. They were probably too heavy for the Pagoda and were damaging it. He would also have needed to remove the dragons in order to take the tiles off. Perhaps the dragons were so old and damaged they fell apart; perhaps they were thrown away, or stolen. There is even a story that the Prince Regent lost them in a bet. We do know that not a single one has ever been found, and they had disappeared by 1840 when the first plan to restore the Pagoda was made. Maybe they just flew away...





*What do you think happened
to the dragons?
Perhaps you could write a story
about why the dragons left.*

*A lot of work went into finding
out what the Pagoda dragons
should look like.
Do you think we were right?*

*Do you think you might
have a better design?*

*Perhaps we need different dragons
in the 21st century.
What do you think?*

THE BLACKSMITHS DAUGHTER

My father is a blacksmith. He is very well known around here and a trusted member of the community. He doesn't have much time for me. Mostly that is because I daydream a lot. I'm also clumsy and not very practical. When I'm asked to carry buckets of water, or wood for the fires, I'm always tripping up or soaking my clothes. My father gets really cross with me for inventing things and making up stories when I'm supposed to be helping. I think Dad would have rather had a boy to help with the forge but 'never mind' he says, 'one day I'll marry you off to a fine farrier.' I hope that's a joke as I'm sure someone who just makes horse shoes might be rather boring.

Sometimes I sneak off and go exploring. My favourite place in the whole world is the palace at Kew. I'm not really supposed to go there but the servants just shrug and say 'it's only the blacksmith's daughter' and so they ignore me. Sometimes I do little odd jobs and run errands just so they don't make me leave.

In the palace garden there is a sight to truly marvel at. I've been told it's called a Pagoda, and it was designed by a famous man called William Chambers. It's so beautiful. It is as high as a mountain and unlike any other building I have ever seen. Each floor has eight corners and at each corner is a huge, fire-breathing

dragon. When the sun shines on the dragons they glow with all the colours of the rainbow and when it rains, they glisten. Each dragon is arching its wings, and roaring. There are huge dragons on the bottom of the Pagoda, and smaller ones at the top. Whenever I get time I run to the Pagoda and stand and stare at these glorious creatures. Sometimes I even talk to them.

One day, round about sunset, I was at the Pagoda. I knew I would be in trouble because I was cutting it a bit fine to get home before dark and I'd never find my way without light. This evening there was a sunset of the brightest oranges, golds and pinks and all the sky was on fire. The reflection on the dragon feathers set each dragon alight. I could not tear myself away from the beautiful sight of the iridescent dragons, almost alive in the glow. Then, as the sun began to set and the fiery display dimmed, just out of the corner of my eye something seemed to move. For a moment I could have sworn I saw a wing ripple. I turned but saw nothing, a trick of the light perhaps. I heard a sound like the snorting of a horse. I held my breath and listened but nothing, I must have been imagining things. My father always told me my imagination would be my downfall, and here I was letting it keep me out after dark. I was going to be in big trouble, I had to run. I set off as quickly as I could but already it was getting hard to see the way in front of me. 'Oh no!' I thought, 'why did I stay out so late! I am going to be punished when I get home'. I was so worried I did not look where I was going and I tripped up on the root of an enormous tree. I fell forwards and I felt my head hit something hard. Then there was darkness.

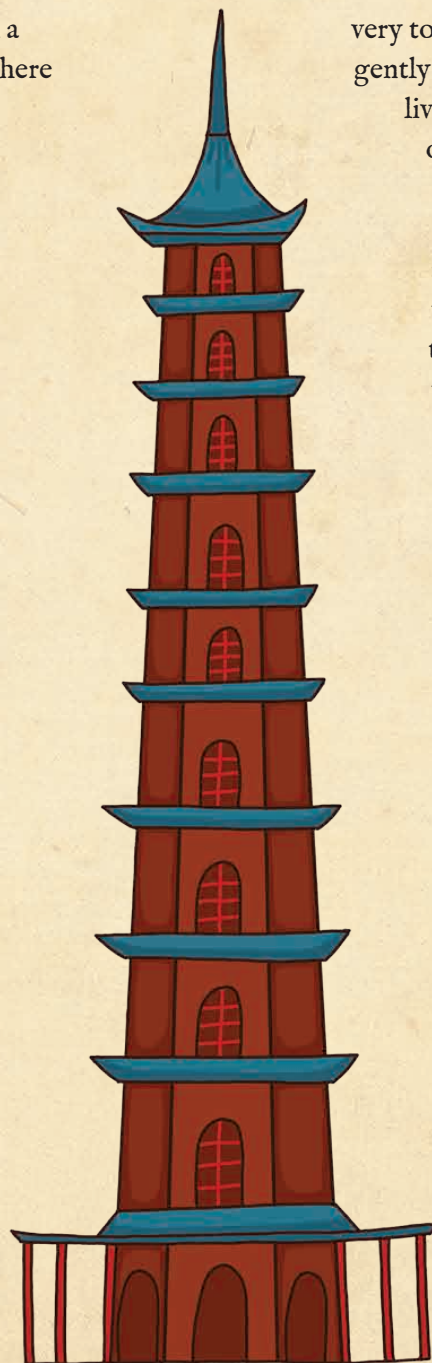
The next thing I was aware of was a rather unusual smell, like burned spices and oranges. I also felt very warm. Something rough was being dragged across my face. I struggled to force my eyes open and, for a moment, I stopped breathing... right in front of my face was a dragon. It was about the same size as me and it was licking my face with a huge red tongue. I tried to scream but only a cough came out and I managed the strangled words 'don't eat me'. The dragon laughed, coiled his tail around me and stopped licking my face. 'We don't eat people' he sang, and his voice sounded like a musical instrument being played. Something like a fiddle but more beautiful and much finer. I tried to open my eyes fully to



get a look at the dragon. He was green and blue, with red claws and a red mouth. He had flaming orange feathers at the end of his tail. Where I was touched by him his skin felt solid and firm but also soft, like a moss covered tree. As he moved, his body rippled like a snake and I shuddered. He looked so fierce, but seemed so friendly. He arched his wings and breathed out a gust of hot breath that smelled like the forge when I accidentally put greenwood in the fire. 'Come with me' he said and I got to my feet, gingerly feeling the lump forming on my head. I followed him back to the Pagoda and then I looked up and stood stock still in awe and wonderment. To my astonishment all the dragons were alive and moving! Some were swooping through the sky, others were grooming their feathers or stretching their glorious wings. They were talking and singing. The sound was beyond anything I have ever heard, even more beautiful than the choir at Christmas time.

My new dragon friend introduced himself 'I am Hong Zhengfu 虹征夫, the Rainbow Traveller and this is Yao Hui' 耀辉, Glorious Sunshine' and he bowed - in the direction of one of the largest of all the dragons. 'My name is Jane Smith,' I said. 'I am the blacksmith's daughter'. I tried a very wobbly curtsy to this most magnificent of all the dragons. Her body sparkled and rippled like waves on a lake and her feathers changed from red to blue to green. Her enormous wings beat like the bellows in the forge and her voice crackled like the flames from the fire. 'Do you fly?' she asked tilting her head to one side to look for my wings. 'No,' I said sadly and sighed. 'Then climb up,' she said. My heart was beating fit to burst and I was filled with a mixture of fear and excitement as I climbed up, gripping her mossy feathers and clambering onto her back.

We took off and soared through the night sky, lit by the glow from eighty dragons and guided by the crystal clear moonlight. I looked down over the gardens and saw the



very top of the Pagoda, the ponds reflecting the stars and the trees rustling gently in the breeze. We flew for a little while and I said 'have you always lived here?' I heard her sigh. 'Dragons come and dragons go'. 'How old are you?' I asked. She sighed once more and replied, 'dragons live forever'. 'Really?' I said. 'Can't anything kill a dragon?' 'Well... yes' she explained, 'fire. We cannot survive fire. Now this is all too serious. It's time for fun'. All night I talked, and sang and flew with the dragons till I began to feel quite sleepy. I laid my head against the warm, bark-like skin of one of the larger dragons and listened to the birds singing the dawn chorus as I drifted off.

I was woken by a rough shaking and the sound of a concerned voice. It was one of the kitchen staff who seemed very worried about me. 'I can't understand it - she must have been out all night! She was knocked out unconscious but she isn't cold. She feels quite warm'. 'Dear girl,' she addressed me, 'Everyone has been out looking for you. My goodness look at that lump on your head! We need to get some brown paper on that and get you into bed.' After my adventure, I was in bed for over a week and even my father sat with me now and then to see how I was. One evening he sat next to me on the bed and said, 'I've had some good news. I'm being paid rather well to remove all of the iron roof tiles from the Pagoda. I'm also going to take down all of those old wooden dragons. They are getting old, they are not real gold and no one seems to want them. I thought they'd make good fuel for the forge fire.'

My heart leapt into my mouth. Oh no! They couldn't burn the dragons! I was devastated and I quickly made up my mind that I had to tell them. 'When will you start?' I asked.

'The day after tomorrow, I'll take the dragons off first to get to the tiles, and get that forge fire burning bright.'

I tried not to cry. Just one day, that's all I would have to say goodbye. The following morning was bleak and the

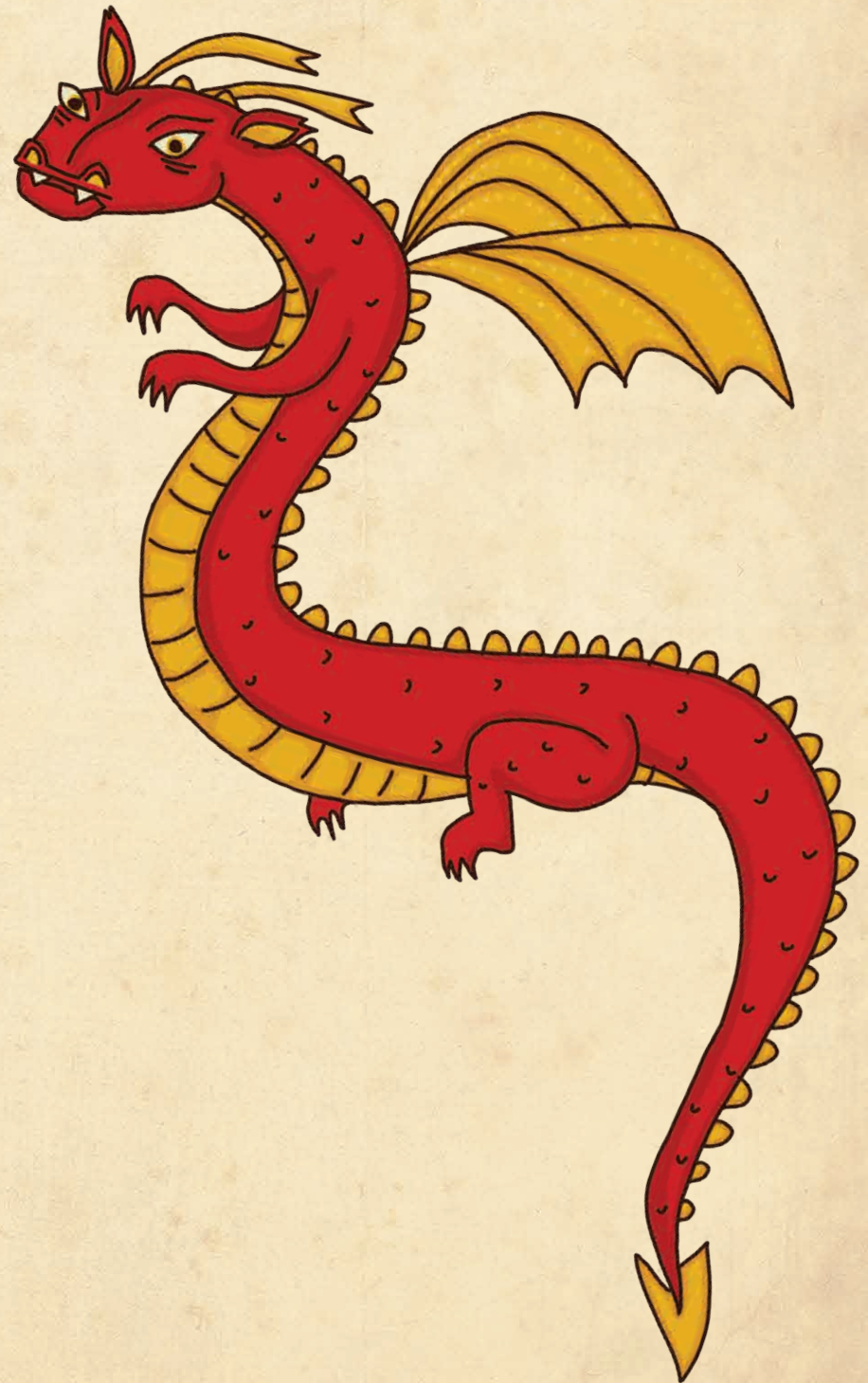
rain was pouring down. I was up at dawn with my father. I told him I felt a little better and I'd like to help. As soon as I could get away I ran as fast as I could, even though my head was pounding and I felt sick. I got to the Pagoda and stood in front of the largest of the dragons. Father was right. In this light I could see they had lost some of their glow. They were looking weather beaten, and a bit old. Their paint was faded in places but I still loved them. I called out, 'Hong Zhengfu, Yao Hui, listen to me. You are not safe here; they are coming to take you. I'm so sorry; my father wants to burn you.' It seemed like the entire Pagoda shuddered, as if the wind had suddenly got up. I stood there shouting for the longest time. I was crying in the rain and not sure what I was trying to achieve. The same woman from the kitchen came along, took one look at me and declared I'd gone mad from the bang on the head. She took me home and I was put back to bed.

That night I couldn't sleep. I tossed and turned and thought of those poor dragons. Then, as I lay there I heard the strangest sound. It was a steady beating rhythm, like many drums. 'What is that noise?' Then I realised ... it was the sound of eighty pairs of dragon wings. I leapt from my bed and ran outside. Over my head the dragons were circling. 'Goodbye, Jane Smith, the blacksmith's daughter. Thank you, thank you and thank you!' 'Will you come back?' I called after them. 'Maybe,' said Yao Hui, 'one day'. And then they were gone.

The following day I was in the forge bringing some water and I overheard my father talking to Jack, his apprentice. 'It's the strangest thing - I went to start on the dragons but someone else has been and taken them down. They have all gone.'

'Are you going to tell anyone?' asked Jack 'No - I might get paid less - I'll keep quiet for now.'

I smiled and continued with my work.



THE NAMING OF DRAGONS

It's time to check your Dragonologists notebook.

Have you described your dragon?

Have you made some sketches of dragons that might inspire you?

Have you thought about what your dragon looks like?

What is it made of and what colour is it?

How large is it and how many legs, wings and heads does it have?

*Finally you must give your dragon a name. Consider your dragon's personality and temper and find a name to match.
Here are some examples of great dragon names to inspire you:*

BALAU was a huge Romanian dragon. He was covered in serpentine scales, and had wings, fins, and legs so could hunt on land and sea. He had an extra head on his tail and would hide under the mountain for many years, then emerge to eat people and cause bad weather

DRAGO from *Dragonheart* by Adriana Gabriel

HUNGARIAN HORNTAIL from *Harry Potter and the Goblet of Fire* by J.K. Rowling

HYDRA from the stories of Hercules. This was a sea serpent with many heads. Hercules killed it by cutting off each head and burning the neck so it could not grow back

KALIYA NAG was an Indian dragon who was defeated by Lord Krishna

MUSHUSSU SIRRUSH is the Babylonian dragon from the Ishtar Gate, constructed by King Nebuchadnezzar over 2000 years ago

NÍÐHÖGGR (the 'Dread Biter', also spelled Nidhogg) is a horrible Norse dragon who ate just about everyone and everything

NORBERT, Hagrid's pet dragon in *Harry Potter and the Philosopher's stone* by J.K. Rowling

OUROBOROS is the tail eating serpent dragon from Egyptian mythology

RYŪJIN is the dragon god of the sea in Japanese mythology

TOOTHLESS from *How to Train your Dragon* by Cressida Cowell

SMAUG from *The Hobbit* by J.R.R. Tolkien

SARKANY was a Hungarian dragon in human form, a huge giant with many heads

SLIBINAS from Lithuania who had many heads and ate sheep

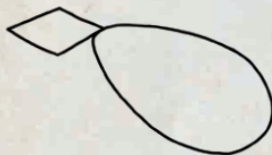
ZMEY GORYNYCH is the most famous of Russian dragons. He has three heads, is green, walks on two back paws, has small front paws, and spits fire

Now you are ready to design and draw your very own dragon!

How To DRAW A DRAGON



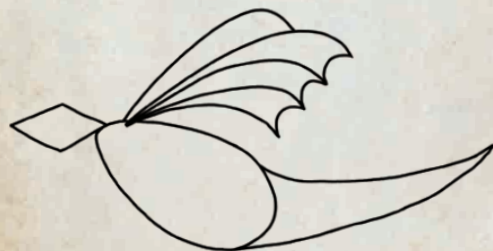
Step 1
draw an egg shape



Step 2
Add a diamond to the top of the egg



Step 3
Add a tail to the bottom of the egg



Step 4
add wings
like this.
(you can make them fancy if you like!)



Step 5
Add some eyes, nostrils and a mouth



Step 6
draw the arms and legs and tummy



Step 7
Decorate and colour the dragon, any way you please!

THE NAMING OF DRAGONS

*I cannot put my shoes on
There is a dragon in my shoe
He is small and green and hairy
I don't know what to do*

*I want to clean my teeth
But there is a dragon in the sink
He is yellow and he is scaly
And making quite a stink*

*There is a dragon in the wardrobe
He is furry, big and blue
He won't let me get my trousers
He's really there, it's true*

*The dragon in the kitchen
Covered me with drool
He ate my lunch and breakfast
That's why I'm late for school*



LEARNING NOTES

This pack contains a number of resources to stimulate discussion and investigation around the Kew Pagoda dragons. It contains stories, descriptions and ideas for investigating dragons. It can be used by parents to support a child to research different kinds of dragon, and to invent and draw their own dragon. Older children can read the stories and instructions for themselves, and plan their own dragon trail using the ideas. Teachers could use the resources to support lesson planning or to generate ideas for how dragons can inspire descriptive writing and story-telling, as well as art and design. Dragons can be used to create STEAM learning experiences that engage children and encourage them to follow their interests and shape their own learning. Have fun taking the theme further.

WIND TUNNELS

Part of the testing of the dragon design was to put them in a wind tunnel and check that they would not place additional strain on the building, or even be lifted off in very strong winds. A wind tunnel is a chamber through which high-speed air is passed. Models of aircraft (or actual aircraft) can be mounted in a wind tunnel so that flight conditions can be simulated and engineers can study how well a design will fly (or not, in the case of the dragons). Wind tunnels have been used for over a hundred years and helped the Wright brothers build their first aircraft. Children can design and create a wind tunnel using only a few items: a cardboard box, small electric fan (with safety guard), duct tape and model. You could even make a wind tunnel at home with a hair dryer. Try NASA, James Dyson Foundation and the National Space Centre websites for more ideas on wind tunnels, wings and engineering experiments.

PIGMENTS AND FINISHES

Trying to work out what the dragons were made of and how they were painted involved scientific analysis of the roof fixings and then experiments with different types of paint to get the correct 'iridescent' effect. Recreate these experiments at home or in the classroom by mixing different types of paint with substances such

as glitter or corn flour to see what kinds of finishes can be achieved. The Kew Pagoda dragons are painted with copper verdigris; this is copper salts mixed with resin. Copper turns green when it oxidizes (like rust).

COMBUSTION

One very interesting thing about dragons is their ability to breathe fire. Studying dragons might be an opportunity to demonstrate some experiments with various combustible chemicals and explore Health and Safety around fire. The dragon Smok Wawelksi was destroyed by the trick of feeding him with a sulphur filled sheep carcass. Sulphur burns with a purple flame so makes an interesting experiment - potassium, on contact with water, is even more impressive. We strongly advise teachers to undertake experiments under your school's usual chemistry lab conditions. Parents might find the 'Flash Bang Wallop' show at the science museum is the safest way to find out about chemical reactions and explain the combustion triangle to children.

LITERACY

The stories of dragons are often exciting and interesting and can draw in even the most reluctant reader. Teachers and parents might want to read stories aloud, and encourage children to tell their own stories about dragons. Telling stories before writing them down can often help children keep their interest and develop their narrative skills. Dragons need a lot of describing so activities that encourage children to describe how a dragon looks and how it behaves will help children develop their vocabulary. The Times Education Supplement website has a series called *Dragon Tales* with a whole series of resources including dragon making activities and a *George and the Dragon* animation. The poems included in the pack can also be used to stimulate children's writing by asking them to write new verses of the *Dragon in the Wardrobe* poem.

GLOSSARY

BASILISK: A legendary reptile reputed to be king of serpents and said to have the power to cause death with a single glance

CHIMERA: A fire breathing female monster with a lion's head, goat's body and a serpent's tail from Greek mythology.

CHINOISERIE: a decorative style in Western art, furniture, and architecture, especially in the 18th century, characterized by the use of Chinese motifs and techniques

ECHIDNA: A winged serpent woman from Greek Mythology.

GRIFFIN: A creature with the body of a lion, the tail of a snake, and the head and wings of an eagle

IRIDESCENT: Showing luminous colours that seem to change when seen from different angles. Synonyms: shimmering, shimmery, glittering, sparkling, dazzling, shining, gleaming, glowing, lustrous

MAQUETTE: French word for scale model or rough draft of an unfinished sculpture

PAGODA: a tiered tower with multiple eaves, common to Nepal, India, China, Japan, Korea, Vietnam, Burma, Sri Lanka and other parts of Asia

STEAM: Science, technology, engineering, art and maths

WYVERN: A legendary creature with a dragon's head and wings, a reptilian body, two legs, and a tail. A sea-dwelling variant dubbed the sea-wyvern has a fish tail in place of a barbed dragon's tail

REFERENCES AND READING LIST

There are many great books about dragons for all ages; here are just a few that might help inspire dragon hunting, dragon drawing and dragon naming.

Zog the Dragon by Julia Donaldson, Illustrated by Axel Scheffler (Scholastic, 2014)
This is a fun book about a very clumsy dragon, written by the author of the Gruffalo

My Father's Dragon by Ruth Gannett (Createspace 2010)
1940's book about a child hunting for a dragon

How To Train Your Dragon by Cressida Cowell (Hodder 2010)
The stories of Hiccup the Viking and his dragons are funny and entertaining

The Reluctant Dragon by Kenneth Grahame, 1898 (Egmont 2008)
A classic tale of a dragon that just wants to read, by the author of Wind in the Willows

The Paper Bag Princess by Robert Munsch, illustrated by Michael Martchenko, 1980 (Annick 2009). Not the usual 'damsel in distress' version of a fairy tale

Dragon Rider by Cornelia Funke (2005)
A journey through magical lands to meet fantastic beasts

The Voyage of the Dawn Treader by C. S. Lewis, 1952 (Harper Collins 2009)
The dragon appears in the fifth book of the chronicles of Narnia

Dragonkeeper by Carole Wilkinson (Black Dog 2012)
This fascinating story features Chinese dragons like the ones from the Kew Pagoda

Eragon: Book One (The Inheritance Cycle) by Christopher Paolini (Corgi 2005)
A story about magic, glory and becoming a Dragon Rider

Harry Potter and the Philosopher's Stone by J. K. Rowling (Bloomsbury 1997)
This is the book where we meet Norbert, Hagrid's Norwegian Ridgeback dragon

Harry Potter and the Goblet of Fire by J. K. Rowling (Bloomsbury 2000)
There are descriptions of many dragons in the Tri-Wizard tournament

Through the Looking Glass and what Alice found there by Lewis Carroll, 1871 (Penguin 2007) The illustrations are a great inspiration for a really frightful dragon!

The Hobbit by J. R. R. Tolkien, 1937 (Harper Collins 2013)
This epic tale includes the destruction and desolation caused by Smaug the Magnificent

Dracopedia: A Guide to Drawing the Dragons of the World by William O'Connor (impact 2009). Tips to help you draw dragons including the basilisk, coatyl, feydragon, hydra, sea orc, wyrm and wyvern

Dragonology: The Complete Book of Dragons by Dr. Ernest Drake (Templar 2003)
A scrapbook and illustrations of the ancient science of dragonology

Beowulf by Michael Morpurgo (Walker 2013) or *Beowulf* by Seamus Heaney (W. W. Norton 2007). Suitable for older children, they both tell the story of Beowulf slaying a dragon

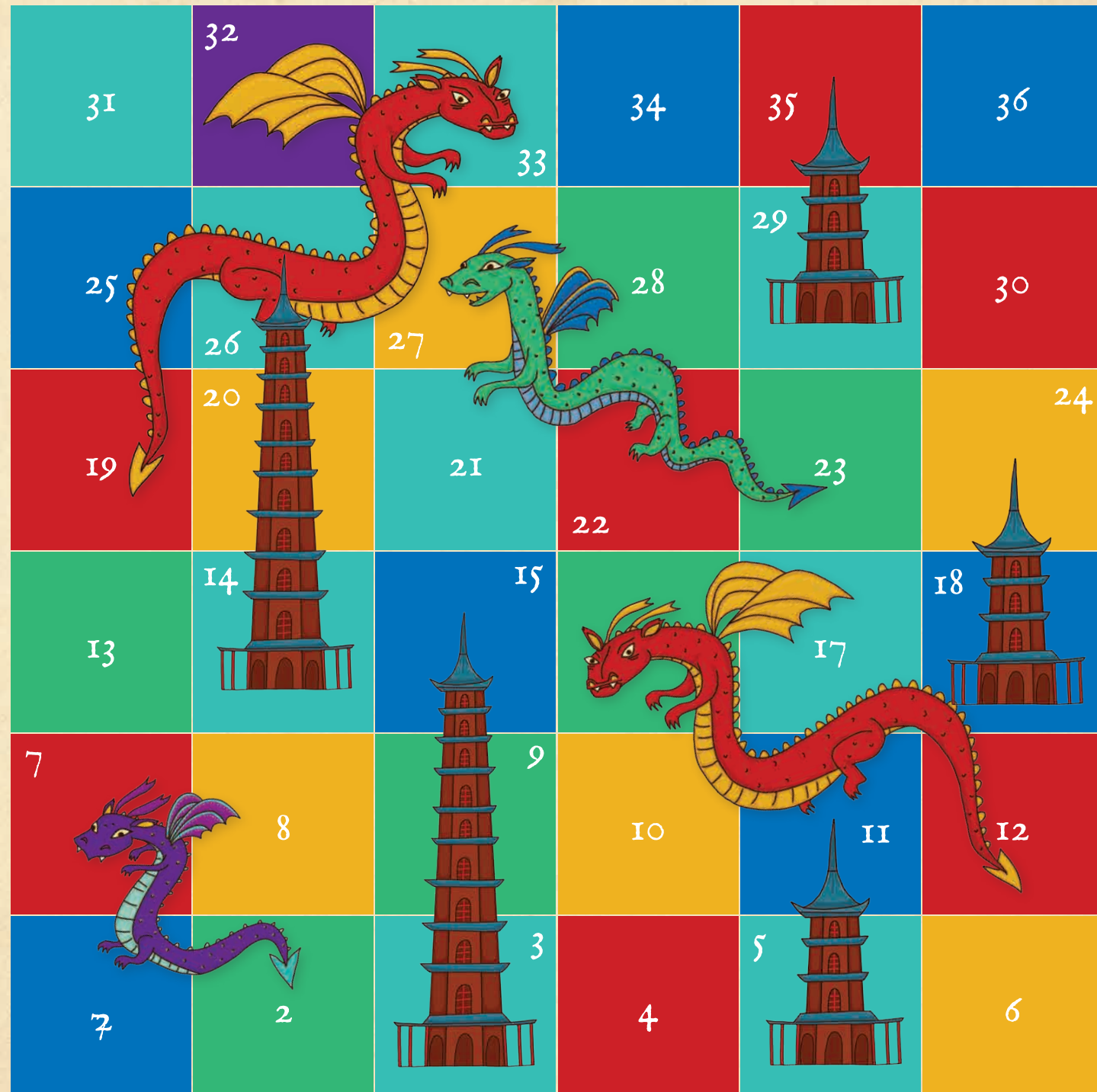
An Anthology of Dragons by Steve Dobell (Lorenz 2013)
A compilation of dragon art, poems and stories from all over the world.

PAGODAS AND DRAGONS

Pagodas and Dragons is a game just like snakes and ladders. You will need to find some small magic stones that look like Dragon Eggs and a dice.

- Print out the game as large as you would like
- Each person will need their own Dragon Egg
- Throw the dice and move your stone that number of places
- If you land at the bottom of a Pagoda, climb up
- If you land at the head of a Dragon then slide all the way back down
- The winner is the first person to get to 36

Have fun!



OTHER PLACES TO SPOT DRAGONS

In BELFAST at the Atrium (W5) there is a huge climbing sculpture called the Celtic Dragon.

In St Bees Churchyard in CUMBRIA you will see a Saxon carving of a dragon that is over a thousand years old.

If you go inside CARLISLE CATHEDRAL, try to find the stone carving of a 'Wildman' fighting a dragon.

In DERBYSHIRE, you will find a Wyvern on the coat of arms outside Derby railway station and on the Green Dragon pub sign in Ashbourne.

In EXETER, DEVON, there is a sculpture of George killing the dragon on the outside of the Cathedral as well as a smaller dragon on a 'boss' inside.

In Henllys, Wales, you can find a dragon at the Iron Age Hill fort and HARLECH Castle has a huge, smoke-breathing dragon.

There is a friendly stone dragon in IRVINE Beach Park, NORTH Ayrshire, overlooking the sea.

There is a sculpture of a dragon at the LONDON Stock Exchange, a gold dragon weathervane sits on top of the steeple at St Mary le Bow church and at the V&A Museum there is a bed that is decorated with carved dragons..

If you live near NOTTINGHAM, you can see a most ferocious dragon in a place called Sneinton. This was designed by sculptor Robert Stubley and has a four-metre wing span.

In NORFOLK a fearsome dragon took up residence underground at St Benet's Abbey, Ludham and its stories can be found in the Abbey and in Great Yarmouth, you can find a wooden carving of George and the Dragon in St George's Park.

SUFFOLK is a great place for dragon hunting. In SCOLE there is a wooden sculpture of a dragon's head in the woods. In St Andrew's church in WORMINGFORD you will find a dragon in a stained-glass window. If you are lucky, you may catch a glimpse of the BURES dragon on the hillside.

In Horsham Park, WEST SUSSEX, there is a bronze dragon. This is the dragon from the story of St Leonard, a hermit who lived in the woods. He defeated the dragon and stopped snakes from biting people.

UK Museums where you can see Dinosaurs

- Natural History Museum, LONDON
- OXFORD University Museum of Natural History
- New Walk Museum, LEICESTER
- National Museum, CARDIFF
- National Museum of Scotland, EDINBURGH

ACKNOWLEDGEMENTS

Research into the restoration of the Dragons led by Craig Hatto, Lee Prosser and Polly Putnam

Original stories and poems written by Lisa Vernon

Design: Tom Keates-Miles

Illustrations from original documents and Joy Nevada Hale

Contributors: Edward A Derbyshire & Amanda Demwell

Image credits:

P4 'Elevation of the Great Pagoda as first intended'

From the book 'Plans, Elevations, Sections and Perspective Views of the Gardens and Buildings at Kew in Surry', by Sir William Chambers, 1763

Copyright © Historic Royal Palaces

P14 'A View of the Wilderness, with the Alhambra, Pagoda and the Mosque in the Royal Gardens, Kew' by engraver Edward Rooker, after William Marlow, 1763

Copyright © Historic Royal Palaces