



ENGLISH HERITAGE
EDUCATION

TEACHERS' KIT

Grime's Graves

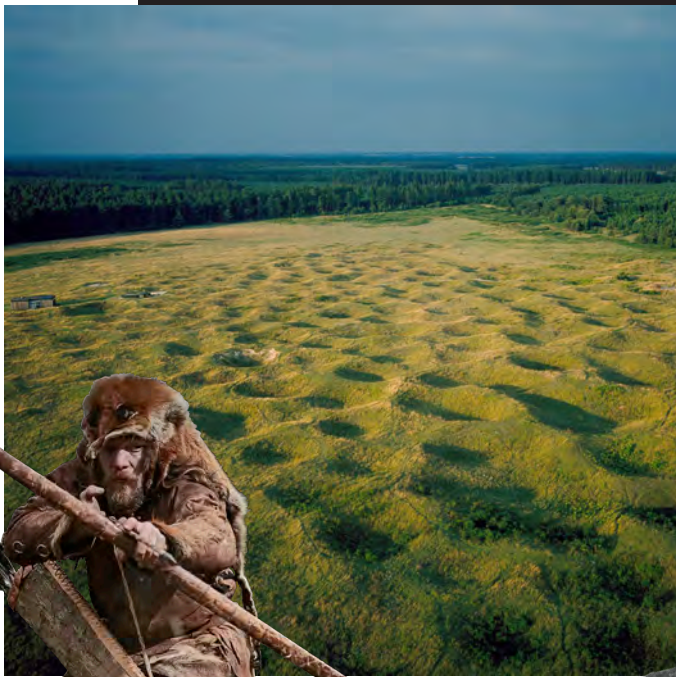
This kit will help teachers plan a visit to Grime's Graves, the only Neolithic flint mine in Britain open to school groups. Use these resources before, during and after

your visit to help students get the most out of their learning.

KSI-2

KS3

SEND



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WELCOME

This Teachers' Kit for Grime's Graves has been designed for teachers and group leaders to support a free self-led visit to the site. It includes a variety of materials suited to teaching a range of subjects and key stages, with practical information, activities for use on site and ideas to support follow-up learning.

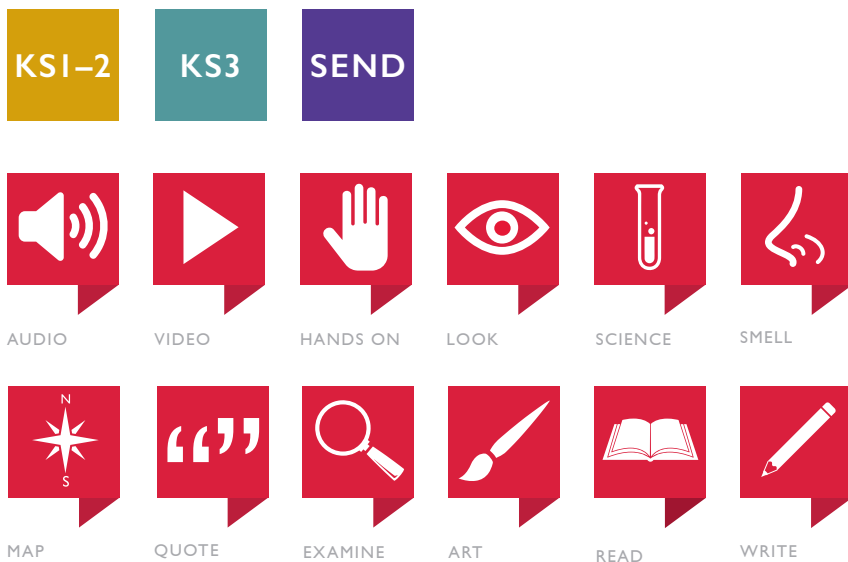
We know that each class and study group is different, so we have collated our resources into one kit allowing you to decide which materials are best suited to your needs. Please use the contents page, which has been colour-coded to help you easily locate what you need and view individual sections. All our activities have clear guidance on the intended use for study so you can adapt them for your desired learning outcomes.

To further aid your planning, you can download Hazard Information sheets from the Grime's Graves **Schools page**. You can find more practical information about your booked visit to Grime's Graves on your Education Visit Permit. We hope you enjoy your visit and find this Teachers' Kit useful. If you have any queries, please don't hesitate to get in touch with a member of our team either via bookeducation@english-heritage.org.uk or on 0370 333 0606.

English Heritage Learning Team

ICON KEY

The icons below will help you quickly identify the types of activities and information presented.



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PRE-VISIT

Information and activities you can use in the classroom before your visit.

GRIME'S GRAVES

SITE PLAN



HISTORICAL INFORMATION

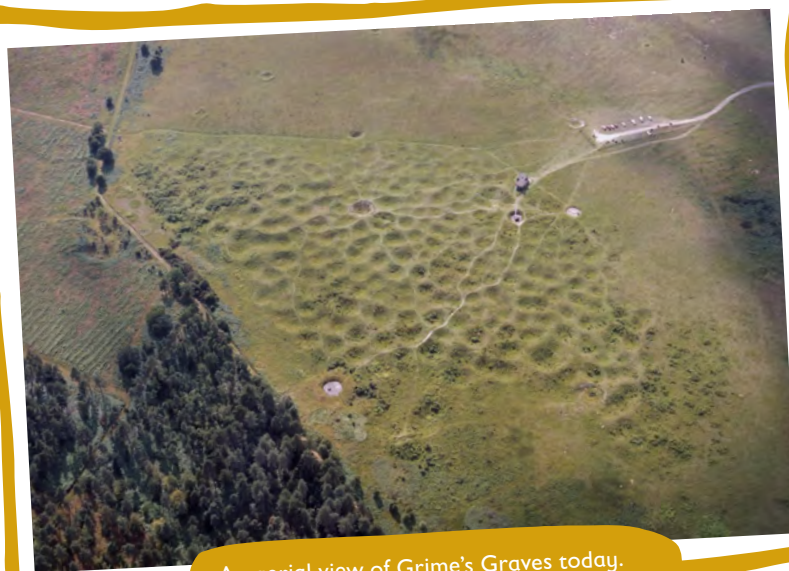
DISCOVER THE STORY OF
GRIME'S GRAVES

Below is a short history of Grime's Graves. Use this information to learn how the site has changed over time. You'll find the definitions of the key words in the Glossary.

STONE AGE GRIME'S GRAVES

The Stone Age in Britain is divided into three periods. The oldest is the **Palaeolithic** from about 900,000 years ago to about 11,600 years ago. This is when the earliest humans were in Britain. The **Mesolithic** is the Middle Stone Age lasting from about 11,600 years ago until about 6,000 years ago. The **Neolithic** is the New Stone Age from about 6,000 years ago until about 4,300 years ago. It was in the late Neolithic period that people mined Grime's Graves for **flint**.

Up to 18,000 tons of flint were dug up between 2650 and 1450 BC. People used it to make essential tools such as knives to cut up food, axes to chop down trees, and arrowheads to be used during hunting. To understand how Grime's Graves got its flint, it's important to understand what happened across this area of England millions of years earlier.



An aerial view of Grime's Graves today. The circular shapes you can see mark where people dug for flint 4,500 years ago.

GOING BACK IN TIME

When you descend the **mine shaft** at Grime's Graves, it is as if you are travelling back in time. The deeper underground you go, the older the layers of chalk are. During the **Cretaceous** period (66–145 million years ago) dinosaurs like the **iguanodon** roamed the land along with the first insects, flowering plants and snakes. Sea levels were much higher and the area around Grime's Graves was under a warm, tropical sea. This is when layers of **chalk** and flint were deposited.

Chalk is made from **calcium carbonate**. This comes from the bodies of tiny sea creatures called plankton, such as **coccolithophores**. Plates on their shell-like bodies are called **coccoliths**. This is where the calcium carbonate comes from. When they die, their bodies break down, leaving deposits on the seabed that we call **sediments**. This builds up over time and **compresses** as more layers are deposited on top. These squashed layers eventually become solid chalk.



A shark's tooth found in the ceiling of Greenwell's Pit. It was probably lost by a shark swimming through warm, shallow seas about 10 million years ago.



A scan showing a coccolithophore. Each circular plate you can see in the image is a coccolith. This is the part of the sea creature that helped to make chalk. © Alison R. Taylor (University of North Carolina Wilmington Microscopy Facility) via Wikimedia Commons

In the chalky ground are **nodules** of shiny black flint. It is made from **silica**. This also comes from the bodies of dead sea creatures, especially sea sponges. When they die, the silica goes through a gel-like state before hardening. This allows it to fill hollow spaces such as holes left by burrowing marine animals. This results in irregular-shaped nodules of flint. Solid layers of **tabular** flint like the **Floorstone** at Grime's Graves are much rarer. It was probably formed from a bed of sea sponges that all died at the same time.

ICE AGE EVIDENCE

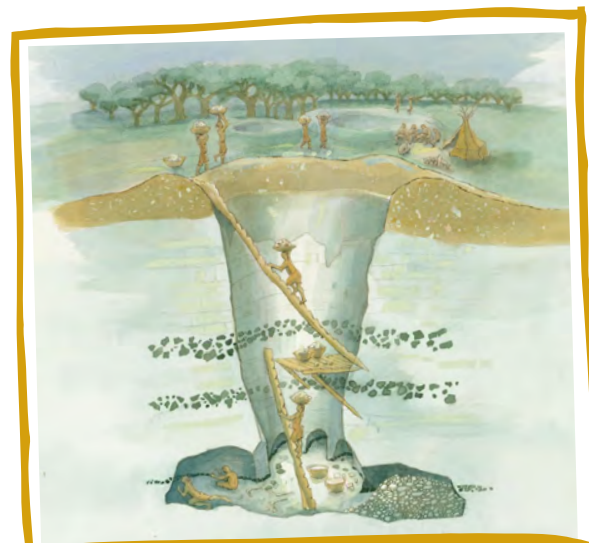
Britain has experienced several **ice ages** over the last 500,000 years. During the most recent one, which ended 10,000 years ago, northern England was covered in ice and the area around Grime's Graves was a frozen **tundra**. Periods of freezing and thawing caused cracks in the chalky ground, which filled with windblown sandy soils. This resulted in distinctive lines in the land known as **periglacial stripes**. Find out more in our Nature Explorers activity on pages 47–50.



An aerial photograph showing lines in the grass. These are the periglacial stripes that formed in the ice age.

DIGGING DEEP

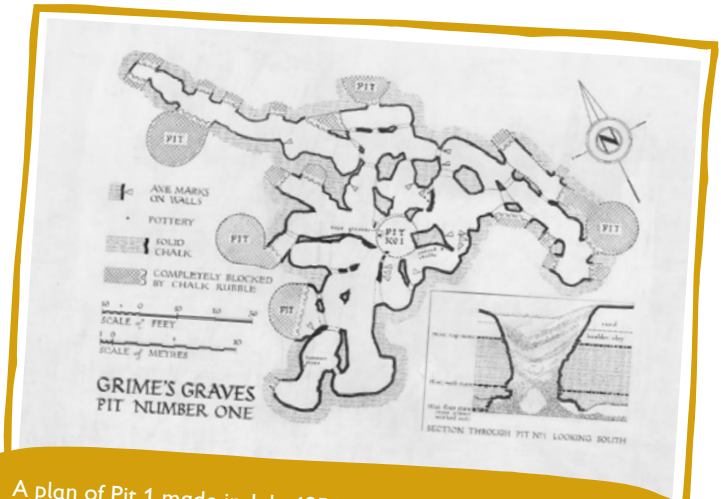
There are three main **seams**, or layers, of flint in the ground at Grime's Graves. The top two are **nodular** and the bottom is tabular. The lowest of these, known as the Floorstone, was valued very highly in the Neolithic period. It has a rich black colour, and can be polished to a beautiful shine. It also has no impurities and so flakes can be **knapped** off in a predictable and precise way. The Neolithic miners deliberately dug pits deep enough to reach this layer of flint, rather than mining the **Wallstone**, or **Topstone** above. They knew that this layer was there because the land is sloping, which made the Floorstone visible in the nearby river valley as an **outcrop**. We know of more than 400 pits dug at Grime's Graves during this period, although there may well be many more in the surrounding landscape that have not yet been identified because they are covered by windblown sands.



An artist's impression of a Neolithic flint mine showing the three layers of flint.

DIGGING DEEP (CONTINUED)

Pits of up to 13 metres deep were dug into the ground to create mine shafts. The deepest of these were mined over a few hundred years. At the bottom, the miners dug several tunnels, known as **galleries**, radiating outwards from the central mine shaft. Some were up to 20 metres long and often joined up with galleries from other mine shafts. The flint was worked out by digging away the chalk and prising out the flint. Most of the galleries were wide enough to allow two people carrying chalk or flint to pass each other, but they were not tall enough to stand upright. Men, women and children were all involved in mining the flint at Grime's Graves.



A plan of Pit 1 made in July 1954. It shows how far archaeologists excavated the pit and where each gallery goes. The plan shows where axe marks can be seen on the walls and it indicates where rope marks were identified, created by the movement of flint or chalk up to the surface.

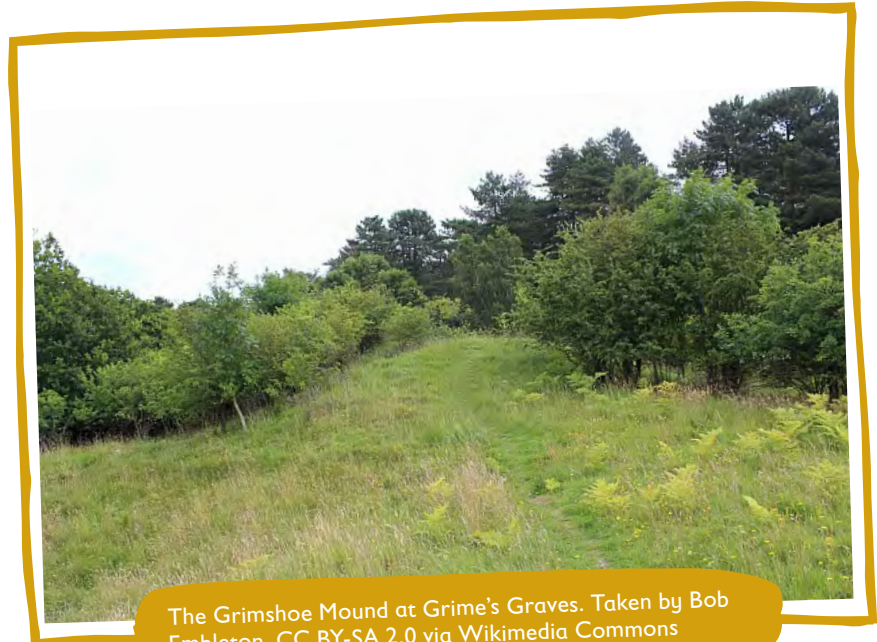
SPOIL HEAPS

All this digging resulted in unwanted material that had to be discarded.

At first, the miners created **spoil heaps**.

Grimshoe Mound, on the south-eastern edge of the site, might be an example of one of these from the earliest mining activity.

Unwanted chalk was also used to **backfill** mine shafts that were no longer in use. Underground, chalk was discarded in the shorter galleries. This stopped them having to carry it all up to the surface.



The Grimshoe Mound at Grime's Graves. Taken by Bob Embleton, CC BY-SA 2.0 via Wikimedia Commons

RITUALS AND CEREMONIES

The miners carried out special closing **ceremonies** that are sometimes called **abandonment rituals**. These might have taken place when they stopped mining a particular shaft and were probably a way to give thanks for the flint. Some of these **rituals** included lighting small fires and arranging objects, perhaps as **offerings**. It's not known who or what these offerings were being made to, or whether people believed in a **deity** or **spirit** that needed to be thanked. It could be that the underworld or earth was seen as a person or special being that needed to be kept onside to ensure that flint would still be there in the future.



Antler picks left in a gallery after mining had finished in the shaft.



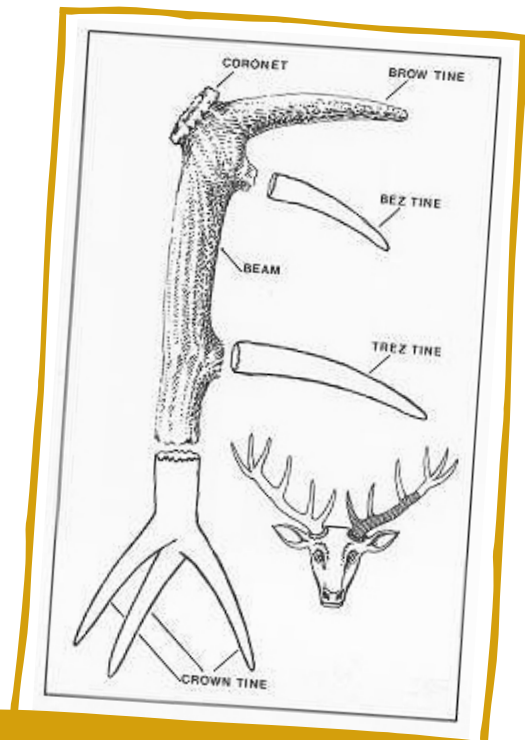
An artist's reconstruction of an arrangement of objects that were left by miners in one of the mine shafts, possibly as an offering to give thanks and make sure that the supply of flint didn't run out.

Archaeologists have found objects that may have been part of these rituals and ceremonies, such as carved chalk cups and balls and antlers laid out in very particular formations. They think that these objects were deliberately placed there by Neolithic people during special ceremonies. For example, in Greenwell's Pit, archaeologists found three antler picks that were placed in a neat row inside a gallery before it was abandoned. They remain where they were left by the Neolithic miners thousands of years ago. In another mine shaft, two antler picks were laid with their **tines** facing each other. In between, a Cornish greenstone axe was placed and the skull of a **phalarope** bird. These objects had been brought quite some

distance to get to Grime's Graves. It suggests that these were valued objects and that people were trading across wide distances.

ANTLER PICKS

The miners at Grime's Graves needed a large supply of antlers to use as **picks**. Most of these were made from red deer antlers. A sample of 282 antler picks found on site was analysed by archaeologists. It showed that fewer than 20 were from slain animals. These antlers still had part of the skull attached. The vast majority were naturally shed antlers without any skull attached. Every year between March and May, deer return to the same location to shed their antlers. This made it easier for the miners to know when and where to **forage** for antlers. Over time, they probably managed herds of deer to ensure a large enough supply of antlers. They probably needed about 140 antler picks to dig each mine.



An artist's illustration to show which part of the antler was used to make picks in the Neolithic period.

FLINT KNAPPING

Flint from Grime's Graves was used to make tools. First the flint was knapped to remove unwanted materials. Then it was shaped into the desired shape, known as a **roughout**. The roughouts were transported somewhere else to be finished. The edges were smoothed out by rubbing the flint against another stone. A flint axe head could then be **hafted** onto a wooden handle. Search the English Heritage YouTube channel for 'How to make a prehistoric flint axe' to find out more. Or get hands-on with the handling collection at Grime's Graves or by knapping a piece of soap using the Soap Knapping activity on pages 67–68.



A flint knapping demonstration at Grime's Graves. The antler, stone and piece of bone were all used as tools to make this axe head. You can also see a nodule of flint.

ESSENTIAL TOOLS

Flint was used to make:

- arrowheads for hunting using bows and arrows
- axe heads for cutting down trees, chopping and working wood
- scrapers for removing fat to clean skins and furs
- **awls** for piercing holes in leather or wood
- knives for cutting up food and plants
- serrated blades for stripping plant fibres
- spearheads
- sickles for cutting grass or crops
- fabricators for making sparks to light fires
- special ceremonial objects or tools that were never actually used (some of these have been found in burials, perhaps to support the dead in the **afterlife**, or to demonstrate their **status**).



Three polished axe heads are visible in the centre of this image. There are other stone tools such as scrapers. On the right-hand side, the three lumps of flint are the cores left over after knapping.

NEOLITHIC HOME SWEET HOME

The Neolithic miners probably travelled a long distance to access the flint at Grime's Graves and lived in temporary **settlements** nearby during the mining season. To spot a Neolithic settlement, archaeologists look for flint tools, pits containing animal bones and pottery, postholes marking where a building once stood, or evidence of a hearth. Evidence for these at Grime's Graves has not yet been found, perhaps because it lies under the windblown sands in the valley area. To understand Neolithic home life better, it can be helpful to look at other sites from the same period: for example, Durrington Walls, in Wiltshire, where the people who built the stone circle at Stonehenge probably lived. They had small square houses. Rods of **hazel** were woven between wooden posts to create walls and a **daub** of chalk, hay and water was added. You can find out more by watching 'Who built Stonehenge?' on the English Heritage YouTube channel.



Children applying a chalk daub to walls during a visit to the Neolithic village at Stonehenge.

SKILLED FARMERS

Neolithic people knew how to grow crops such as wheat and barley. They kept domestic cattle, sheep, goats and pigs. The remains of animal bones, pottery residues and charred plant remains tell us that the late Neolithic diet focused mostly on meat and dairy products, but they also ate wild plant foods, such as hazelnuts, berries and **tubers**. Drinking cow's milk upset Neolithic adults' stomachs. However, they discovered that turning it into cheese, yoghurt or butter made it more **edible**.



Cheese made by warming up milk, adding rennet and then separating the curds from the whey, as demonstrated in the 'How to make prehistoric cheese' video on the English Heritage YouTube channel.



This Grooved Ware pot found at Durrington Walls was probably used for ceremonies or display. Plain pots were used for cooking.

People cooked their food over open fires, using flat stones or pots. At Grime's Graves **sherds of Grooved Ware** pottery have been found. Their flat bottoms made it easier for them to stand upright in fires when cooking, or in **communal** spaces for sharing and serving food.

Animals were not just an important source of food. They also provided bones for tools such as sewing needles. **Hides** could be made into leather containers and furs could make warm clothes. Preparing the skins was a messy job. First, the fat needed to be scraped off and the

skins cleaned up. Scraper tools made of flint from Grime's Graves would be perfect for the job. An awl might be used to make holes for threads of leather to be laced through. People also made thread and clothing from plant fibres such as nettle, hemp, or **flax** which could be made into **linen**. Search for 'Meet a prehistoric flint miner' on the English Heritage YouTube channel to see what some of these clothes looked like.

DOG LOVERS

Gnawing marks found on bones show us that Neolithic people kept **domesticated** dogs. Dogs were used when hunting, to locate and move prey, or to **retrieve** birds when they were shot down. They may also have been used to help people move flocks of farmed animals, much like sheepdogs do today.

There is also evidence that people viewed their dogs not just as working animals but also as companions or even beloved pets. There are examples of dogs being carefully buried at Neolithic settlements across Britain.

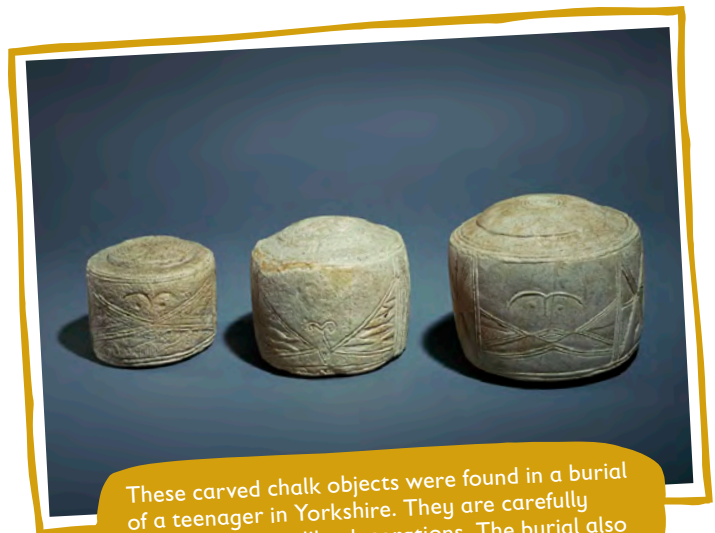
At Grime's Graves, the remains of a dog were found in one of the pits. It had been carefully placed in a gallery just before it was abandoned. We don't know whether this dog was a working animal or a pet. It was probably left as an offering as part of the closing ceremony. It was surrounded by chalk blocks and buried with a pig bone as a snack. This shows us that miners lived alongside domesticated dogs and they buried them with care.



In 2019 Historic Environment Scotland and the National Museum of Scotland reconstructed the face of a 4,500-year-old dog. Its remains were found on Orkney. The reconstruction shows a dog with a lot of wolf-like features. Scientists believe it would have been about the size of a large collie.

NEOLITHIC ARTISTS

Neolithic people made art and decorated their pottery and chalk objects with **abstract** designs. It is likely that they also decorated their clothing and wooden objects, but these have not survived. In the north and west of Britain, open-air rock art is often found. The **concentric** circles and dot patterns are known as 'cup and ring' marks. **Geometric** designs, such as lines and **chevrons**, are also found on pottery from the period, such as the Grooved Ware bowl pictured on page 13. This type of pottery was first made in Orkney in about 3000 BC. Some people think that the patterns **incised** into the clay look a bit like **basketry**. Explore how people made pottery in the Neolithic period using our Prehistoric Pottery activity on pages 65–66.



These carved chalk objects were found in a burial of a teenager in Yorkshire. They are carefully incised with face-like decorations. The burial also included a bone pin, pottery and flint.

MYSTERY MARKS AND OBJECTS

The evidence for art in Grime's Graves is inconclusive. Above the gallery entrances in some of the pits, lines have been incised into the chalk. Marks found above galleries in other Neolithic mines have been interpreted as art, but some archaeologists view them instead as tally marks to keep track of time, or to add up how much flint was mined. They could also have been made by ropes when hauling flint up to the surface. In Pit 2 there are also carved marks that have been interpreted as a **sundial**.

Most art from this period is abstract. It is very rare to find **figurative** art that depicts animals or people, although some examples have been found in Orkney. At Grime's Graves the discovery of one piece of figurative art got archaeologists talking. It is the figure of a woman, carved in chalk, that was found standing upright on a pile of chalk blocks. When archaeologist A.L. Armstrong found it in 1939, it was dated to the Palaeolithic period as it was similar to other examples of Palaeolithic art. It is now thought to be a **hoax**, but the discussion isn't over as further research or excavations at Grime's Graves and other prehistoric sites could shed more light on this mysterious object.



The chalk goddess found by archaeologists in the late 1930s inside Pit 15 at Grime's Graves.



This necklace and bracelet were found at Skara Brae in Orkney, Scotland, and date to between 3100 and 2500 BC.
© National Museums Scotland

As Neolithic people could sew, they may have also added arty touches to their clothing using embroidery. Beaded jewellery made from animal bones, teeth and tusks, and from shells, clay, stone and even fossils have been found in burials. Have a go at making your own Neolithic jewellery in the Neolithic Jewellery activity on pages 38–41.

WHAT A LOAD OF RUBBISH!

Much shallower pits were dug at Grime's Graves during the early Bronze Age and a major settlement developed in the middle to late Bronze Age. Old mine shafts were used for dumping rubbish. In these **middens**, archaeologists have found more than 8,000 fragments of pottery, hundreds of animal bones and charred grains. There is also evidence for a range of activities including making textiles, leatherworking, woodworking and metalworking including rare clay moulds for making large, ceremonial spearheads. Cattle bones found among the rubbish show that people were eating beef and probably also drinking milk and making cheese. Grains such as wheat and barley were used to make breads, porridge or ale. Remains at Durrington Walls show that pigs were fed sweet, soggy leftover grains from ale-making. This caused them to develop holes in their teeth.



A set of pig's teeth that were damaged from eating the sugary grains left over from ale-making.

IRON AGE BURIALS

Just before the Roman invasion in AD 43, two burials were placed at the top of one of the mine shafts. A young woman was buried with a decorated chalk **plaque** by her hip, and a man was found with two iron beads possibly from a necklace or earrings. These burials suggest that Grime's Graves continued to be important thousands of years after mining had taken place.



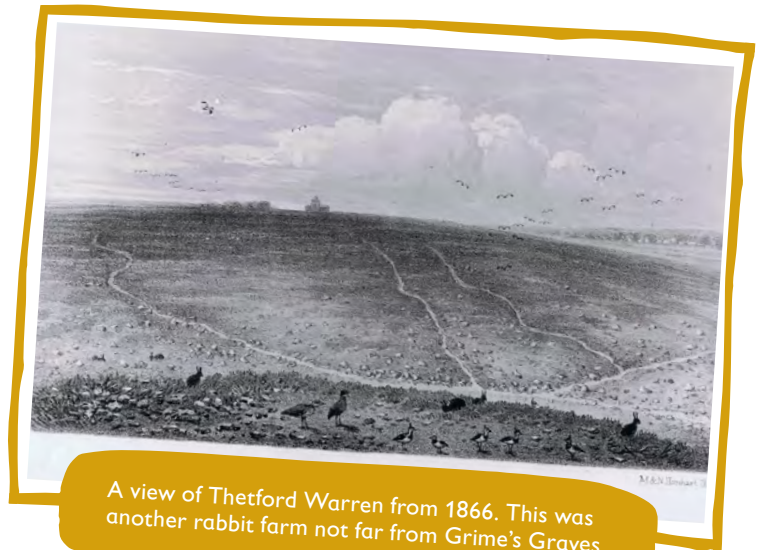
A illustration of the Anglo-Saxon god Woden, or Grim. He is depicted here with Anglo-Saxon rulers who claimed they descended from him.

GRIME'S GRAVES GETS ITS NAME

In the early medieval period, local people believed that the landscape at Grime's Graves was created by the god Grim (Woden). They called the mound on the eastern side of the site the Grimshoe Mound, meaning 'Grim's burial mound'. From AD 939, it became the place where local officials met from the **Hundred**. This was how the Anglo-Saxons divided up the country into smaller areas. Each Hundred contained about 100 households.

RABBIT WARRENS

From the 12th century onwards the site was used for farming rabbits. Rabbits were reared quite easily without too much labour. They were highly prized for their meat and fur, which was used to trim clothing. In the 13th century, one rabbit was worth more than a worker's daily wage.



A view of Thetford Warren from 1866. This was another rabbit farm not far from Grime's Graves.

UNIQUE LANDSCAPE

The geology of the site, plus the mining that took place here, has created a unique landscape, resulting in Grime's Graves becoming a Site of Special Scientific Interest. It may look like a vast grassy area covered in craters, dips and humps, a bit like the moon. However, a closer look reveals how special this environment is. As you enter the site and go towards the visitor centre, you are travelling through acid grassland. Sandy soil allows typical **Breckland** species, such as wild thyme, to thrive in this part of the site. Where mining has brought chalk to the surface, the soil is less acidic. This chalk grassland is perfect for species such as wild carrot. Both types of grassland allow rainwater to drain freely. As the summers here are often hotter than in the rest of the country and the winters are very cold, many plants would not survive. However, two types of lady's bedstraw thrive here, one in the chalk grassland and the other in the acid grassland. This pleasant-smelling plant was used to stuff straw mattresses in medieval times, particularly those of women about to give birth. Explore all of this further using the Nature Explorers activity on pages 47–50.



An illustration of lady's bedstraw by William Catto in the collection of the Aberdeen Archives, Gallery and Museums. Available in the public domain via Wikimedia Commons Images.

GLOSSARY

TRICKY TERMS AND
WHAT THEY MEAN

Below is a list of words you might come across while exploring Grime's Graves. Use this Glossary to find out what they mean.

abandonment ritual – a special closing ceremony that marked the moment when people stopped mining a mine shaft

abstract – a type of art where the artist uses colours, shapes and textures to convey a meaning or message. Neolithic people probably took inspiration from the shapes and patterns found in nature to make their art.

afterlife – a life that happens after death. It often forms a central part of religious beliefs.

awl – a piercing tool for making holes in a material

backfill – the process of refilling holes. This was done at Grime's Graves when miners dumped unwanted chalk into galleries or older mine shafts.

basketry – the process of making a basket by weaving together thin strips of materials such as wood

Breckland – an area of England that covers part of Norfolk, Suffolk and Cambridgeshire. It is largely covered in sandy soils on top of chalk, resulting in grasslands and dry heath.

calcium carbonate – a solid white material that occurs naturally in shells and stony corals. Three types of stone are made of calcium carbonate from the remains of these sea creatures: chalk, limestone and marble.

ceremony – a formal event where a group of people get together to celebrate or remember (commemorate) something

chalk – a white rock formed from the remains of sea creatures. It cracks and crumbles when struck with another stone and this can create a powdery dust. It can be used to draw or write with.



An artist's reconstruction of objects that were deliberately arranged in a mine shaft. The objects include a Cornish greenstone axe head and the skull of a phalarope, both of which had been brought some distance to get to Grime's Graves.

chevron – a repeating pattern of lines in a V shape that might be facing upwards, downwards, to the left or the right



A sherd of Grooved Ware pottery with a chevron-style pattern incised into it.
© Trustees of the British Museum

coccolith – a single, tiny plate of calcium carbonate that comes from the bodies of plankton known as coccolithophores

coccolithophore – a tiny sea creature (plankton) whose body is made up of plates known as coccoliths

communal – the sharing of something with a whole community of people, such as a communal kitchen for everyone to use or a communal meal for everyone to eat

compress – the process of squeezing, pressing or squashing things together



Concentric circle patterns known as 'cup and ring' marks on the eastern rock sheet at Kilmartin Glen, Scotland. Taken by Otter, CC BY-SA 3.0 via Wikimedia Commons Images.

concentric – a pattern of two or more circles where one fits entirely inside another. They must share the same centre point.

Cretaceous – a period that began about 145 million years ago and ended 66 million years ago. The name comes from the Latin word for chalk, *creta*.

daub – a mixture of chalk, hay and water that was applied to wooden structures to make walls

deity – a god or goddess

domesticated – animals that are tame, so they can be farmed or kept as pets

edible – a plant or animal that is safe to be eaten as a food by people

figurative – a type of art that shows real things we recognise in the world around us, usually figures of people or animals



An example of figurative art. This figure carved from chalk was found at Grime's Graves.

flax – a plant that is grown for its seed, known as linseed, and for its fibres, which are taken from the stalks and made into a cloth called linen

flint – a hard rock that is found in layers of chalk. Its colour can range from grey to black. The flint at Grime's Graves was particularly desirable for its strong black colour.

Floorstone – the layer of flint you can see at floor level inside the mines at Grime's Graves

forage – the process of searching for foods such as hazelnuts or blackberries in the wild

gallery – a low-level tunnel that goes out from the central mine shaft. It follows the seam of Floorstone flint. Miners would need to crouch, sit, kneel or even lie down while mining and moving about in the galleries.



A visitor explores a gallery during her visit to the pit at Grime's Graves. Look carefully through the grill to see the gallery stretching off into the distance.

geometric – a style of decoration that uses regular lines and shapes

Grooved Ware – a type of pottery made by people during the Neolithic period and used for feasting. The pots come in a variety of shapes and sizes, but they usually have flat bottoms and geometric patterns incised on them. This creates grooves on the surface of the clay, which is where the name comes from.

haft – the process of attaching a handle to a stone blade. For example, the piece of flint is hafted onto a wooden handle. The handle is also sometimes referred to as the haft.

hazel – a small English tree that has nuts in the autumn and catkins in the spring

hide – the skin of an animal that has been cleaned and is ready to be made into something

hoax – a trick, something meant to deceive someone into believing something that isn't true

Hundred – the way that the Anglo-Saxons divided up the country into smaller areas. Each Hundred was roughly 100 households. They had a court in each Hundred to settle any local disputes. All of this made it easier to raise taxes and enforce the law.

ice age – a period of time when the earth experienced colder temperatures than today

iguanodon – a large dinosaur that lived 140–110 million years ago

incise – the process of cutting or scraping the surface of a material such as clay. For example, the geometric patterns that you can see on Grooved Ware pottery have been incised into the clay.

knap – the process of knocking a piece of flint into shape with another piece of stone or bone. Flakes of flint are chipped away until the desired shape has been made.



A piece of flint that has been knapped.

linen – a thread made from the fibres of the flax plant that can be woven into a strong cloth

Mesolithic – the middle time period of the Stone Age lasting from 11,600 years ago until about 6,000 years ago. This was when people in Britain were hunter-gatherers and before the first farmers arrived from Europe.

midden – a rubbish dump

mine shaft – a hole that goes down into the ground. It is the main route in and out of the mine.

Neolithic – the most recent time period in the Stone Age that lasted from about 6,000 years ago until about 4,300 years ago. ‘Neo’ means ‘new’, so Neolithic means the New Stone Age. This was when a new group of people arrived from Europe, bringing farming to Britain for the first time.

nodular – a layer of flint that is made of nodules rather than a solid seam

nodule – a rounded, irregular-shaped lump



A flint nodule found at Grime's Graves. Flakes have come off the nodule where it has been struck, revealing how shiny and black it is beneath the surface.

offering – something that is given away as a gift in a ceremony. Offerings are usually made by people to keep a god or gods on their side.

outcrop – a rock formation that is visible above the surface of the ground

Palaeolithic – The oldest time period in the Stone Age that lasted from about 900,000 years ago to 11,600 years ago

periglacial – an area that is next to a glacier or ice sheet that goes through periods of repeated freezing and thawing

phalarope – a small migratory bird that likes to wade or swim in water

pick – a tool that is used for digging. At Grime's Graves antlers were used as picks.

plaque – a flat piece of stone, especially chalk, with geometric patterns on it. Modern-day plaques have writing on them. They are displayed on walls to commemorate people or events.



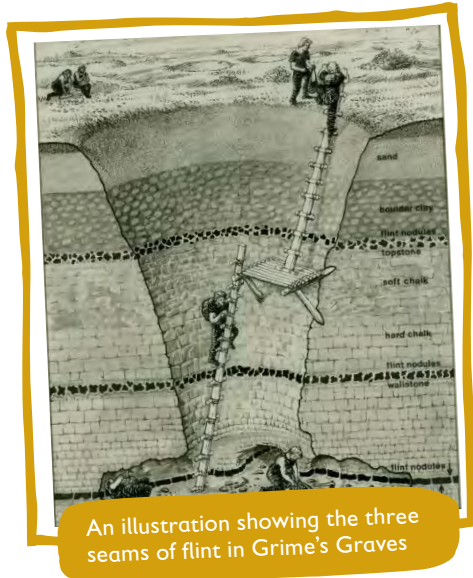
An example of a chalk plaque found in Yorkshire with a geometric design cut into its surface.

retrieve – to bring something back from somewhere

ritual – a set way of doing things that follows the same pattern every time because it has spiritual or religious meaning. This could include using particular words, actions or objects in a specific order.

roughout – a piece of flint that has been knapped to the shape required but is yet to be finished and polished. This means it has a rough appearance.

seam – an underground layer of material such as flint



sediment – a solid that sinks to the bottom of a liquid. Sediments that fell to the bottom of the sea helped to form the chalk and flint you can see at Grime's Graves.

settlement – a place where a community of people live

sherd – a broken piece of pottery

silica – a substance that is found in rocks such as flint

spirit – a supernatural being

spoil heap – a place where unwanted materials from an excavation are dumped, creating a hill or heap

status – the position someone has in society – the higher their status, the more important they are seen as being

sundial – an early type of clock for telling the time by marking the movement of the sun across a surface. It has a round, flat plate with the hours of the day on it. There is usually a pointer fixed onto the centre that makes a shadow when placed in sunlight. As the sun moves, the shadow moves around the hours of the day on the plate.

tabular – something that is broad and flat like the top of a table

tines – the sharp points or prongs on an antler

Topstone – the highest layer of flint, closest to ground level. It is made up of small nodules of poorer-quality flint than the Floorstone.

tuber – the underground part of a plant stem that Neolithic people might dig up and eat. We also eat tubers today such as potatoes and other root vegetables.

tundra – an area of land that is treeless because of the cold conditions. This is what the area around Grime's Graves was like during the last ice age.

Wallstone – the middle layer of flint that is made up of small nodules of poorer-quality flint than the Floorstone

STONE AGE

c.500,000 BC–c.2300 BC

950,000–700,000 BC

A group of people walk through the mudflats at Happisburgh in Norfolk and Pakefield in Suffolk, leaving a trail of footprints and a few stone tools behind.

c.400,000 BC

A man dies at Boxgrove. His remains are later found by archaeologists. His bones are the oldest surviving remains found in Britain. Other remains from this period suggest people hunted in groups and were skilled at butchery, leaving behind horse, deer and rhinoceros bones.

c.11,000 BC

Cave art is made by people at Cresswell Crags, Derbyshire. People at this time are hunter-gatherers.

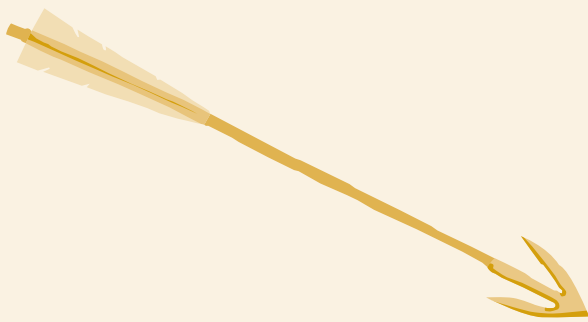
c.6500 BC

The land bridge (Doggerland) connecting Britain and Europe is covered by rising seas, making Britain an island.

950,000 BC

c.9500 BC–4000 BC

Hunter-gatherers may have been living in the area of Grime's Graves in the Mesolithic period.



PALAEOLITHIC

c.900,000 BC–c.11,000 BC



MESOLITHIC

c.11,000 BC–c.4000 BC



c.4000 BC

Migrants from modern-day Europe come to Britain. They bring new skills with them such as pottery making and farming. People start to bury their dead in communal burials known as long barrows such as Uley Long Barrow (Hetty Pegler's Tump) in Gloucestershire.

c.3000 BC

People begin building communal stone monuments such as Stonehenge.



2400–2300 BC

Metals are used in Britain for the first time. The earliest metals are copper, gold and bronze. They are used for weapons and jewellery.

c.2300 BC

A new kind of pottery has arrived in Britain called Beaker pottery.

c.2200 BC

People are starting to be buried individually, rather than communally. Some people are buried with exotic imported goods.

c.2020 BC

People are using new, larger sea-going boats made of oak.

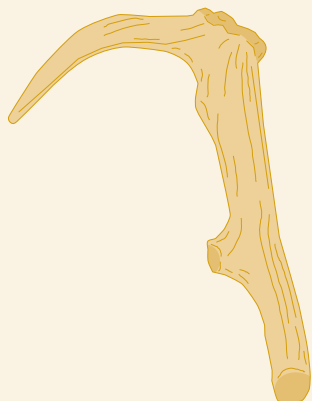
2200 BC

2650 BC

Mining begins at Grime's Graves. The first mines are the deepest and most complex of all the mines found at Grime's Graves.

c.2400 BC

Mining in the deepest pits ends. People continue to dig for flint, but their mines are much shallower and less complex.



NEOLITHIC

c.4,000 BC–c.2200 BC

2100 BC

The mines at Grime's Graves are abandoned.

1400 BC

A new settlement is built at Grime's Graves.



BRONZE AGE

c.2200 BC–c.800 BC

c.800 BC

People discover how to work with iron. Tools and weapons made from iron are much stronger.

c.800 BC-AD 43

Big hillforts are built to claim land and protect communities of people inside them. More people are living in permanent settlements with roundhouses.

AD 43

The Romans arrive to conquer Britain.

AD 122-28

Emperor Hadrian builds a wall to mark the border of the Roman Empire in northern England.



800 BC

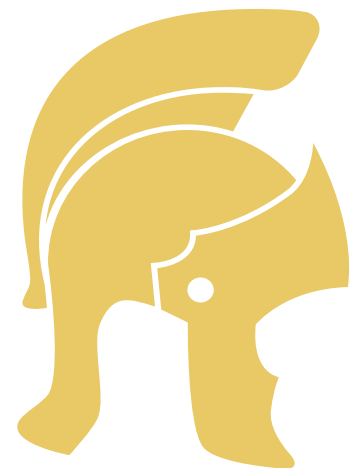
AD 1

390-150 BC

Grime's Graves is used as a burial ground. Dips in the ground where mine shafts were abandoned and backfilled are used as graves.

AD 43-410

There is little activity at Grime's Graves, but some visitors leave behind pottery sherds from pots made in Gaul (modern-day France).



ANGLO-SAXONS, VIKINGS & BRITONS

NORMANS

1066–1154

AD 410

The Romans leave Britain.

AD 563

A monastery is founded by St Columba on the island of Iona off the Irish coast.

AD 789

Three ships of Vikings land on the coast of Wessex. The West Saxon king's reeve is killed.

**1066**

William the Conqueror is victorious at the Battle of Hastings. The Norman Conquest of England begins.

1087

William dies. His son, William Rufus, is crowned King William II.

1154

Henry II is crowned king of England.

**AD 400****1000****AD 410–1066**

Grime's Graves and Grimshoe Mound are both given their names in this period.

**5TH–11TH CENTURIES****1086**

Grime's Graves is part of the area called Breckland. Domesday Book shows that Breckland is the least populated area of East Anglia.

c.1100

Rabbit warrens are being set up in areas with poor soil and few peasants to farm the land, including in Breckland and probably at Grime's Graves.

**11TH–12TH CENTURIES**

PLANTAGENETS
1154-1485

1215

King John signs Magna Carta at Runnymede. Soon afterwards the barons revolt against the king, aligning with Alexander, king of Scotland and Prince Louis of France, to try to remove King John.

1314

The English are defeated by the Scots at the Battle of Bannockburn.

1455-87

The Wars of the Roses between the Yorkists and the Lancastrians.



1200

1224

Grime's Graves is owned by a priory nearby and is probably being used as a rabbit warren.

13TH-15TH CENTURIES

TUDORS AND STUARTS
1485-1714

1509-47

Henry VIII's reign.

1558-1603

Elizabeth I's reign.

1642-9

The English Civil War between the king (Charles I (r.1625-51) and Parliament.

1660

The restoration of the monarchy brings back a royal family.



1500

1541-42

Grime's Graves is used for farming sheep.

1695

Edmund Gibson is the first person to write about Grime's Graves as a place of historical interest. He adds comments to William Camden's Britannia, describing the site as 'a hill with certain small trenches'.



16TH-17TH CENTURIES

GEORGIANS

1714–1837

VICTORIANS

1837–1901

1775–83

The American War of Independence between Britain and its American colonies.

1789–99

The French Revolution leads to the end of the monarchy. Napoleon Bonaparte (r.1804–14) takes power and begins France's aggressive campaign to become a world power.

1793

Britain declares war with France.

1793

The Duke of Wellington defeats Napoleon at the Battle of Waterloo.

1700

1739

The Reverend Francis Blomefield describes Grime's Graves in an essay entitled *Hundred of Grimshou, An Essay Towards a Topographical History of the County of Norfolk*.

1761

John Parker makes a map of Grime's Graves which represents each abandoned mine shaft as a circle.

18TH CENTURY

1830–37

Reign of William IV.

1826

The world's first photograph is taken.

1837–1901

Reign of Queen Victoria.

1845

The arrival of the railway.

1800

1824

Grime's Graves is featured on the Ordnance Survey map.

1852

The first excavation of Grime's Graves takes place. The earliest known drawing of Grime's Graves is made by the Reverend Francis Vyvyan Luke.

1861

Canon William Greenwell carries out an excavation at Grime's Graves confirming it was a Neolithic flint mine.



19TH CENTURY

20TH CENTURY

1900–1945

WWI

1914–18

WWII

1939–45

20TH CENTURY

1945–1999

POST-WAR BRITAIN

1910–36

Reign of George V.

20 January 1936–11 December 1936

Reign of Edward VIII. Edward abdicates the throne.

1936–52

Reign of George VI.

1952–2022

The reign of Queen Elizabeth II.



1900

1950

1914–15

Pits 1 and 2 are excavated. Pit 1 is the mine shaft that is currently open to the public. The pits are numbered to help record the excavations and finds during archaeological digs.

1931

Grime's Graves is made a guardianship monument to be looked after by the Commissioner of Works and Public Buildings.

1939

Pit 15 is excavated. The chalk 'goddess' is discovered.

1971–2

Excavations find seven antler picks, Grooved Ware pots and the remains of a dog.

1971–2

The British Museum carries out excavations at Grime's Graves.

1985

Grime's Graves becomes a Site of Special Scientific Interest due to its special natural habitats.



20TH CENTURY

20TH CENTURY

GRIME'S GRAVES TIMELINE

PRE-VISIT ACTIVITY

WHY IS GRIME'S GRAVES SPECIAL?



Recommended for

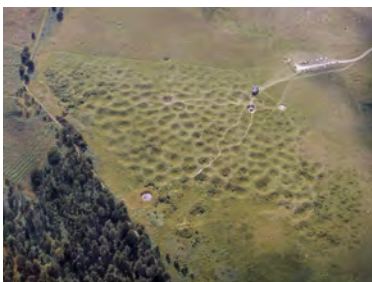
KSI-2 (History, Geography)

Learning objectives

- Know what Grime's Graves is and why people mined here
- Understand why Grime's Graves is significant
- Develop enquiry skills by designing and answering questions about Grime's Graves

Time to complete

Approx. 60 minutes



An aerial view of Grime's Graves and the starting point for this activity.

SUGGESTED APPROACH

Over 400 pits have so far been discovered at Grime's Graves. People returned year after year to extract flint. This required a great deal of effort and demonstrates how important flint was to them. In this activity students explore how flint was formed and what it was used for. They develop an understanding of why the miners were willing to go to such lengths for the flint at Grime's Graves.

SUGGESTED APPROACH

Teachers of KSI may wish to focus on the image on page 32 as their main activity. To add greater challenge for KS2 students, teachers may want to follow this up using the information cards on pages 34–37 and the data capture sheet on page 33. Photocopy and cut out enough information cards and data capture sheets for your class to use in small groups or individually.

Use the suggestions in the Teachers' Notes on page 31 to prompt discussions about the image on page 32 and get students to design their own questions about this mysterious landscape.

Next, students can use the information cards on pages 34–37 to make notes in the data capture sheet on page 33. You may need to support students to define 'important' and 'useful' first. Afterwards, assess learning by revisiting the questions they designed to see if they can now answer them.

MORE LEARNING IDEAS

Use Google Maps in satellite view to take a closer look at Grime's Graves and its surrounding area. You could locate the waterways to explore the possible routes flint might have taken from Grime's Graves. Where could a piece of flint have ended up if they could only follow waterways?

WHY IS GRIME'S GRAVES SPECIAL?

TEACHERS' NOTES

EXAMINING THE IMAGE

Get students to look carefully at the image on page 32. You could do this by revealing one section of the image at a time. Encourage them to pick out key features in the landscape and discuss what they might be. You can assess how much they already know and identify misconceptions that need challenging.

DESIGNING QUESTIONS

Students could use the 5Ws (who, what, when, where, why) and 'how' as question stem starters and write them into the table on page 33. Questions they might come up with include:

- Who (or what) made the circles / craters / hollows in the ground?
- Who (or what) lives here today / in the past?
- Who (or what) cuts the grass?
- What are the stripes in the grass?
- What plants grow here?
- When were the hollows made?
- Where is this?
- Why aren't there many trees?
- Why is this place important?
- How old are the hollows?

MAIN ACTIVITY

Some students may be able to predict answers to their questions straight away but working through the main activity should support students to answer their questions. Students could work in small groups or individually. The information cards are not designed to be stuck directly onto the data capture sheet. Instead, students will need to select evidence to write onto their data capture sheet. To reduce the amount of reading, you could give each group a small selection of cards to focus on. They could share their findings with others to help them answer all their questions.

SUMMARY

Revisit the questions students posed at the start of the lesson to assess how much they have learnt. You may need to prompt some students using the information cards in the main activity. Any that are left outstanding could form part of future learning using the Historical Information on pages 6–17 or the site visit.

WHY IS GRIME'S GRAVES SPECIAL?



BACK TO CONTENTS



An aerial view of Grime's Graves. What features can you spot in the landscape?

WHY IS GRIME'S GRAVES SPECIAL?



BACK TO CONTENTS

Write down the questions you have designed in each of the boxes below. Then use the information cards to help you gather evidence to answer each one. An example is done for you.

<p>WHO MADE THE CRATERS?</p>	<p>WHAT _____ _____?</p>	<p>WHEN _____ _____?</p>
<p>Neolithic people mining for flint made big holes in the ground.</p> <p>They filled some of them in with unwanted chalk.</p> <p>Grass and other plants have grown over the old mine shafts.</p> <p>This has created a lumpy landscape of over 400 different sized craters.</p>		
<p>WHERE _____ _____?</p>	<p>WHY _____ _____?</p>	<p>HOW _____ _____?</p>



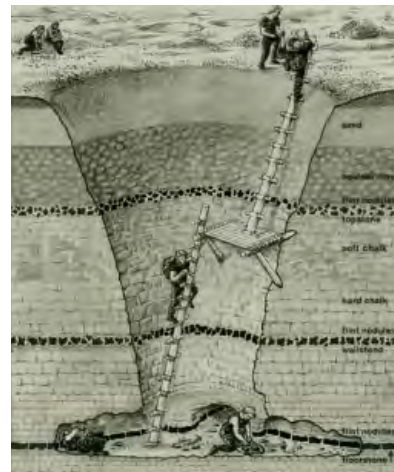
1 The ground at Grime's Graves is made of chalk and flint. It was laid down millions of years ago when East Anglia was under a tropical sea. The remains of dead sea creatures built up over time and got squashed together to form chalk and flint.

2 Arrowheads were attached to a wooden shaft. This made the perfect tool for hunting animals. Hunting provided food, skins for clothing or shelters and bones to make smaller tools like sewing needles.



A re-enactor uses a bow and arrow with a flint arrowhead on its tip.

3 Neolithic people deliberately dug down past poorer-quality layers of flint to reach a thick seam of flint we call the Floorstone.



An artist's reconstruction of the three layers of flint found at Grime's Graves.

4



An unused Cornish greenstone axe was found placed in one of the mines. It was brought quite some distance to get to Grime's Graves. It may have been given as an offering during a closing ceremony.



5 People started mining at Grime's Graves in about 2650 BC. They dug over 400 pits. In the Bronze Age, people dug much shallower pits. They were happy to use poorer-quality flint.

6 Unused flint tools have been found in Neolithic burials. It suggests that flint tools were not just made for practical reasons. A polished piece of flint is beautiful and shiny. Perhaps owning one showed you were important and powerful, especially as it took such a lot of work to make one.

7 Axes were used to chop wood. Wood provided fuel for fires and was used to make shelters, bowls, spoons, and handles for stone tools.

8



Three tools made with flint, wood and antler. On the left is a knife, in the centre is an axe and on the right is a pick.



9 Grime's Graves is a Site of Special Scientific Interest and so it must be protected. There is acid grassland with sandy soils in the valley, and a chalk grassland where mining caused chalk to come to the surface. Sheep help to keep the grass short, which ensures that plants and insects continue to thrive here.

10



An experimental archaeologist uses a chalk cup as a lamp. The chalk cups found at Grime's Graves do not contain residues from a fire, so they may instead have been used to give offerings during the closing ceremonies.

11 Antler picks were hand-held tools that people used to dig the mines. Deer shed their antlers between March and May. This provided a steady supply of antler picks for the mining season. People returned to Grime's Graves to mine for flint every year for thousands of years.

12



An antler pick of the kind Neolithic people used to mine at Grime's Graves.



13 Grime's Graves lies on high ground between two rivers: the Wissey and the Little Ouse. In the Neolithic period, a stream may have run through the valley north of the mines. This may have been where the miners built their settlement.

14 The craters in the landscape mark the locations of mine shafts. This is where the Neolithic miners dug down into the chalky ground to reach the perfect flint underneath. Leftover chalk was thrown into unused mines, so some of the craters are shallower than others. Over time, grass and other plants have grown on the chalky soil, resulting in the unusual landscape we see today.

15



The Little Ouse river as it looks today. Taken by N. Chadwick, CC BY-SA 2.0 via Wikimedia Commons Images

16



The stripes in the landscape are known as periglacial stripes. They formed in the ice age when the land repeatedly froze and thawed. This created cracks in the ground that filled with windblown sands.

PRE-VISIT ACTIVITY

NEOLITHIC JEWELLERY



KS1-2

Recommended for

KS1-2 (History, Art)

Learning objectives

- Know what Neolithic jewellery looked like and how it was made
- Create a piece of Neolithic-style jewellery to wear during a visit to Grime's Graves

Time to complete

Approx. 90 minutes plus cooking time depending on materials chosen



A set of 72 flat bone beads found at Skara Brae in Orkney, Scotland.
© The Trustees of the British Museum

SUMMARY

Learning about prehistory without written documents is a challenge for historians. Instead, we rely on archaeology. There isn't direct evidence of what people wore at Grime's Graves. Beads found in West Kennet Long Barrow in Wiltshire show that Neolithic people wore jewellery. Although this burial took place long before mining at Grime's Graves, late Neolithic jewellery has also been found elsewhere in the country, so the miners may also have worn jewellery.

SUGGESTED APPROACH

Show students examples of modern jewellery. Use the questions in the Teachers' Notes on page 39 to prompt discussion and introduce students to the idea of status and how jewellery can act as a status symbol. Repeat this with the images of Neolithic jewellery on pages 40-41.

Neolithic people used natural materials like animal bones and shells to make jewellery. Students could venture outdoors to forage for their own natural materials such as empty shells, small stones or sticks. They could tie the found objects onto string to create their jewellery. Explain to students how to stay safe when foraging and choose your foraging site carefully to ensure health and safety. It is advised that students wash their hands after foraging and you may wish to take wipes and antibacterial gel with you. Alternatively, use the instructions in the Teachers' Notes on page 39 to guide students in making their own salt dough jewellery. You could do this over a couple of sessions. It is recommended that students make bracelets rather than necklaces to reduce the chance of a choking hazard.

MORE LEARNING IDEAS

Recycle plastic bags to make cordage for your jewellery. Knot together two strips of plastic bag. Twist the strip on your right outwards, away from the other strip. Now cross it over the top of the untwisted strip (it should now be on the left-hand side). Repeat until the strips are tightly woven together. Tie a knot in the end to secure before threading beads.

NEOLITHIC JEWELLERY

TEACHERS' NOTES

JEWELLERY AS A STATUS SYMBOL

Use these questions to discuss examples of jewellery and to introduce the idea of status symbols:

- What materials are they made from? Why?
- What colours, textures, shapes or patterns have been used? Why?
- How might it have been made? How long would it take? What tools might have been used?
- Who do you think this jewellery is aimed at? How can you tell?
- What message might someone be trying to give people, by wearing this jewellery? What are they trying to show about themselves?
- How might it feel to wear this piece of jewellery?

SALT DOUGH JEWELLERY

1. Make the dough

First, students measure and mix the dough. 250g of plain flour and 125g of salt makes enough dough for two students. Gradually add water until you get a good consistency for rolling and shaping. Keep the dough white or add food colouring at this point to turn it amber, ochre, jet black or shale grey. Stir until it comes away from the bowl in a ball.

2. Shape the beads

Students can take inspiration from the images of Neolithic jewellery on pages 40–41 when choosing the shape of their beads. Pierce them with a pencil to make holes for threading.

3. Bake the beads

Help students to cook their beads in an oven (between 10 and 20 minutes at 200 degrees depending on the size of the beads).

4. Add some decoration

Students could decorate their beads with acrylic paints once the beads are cool. Amber, ochre, jet black or shale grey are all good choices.

5. Thread your jewellery

Use a natural-coloured string. Tie a knot at the end to stop beads from falling off. Thread beads onto the string and secure with another knot.

6. Wear with pride!

Either knot the two ends together to fasten or create a loop on one end of the string that can hook over the last bead at the other end.



Examine these examples of Neolithic jewellery. **Write** down your ideas as you **discuss** the following:

- What materials are they made from?
- How might it feel to wear this jewellery?
- What can we learn about Neolithic people from these pieces of jewellery?

SOURCE 1

BEADS

This set of 72 flat bone beads has been restrung, making it just under 10cm long. They were found at Skara Brae in Orkney, Scotland. The Neolithic settlement at Skara Brae was preserved when it was buried in sand, leaving archaeologists with a fascinating record of Neolithic life. © The Trustees of the British Museum



SOURCE 2

BARREL-SHAPED BEADS

Five barrel-shaped beads made of jet and a triangular pendant. This was found in a burial at Tan Hill in Wiltshire. It weighs a total of 5g and is almost 9cm long. It was probably worn as a necklace. These are probably from the early Bronze Age. © The Trustees of the British Museum



SOURCE 3

AMBER BEADS

A set of 15 amber beads of different sizes and colours found at Heneglwys in Wales. Amber is fossilised tree resin. It continues to be used in modern-day jewellery as people love its colour. These are probably from the early Bronze Age.

© The Trustees of the British Museum



SOURCE 4

BEAD NECKLACE

These beads were found at Skara Brae in Orkney, Scotland, and date to between 3100 and 2500 BC. The necklace is made of 13 ivory beads, 13 made of bone and two tusk pendants and was probably a high-status piece of jewellery. The smaller string of bone beads in the centre might have been a bracelet. There are lots of amazing finds at Skara Brae because the buildings and many everyday objects were preserved when it was buried in sand.

© National Museums Scotland



SOURCE 5

STONE BEAD

A single stone bead weighing just over 1g. It was found in West Kennet Long Barrow, one of the largest Neolithic burial chambers in Britain. The chamber was in use for over 1,000 years and archaeologists have found the remains of nearly 50 people along with objects such as this bead.





AT GRIME'S GRAVES

Activities for students to do at Grime's Graves to help them get the most out of their learning.

SELF-LED ACTIVITY

ARCHAEOLOGICAL EXPLORERS



Recommended for

KSI-2 and KS3 (History, Geography)

Learning objectives

- Know how flint formed millions of years ago
- Understand what it might have been like for Neolithic miners
- Get close to prehistory by descending underground, exploring archaeology and experiencing the audio-visual display in the pit

Time to complete

Approx. 60 minutes (including safety talk and the visit to the mine shaft)



A bird's eye view of Grime's Graves.

SUMMARY

Grime's Graves is the only Neolithic flint mine in Britain that school groups can go into. This makes for a special visit as students get up close to our prehistoric past. The audio-visual display inside the mine introduces students to the story of the chalk landscape and the Neolithic people who mined here.

INSTRUCTIONS AND INFORMATION

Numbers are limited in the mine, so split your class into smaller groups. While one group goes into the mine, others can complete the Nature Explorers activity on page 47 or use the handling collection, which you can book in advance of your visit through our bookings team.

All students going into the mine must be aged 7 or over. Before descending into the mine shaft, staff will brief you on safety. Additional guidance is provided in the Teachers' Notes on page 44.

We have not provided an activity to complete in the pit so that students are not carrying anything with them as they descend. However, the Teachers' Notes on pages 45–46 include a list of things to spot so students get the most out of their visit.

Some students may find the experience challenging. Please get in touch to let us know of any requirements in advance. This will ensure we can provide the support needed for your group to get the most out of their visit.

MORE LEARNING IDEAS

Play a quick round of mining charades. Students take it in turns to act out digging, backfilling, hauling up spoil, finding floorstone, knapping flint or making offerings at the end of the season.

ARCHAEOLOGICAL EXPLORERS

TEACHERS' NOTES

HEALTH AND SAFETY

Staff will brief you and your students on safety before anyone is allowed to enter the mine shaft. Everyone will need to wear a hard hat. Students should not carry anything with them, so they can descend the stairs safely. To ensure everyone has a safe and enjoyable visit please monitor your students' behaviour and ensure they follow the instructions given by English Heritage staff.

ACCESSIBILITY

The mine shaft is accessed via stairs. Numbers are limited, so only 15 students can go into the mine at a time and they must be accompanied by an adult.

There are also on-site digital tours which can be provided for anyone that does not descend into the pit. Please let us know in advance if any of your group requires a digital tour.



You can also search the English Heritage website for 'Greenwell's Pit' to take a digital tour of another mine at Grime's Graves that is not normally open to the general public. Click on the people and objects to find out more about each one.

AUDIO-VISUAL DISPLAY

Inside the mine shaft is an audio-visual display that is designed to enhance the experience using lights, music, projections and a voiceover to explain some context. If any of your group might find this overwhelming, please let us know in advance as they can be switched off. You can also come on a free planning visit to help you decide if this is something that would work for your group.

TOP THINGS TO SPOT

Use these notes after the audio-visual display has finished, to support your students to get the most out of their visit.

THINGS TO SPOT	DID YOU KNOW?	CHALLENGE TIME!
<p>Inside the mine shaft you can see layers of irregular-shaped flint nodules. The one towards the top is known as the Topstone and the one in the middle is the Wallstone.</p>  <p>A visitor stands on the steps. She is at the same height as the layer of Wallstone, visible on the wall behind.</p>	<p>Neolithic miners dug straight through these layers to reach the layer at the bottom of the mine shaft that we call the Floorstone.</p>	<p>List five adjectives to describe what it is like inside the mine shaft. Think about the temperature, smells, sights, sounds and feelings you experience.</p>
<p>A lot of the Floorstone has been removed but look closely at floor level in the galleries to spot a thick solid layer of flint. This flint has fewer impurities and is much more black than the layers above.</p>  <p>A thick black layer of floorstone.</p>	<p>Flint was not just used to make practical tools such as knives; polished flint was also valued for its beauty and so it was used in ceremonies and burials.</p>	<p>Discuss why Neolithic miners ignored the top two layers of flint to reach the Floorstone beneath. Clue: think about how important flint was and what was special about the Floorstone.</p>

THINGS TO SPOT	DID YOU KNOW?	CHALLENGE TIME!
<p>There are six galleries (tunnels) radiating out from the central mine shaft. Some of them are over 15m long and many join up with galleries from other mine shafts. Miners spent hours in the galleries digging up flint.</p>	<p>The mine shaft was not closed in as it is today, so it was open to the weather and filled with more natural daylight. This also meant that bats came here to nest in the winter.</p>	<p>Go into a gallery. Reflect on how it feels to be in a gallery. List the challenges miners might have faced when digging in these conditions.</p>  <p>A visitor explores a gallery</p>
<p>The first gallery is much shorter than the rest. The miners stopped extracting flint from this one first, then backfilled it with unwanted chalk from the other galleries.</p>	<p>Men, women and children all worked the flint mines at Grime's Graves together.</p>  <p>An artist's reconstruction of miners working in a gallery.</p>	<p>Look up. Can you suggest how miners might have transported the flint up to the surface of the ground? Find out if you are right using the display in the visitor centre.</p>
<p>Look for the hornstone sticking out from the wall. This large nodule of flint is the remains of sea sponges fused together. These are also known as paramoudra.</p>	<p>Sea sponges have holes called osculum. The osculum expels water after it has been filtered for food.</p>  <p>Visitors can examine this paramoudra that is above ground at Grime's Graves.</p>	<p>When you leave the pit, find the paramoudra. Count how many holes it has. Each hole was an osculum of a sea sponge. How many sea sponges have been fused together in this nodule?</p>

SELF-LED ACTIVITY

NATURE EXPLORERS



Recommended for

KSI-2 and SEND (Science)

Learning objectives

- Know some of the species that live at Grime's Graves
- Understand what makes Grime's Graves a Site of Special Scientific Interest

Time to complete

Approx. 30 minutes



Visitors exploring plant life at Grime's Graves.



Getting up close with nature at Grime's Graves.

SUMMARY

Grime's Graves is a Site of Special Scientific Interest. Its unique landscape includes chalk grassland on the areas that have been mined, and acid grassland in the shallow valley in the north of the site. This activity explores some of the species living on site and particularly focuses on the flowers and butterflies that can be spotted May–September.

EXPLORING NATURE

Not all the flowers and butterflies are easy to spot all year round. If you are on site on a cloudy day, the conditions may not be right for spotting all the butterflies. This could be an interesting discussion point to have with your class. The Teachers' Notes on page 48 provide some additional context that you may want to use with your group.

Print off the spotter sheets you want to use with your group. They can be found on pages 49–50. Photocopy enough for your group.

KSI students may need more support to find each thing, and one spotter sheet may be enough – either 'Chalk Grassland' or 'Beautiful Butterflies'. Whereas, KS2 students may prefer to direct their own learning in small groups. If you are lucky with the weather, they may be able to spot them all.

MORE LEARNING IDEAS

Students could make sketches of butterflies they find on site and then use these sketches back in the classroom to create posters showing the life cycle of their chosen butterfly species. Search the Butterfly Conservation website for useful information such as when each species lays its eggs and reaches adulthood.

NATURE EXPLORERS

TEACHERS' NOTES

HEALTH AND SAFETY TIPS

1. There are no formal pathways, but you will see trails through the land where the grass is worn down more. Sticking to these helps us protect the archaeology. Watch out for rabbit holes to avoid trips and falls.
2. Pieces of worked flint discarded by Neolithic people can often be found in the soil kicked up by rabbits. They have very sharp edges, especially the thin flakes knocked off during knapping, so please don't touch.
3. The sound of F22 jets from nearby RAF Lakenheath can be very loud.

Greenwell's Pit and Bat Exit	When archaeologists like Greenwell excavated Grime's Graves, they found fossilised bat remains. The bats roosted in the mines during the winter months, when the miners were not working. Several species of bat continue to live here in the winter such as Daubenton's bats. To allow them access to the mines this special doorway has been made.
Chalk grassland	Mining brought chalk to the surface and it's the chalk that has created this Site of Special Scientific Interest. Today, rabbits push chalk to the surface, sheep graze the grass, and people walk around spreading seeds. All of this helps to maintain this unusual ecosystem.
Acid grassland	The valley of acid grassland is to the north, where the entrance track goes. The lack of mining means it has remained acidic and sandy, so different species thrive.
Periglacial stripes	The sands that make up the acid grassland were blown across the chalk during the Ice Age. This period of freezing and thawing caused movements and cracks in the chalk. Sand was blown into the gaps. This has resulted in stripes in the land that can still be seen today.
Grimshoe Mound	Mining stopped in about 2100 BC and the memory of what this place was became lost over time. The Anglo-Saxons believed it was the burial ground of the god Grim (also known as Odin or Woden). This is how Grime's Graves got the name that we still use today. It is also why this hill is known as Grim's Hoe or Grimshoe Mound.

You can **look** and **sniff**, but don't lick or pick!
This keeps you safe and protects the woodland.

BACK TO
CONTENTS

WILD CARROT



The ancestor of our modern carrots. Wild carrot roots are not as big or tasty, but are still edible. So are its seeds and flowers, which smell like carrots. It flowers from June to August.

ROCK ROSE



This plant has so many uses. Its leaves can make a tea or flavour food, and its flowers can make a perfume. It flowers from May to September.

LADY'S BEDSTRAW



The flowers from this plant were used to dye butter and cheese yellow. It flowers from June to September.

YARROW



This plant has a superpower. Put some of its leaves in hot water to make an infusion that can heal wounds. It flowers from June to September.

ENGLISH HERITAGE
EDUCATION

CHALK GRASSLAND

SPOTTER SHEET

KSI-2

SEND

BAT EXIT



There are five species of bats nesting at Grime's Graves between October and March. At Greenwell's Pit they've been given their own doorway so they can come and go freely.

RABBIT DROPPINGS



You might not see a rabbit, but you'll probably find things they've left behind. Look for small round droppings and marks in the ground from digging.

YELLOW ANTS



Look out for the anthills. These domes sit on top of nests, which can extend for up to a metre underground.

DID YOU KNOW?

Sheep are kept on site to graze the grassland. This helps maintain the landscape. You may find their droppings on site; they look like lumpy clusters squashed together.

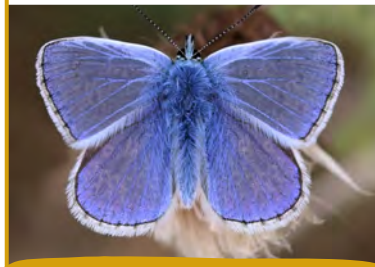
In the summer months **look** out for butterflies.
Some are very rare so you may not see them all.

MEADOW BROWN



These medium-sized butterflies can be seen even on cloudy days June–September. They sometimes fly together in large groups.

COMMON BLUE



This small butterfly can be seen May–September. Males are bright blue, but females in southern England are brown.

SMALL HEATH



The Small Heath can be seen on sunny days May–September. Look out for the eyespot on its underwing when it is resting.

SPECKLED WOOD



This butterfly likes dappled sunlight, chasing other butterflies and eating honeydew in treetops. You might see them April–September on the edge of the site near the trees.



ENGLISH HERITAGE
EDUCATION

BEAUTIFUL BUTTERFLIES

SPOTTER SHEET

KSI-2

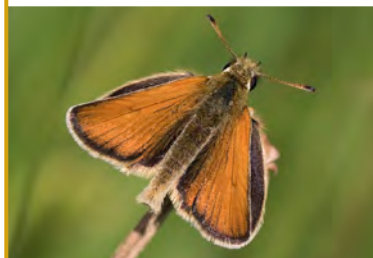
SEND

SMALL SKIPPER



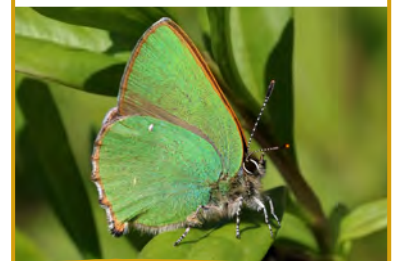
You are most likely to see these small butterflies from July to August. Males have a black line along their wings, whereas females don't.

ESSEX SKIPPER



The Essex Skipper has black tips to its antennae whereas the Small Skipper does not. All Skippers love sunny grassland and don't mind whether it's chalky or acidic.

GREEN HAIRSTREAK



The caterpillar of the Green Hairstreak is bright green too. It feeds on the Common Rock-rose and becomes an adult butterfly from May to July.

DID YOU KNOW?

Honeydew comes from insects such as aphids. They feed on the sap of plants and then release a sticky liquid known as honeydew. Some butterflies love to eat it.

BOOKABLE SELF-LED ACTIVITY

HANDLING COLLECTION



KSI-2

KS3

Recommended for

KSI-2 and KS3 (History)

Learning objectives

- Know what tools and implements were used by Neolithic people
- Understand how Neolithic people made and used these tools
- Get closer to the past by handling replica objects

Time to complete

Approx. 45 minutes



A piece of knapped flint. When flint is knapped it can have very sharp edges.

SUMMARY

This handling collection has been put together by our collections experts. It is available for schools to use during a self-led visit to Grime's Graves. It must be booked in advance to ensure it is available for your school to use. You can collect it from the visitor centre on arrival.

OBJECTS

The handling collection includes a selection of stone tools of the kind used by Neolithic people in everyday life. It also includes objects that originate from animals, such as furs and an antler pick of the kind used by Neolithic people at Grime's Graves to dig up flint. This may be challenging for some students to handle.

HEALTH AND SAFETY

Knapped flint can be sharp, so handle the objects with care and monitor students during the activity to ensure safety. We've included our five rules for handling objects, and some suggestions of how to engage students with objects, in our Teachers' Notes on pages 52–53.

MORE LEARNING IDEAS

Get students to imagine where each of the tools might have been used on site. Ask them to use their senses to imagine what else they might be able to see, smell, hear, taste and feel while using each of the tools.

HANDLING COLLECTION

TEACHERS' NOTES

5 RULES FOR HANDLING OBJECTS SAFELY

Even though all the objects in this collection are replicas, it is still important to handle them with care to ensure others can continue to enjoy them in the future. Follow these simple rules to ensure everyone stays safe and makes the most of their learning while handling objects:

1. WASH YOUR HANDS

Before handling objects, it is good practice to wash your hands to keep the objects clean. Make sure you wash your hands at the end too.

2. SIT DOWN

If possible, get students to handle the objects while seated. The objects have less distance to fall if someone drops them by accident. Doing this on the grass also reduces the chances of any accidental breakages. The visitor centre has a waterproof mat you can also use to sit on.

3. TAKE IT IN TURNS

This might take a bit more time, but it ensures everyone has a go and no one is rushing or grabbing, so it keeps the objects and students safe.

4. USE TWO HANDS

Where possible, objects should be handled using two hands. One hand should act as a cradle beneath the object, while the other turns it over to look at it from all angles. It also limits the chance of dropping it when passing it on.

5. LEAVE THEM AS YOU FOUND THEM

Please pack the objects away again when you are finished with them. If for any reason an object is damaged, please let our site team know so we can get any repairs or replacements made.

HANDLING COLLECTION

TEACHERS' NOTES

3 TOP TIPS FOR LEARNING WITH OBJECTS

1. CLOSE EXAMINATION

Encourage students to examine the objects from all angles.

You could ask:

- What does it look like?
- Can you describe its colour, shape or decoration?
- How does it feel? Is it smooth or textured? Is it heavy or light?
- What does it smell like?
- What materials is it made from?

2. MAKE CONNECTIONS

Get students thinking about how the objects might be similar or different to objects we use today. This might also help them work out what the object was used for.

- Have you seen an object like this before? Tell me more ...
- In what ways is it different?

Support them to make connections with the location and their wider learning. You could ask them:

- How does this object relate to this location?
- How was this object used here?

3. ASK QUESTIONS

Get students to pose questions about the objects that they'd like to ask to find out more.



POST-VISIT

Activities and information to help you extend your students' learning back in the classroom.

SOURCES

PEER INTO THE PAST

A historical source is something that tells us about life in the past, such as a document, a picture or an object. It may be a primary source, from the time, or a secondary source, created later. As Grime's Graves is a prehistoric site, there isn't any primary written sources and so archaeological finds give us important clues about the history of Grime's Graves.

SOURCE 1

'[there are lots of] chippings of various sizes, the refuse pieces struck off from the block in reducing it to shape. These are in such quantities in a field immediately to the south of the pits, that in some places it is scarcely possible to put the foot down without treading on one. It was a most impressive site, and one never to be forgotten, to look upon the tools of workmen still lying where they had been placed so many centuries ago.'

An extract from an article by Revd W Greenwell who excavated at Grime's Graves in the late 19th century. One of the mine shafts at Grime's Graves is still known as Greenwell's Pit today. Get a closer look by visiting the 'Grime's Graves - Prehistoric Flint Mine' page on our website. Click on the 'Grimes Graves Project' tab, scroll down to 'Greenwell's Pit', where you will find a link to 'Explore the virtual tour'.

SOURCE 2

GROOVED WARE POT

This Grooved Ware pot was found by archaeologists in a mine shaft at Grime's Graves. Neolithic miners deliberately left it underground when mining had finished. Perhaps it was part of a ritual that took place at the end of the mining season.
© The British Museum

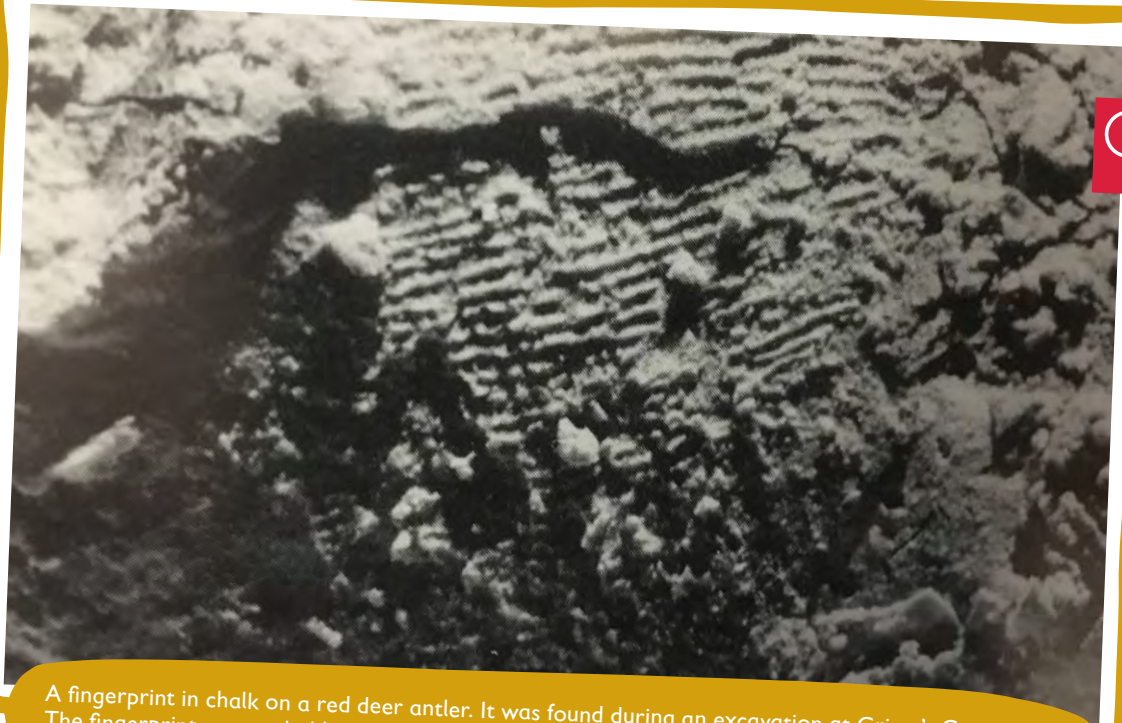


SOURCE 3



A charcoal and pencil drawing of Grime's Graves, made in 1852 by the Reverend Francis Vyvyan Luke. This is the earliest known sketch of a Neolithic flint mine. © Norfolk Record Office

SOURCE 4



A fingerprint in chalk on a red deer antler. It was found during an excavation at Grime's Graves. The fingerprint was probably made by a Neolithic miner. This particular antler was probably left in the mine after it broke or had become too blunt to use anymore.

SOURCE 5



A photograph of the Floorstone still visible underground at Grime's Graves. This thick black layer of flint was very pure and highly prized by Neolithic people who used it to make tools and special ceremonial objects.

SOURCE 6



The two vertical lines visible in the rock are believed to be rope marks made when the miners hauled up flint to the surface. Neolithic people made cordage from plant fibres such as nettles. Find out more by searching the English Heritage website for 'Archaeology Learning Pack' and going to page 10.

SOURCE 7



Drawings of flint finds from Grime's Graves. A set of calipers can be seen in the image. These were used to make accurate measurements before drawing on squared paper.

SOURCE 8



A modern photograph of the bottom of the mine shaft of Pit 15 at Grime's Graves. You can see the entrances to the galleries and a pile of abandoned antler picks and discarded chalk.

POST-VISIT ACTIVITY

CREATIVE WRITING



KS2

Recommended for

KS2 (History, English)

Learning objectives

- Reflect on the sensory experience of being in the mine and use this as inspiration for a piece of creative writing
- Understand that there are gaps in our knowledge about prehistory
- Use additional research and creativity to develop an explanation for the incised marks in Pit 1

Time to complete

Two or more hours depending on the amount of additional research students carry out for their piece, and how much drafting time is allowed.



The sensory experience of being in the mine will inspire students in this creative writing activity.

SUMMARY

Visiting the pit and reflecting on the sensory experience of being in the mine forms the basis for this creative writing activity. As historians are not always certain about what happened in the past, a bit of creativity and imagination can help to bring the stories of the past alive.

SENSORY MIND MAP STARTER

Start the lesson by creating a sensory mind map as a class. The mind map could have a branch for each of the senses and could also include emotions. The Teachers' Notes on pages 60–61 provide more suggestions on how this could work.

CHOOSING EXPLANATIONS

Next, show students Source 6 on page 57. Explain to students that other incised marks have been found and different historians interpret these marks in different ways. Get students to choose one of the explanations on which to base their piece of creative writing. The Teachers' Notes on pages 62–64 have suggestions of how to support students to plan this around their chosen explanation and where to look for more information.

TIME TO WRITE

Once they have planned, it will be time to write. Give students enough time to redraft their work and check spelling and grammar.

MORE LEARNING IDEAS

The piece of creative writing could be a play, which students could perform. They could wear their jewellery from the pre-visit activity and even design their own costumes, props and set.

CREATIVE WRITING

TEACHERS' NOTES

MIND MAP

Students should think back to the sensory experience of being in the mine. Some of the ideas they might come up with include:

Sight	<ul style="list-style-type: none"> chalk Topstone / Wallstone / Floorstone light from the mine shaft other miners Neolithic clothing (see pages 13–15 for more on this) antler picks fire (during the closing ceremony)
Smell	<ul style="list-style-type: none"> chalk dust / wet chalk if it is raining sweat breath burning (during the closing ceremony)
Sound	<ul style="list-style-type: none"> miners chatting, shouting, singing, coughing, breathing scraping / banging / thumping / clunking dragging chalk or flint by rope rain falling down the mine shaft (be aware that it is free-draining, and the climate was slightly warmer and drier than today so it wouldn't stay too wet for too long)
Touch	<ul style="list-style-type: none"> dry, dusty chalk that can be cracked or crushed wet, sticky chalk if it is raining down into the open mine shaft (you could show students the image of a chalk fingerprint on page 56) hard flint with sharp edges slippery, sweaty skin rough hands textured rope hot flames (during the closing ceremony)



Taste	chalk dust smoke (during the closing ceremony) sweat rain food (during the closing ceremony – for more information on the kinds of food they might have eaten see page 13)
Emotions	<p>At the start of the season people might feel:</p> <ul style="list-style-type: none">• excited• hopeful / optimistic• motivated• strong• nervous (if it's a first season mining, for example). <p>At mid-season people might feel:</p> <ul style="list-style-type: none">• tired of mining• aches and pains• thankful for the flint and motivated to keep mining• pleased or proud of what they've achieved so far• looking forward to the end of the season. <p>At the end of the season people might feel:</p> <ul style="list-style-type: none">• exhausted and possibly in pain• thankful / pleased / proud / blessed• ready to move on

CREATIVE WRITING

TEACHERS' NOTES

PLANNING

Introduce students to the focus of the creative writing by showing them Source 6 (on page 57). Get students to pick one of the three possible explanations for these marks – rope marks, tallies or artwork – to build their piece around .

To support students in developing their ideas, you could use the 5Ws (who, what, when, where, why)

<p>WHO</p>	<p>Who made the marks?</p> <p>Men, women and children carried out the mining. We know that groups of people mined together but we don't know how many were mining at the same time or whether they worked in shifts. Miners had to be fit and able to mine for flint, so they were probably not too young or too old.</p> <p>Depending on which explanation the student has chosen, it might affect who they decide is making the marks. For example, a 'lead' miner might make the tally marks to keep track of how they are doing. To explore what their character might look like, students could watch 'Meet a prehistoric flint miner' on the English Heritage YouTube channel.</p>
<p>WHAT</p>	<p>What are the characters doing?</p> <p>Students will need to describe what is happening in the scene. They could create a basic timeline of what happens when.</p> <p>If they choose the artwork explanation, they could decide this was part of a ritual. They will need to choose a tool that their character uses, and think about the process of making the marks, how long it might take and how carefully they have been incised. Search the English Heritage website for 'rituals in a prehistoric flint mine' for more context on this.</p>
<p>WHEN</p>	<p>When is it set?</p> <p>Students will need to think about the time of day and at what point in the mining season this is taking place. As the rope marks are above a gallery opening, they must have been made after the main shaft was dug and flint was already being extracted. Remember that the mine shaft was left open, so the light levels would be quite different from those in the pit today and they would vary as the sun moved in the sky. Plus, it would be open to the weather. The climate during the Neolithic period was slightly warmer than today and a bit drier as well, so this will need to be taken into consideration too.</p>



WHERE	<p>Where is it set?</p> <p>It could be set just in the gallery and mine shaft, or might involve going above ground too. The reconstruction of the interior of the flint mine on page 8 could be useful for students to refer to.</p> <p>If students choose the rope mark explanation, they may wish to watch 'How to make a prehistoric flint axe' on the English Heritage YouTube channel. Perhaps they could follow the piece of flint from being dragged out of the gallery to it becoming a tool?</p>
WHY	<p>Why were the incised marks made?</p> <p>Students will use one of the three explanations suggested by historians: rope marks, tally marks or artwork. All three explanations can link back to the importance of flint and the enormous effort Neolithic people went to excavate it at Grime's Graves.</p> <p>If the artwork explanation is chosen, students may need to think about whether the marks represent something or have a deeper meaning. They could look into other examples of decoration or art made by people at a similar time period. They could look at the geometric designs on Grooved Ware pots such as the one on page 55. Search the British Museum Collection online for 'Neolithic chalk plaque' and 'Neolithic chalk drum' to see some intriguing objects decorated with geometric designs that were found in Yorkshire.</p>

ADDITIONAL SOURCES OF INFORMATION

- Use the historical information on pages 6–17 to provide students with more context about Neolithic art and the process of mining.



- Use the QR code for Sophie Kirtley's story set in Grime's Graves.



- Use the QR code for Michael Rosen's poem about Grime's Graves.

- Search the English Heritage website for 'An introduction to prehistoric England' for more context.

- Search BBC Bitesize for 'Who were the first farmers?' for more information about Neolithic people.

POST-VISIT ACTIVITY

PREHISTORIC POTTERY



KS1-2

Recommended for

KS1-2 (History, Art)

Learning objectives

- Know what Grooved Ware pottery was, how it was decorated and what it was used for
- Understand how people made pots in the Neolithic period
- Apply their learning by making their own Neolithic-style pot

Time to complete

60–90 minutes



Grooved Ware pot found at Grime's Graves. © The Trustees of the British Museum

SUMMARY

Sherds of Grooved Ware pottery were found at Grime's Graves. In this activity students learn about this type of pottery and have a go at making their own.

WHAT IS GROOVED WARE?

Start by explaining what Grooved Ware pottery is. Use the historical information on pages 13–15 and show students the image on page 55. Discuss the main features of the pots including:

- geometric patterns incised into the clay
- flat bottoms to allow the pots to stand
- wide openings at the top
- straight or flared sides
- thickness and colour of the clay
- texture of the surface of the pot.

You could give students examples of modern bowls and plant pots to touch, compare and discuss. In doing this, they may notice that the modern pots are much more likely to be glazed and covered in colour rather than incised designs.

Show students how Neolithic pots were made using the demonstration 'How to make prehistoric pottery' on the English Heritage YouTube channel.

GETTING HANDS-ON

Students should now try to make their own pots using the method they watched on the video. The activity sheet on page 66 can help with this.

MORE LEARNING IDEAS

Get students to add a design to the outside of their pots inspired by Grooved Ware pottery. One way to do this is by pressing string or rope into the clay to create a basket-style pattern or texture to the outside of their pots.

PREHISTORIC POTTERY

MAKE A GROOVED WARE POT

YOU WILL NEED:

- 250g of clay
- rolling pin
- knife
- cookie cutter or cup
- slip
- paintbrush



1 MAKE A BASE

Take one half of your clay. Roll it out to approximately 1.5cm thick. Then use a cookie cutter to make a circle or cut round a circular object such as a lid.



2 MAKE A SAUSAGE

With your other clay make a long sausage shape about 2cm thick. Try to make your sausage an even thickness along its length.



3 SCORE AND SLIP

Make small lines all around the outer edge of your base. Make sure the cuts do not go too deep into the clay. Then use a paintbrush to apply slip. Slip is water and clay mixed together to make a runny glue.



4 START BUILDING

Place your sausage on top of the scoring and slipping you did in step 3. Cut off any excess sausage and keep it for step 6.



5 SMOOTH IT OUT

Use your finger to smooth the edges of the sausage into the circular base.



6 KEEP BUILDING

Now score and slip the sausage you have just stuck to your base so that you can place another sausage on top. Remember to smooth the clay together so you can't see the joins. Keep repeating until you have made a shallow dish.



POST-VISIT ACTIVITY

SOAP KNAPPING



Recommended for

KSI-2 (History, Art, Science)

Learning objectives

- Know how flint tools were knapped into shape
- Understand how archaeologists can study knapping sites
- Make your own Neolithic-style tool using soap

Time to complete

60–90 minutes

SUMMARY

Soap doesn't behave in the same way as chalk or flint. You can't strike it with another rock to knap it into shape, but for students to knap flint supervision from an expert is required. Instead, this activity can be safely done in the classroom. Students get to knap soap, study a knapping site as archaeologists do, and create soap tools that can go on display.

Archaeologists sometimes carry out experiments to test ideas about the past. In this activity students become experimental archaeologists by knapping soap, studying a scatter pattern and producing an object to go on display, all around an imaginary fire to keep warm. The Teachers' Notes on page 68 give suggestions on how to structure this activity.

Archaeology provides a great opportunity for cross-curricular learning. Search the English Heritage website for 'Archaeology Learning Pack' for more STEM learning you can do in the classroom, such as creating stratigraphy models or carrying out experiments to find out which materials survive underground.



A re-enactor knapping flint.

MORE LEARNING IDEAS

Create a museum with microliths (small flint blades), cores and axes on display along with any Neolithic jewellery and pots students might have made as part of their study on this topic. You could add photos from their visit to Grime's Graves and any creative writing pieces that they completed after their visit.

SOAP KNAPPING

TEACHERS' NOTES

PREPARATION

Set up the room in advance so that each group of students have their own knapping site to work on. Stick four pieces of A3 paper together to create a knapping site for each group of four students. Stick an orange piece of A4 paper in the centre to represent a fire. Each student will need a bar of soap and a table knife or clay tool. Using different coloured bars of soap helps students to see where their flakes have landed on the paper.

GET KNAPPING

Show students the demonstration of 'How to make a prehistoric flint axe' on the English Heritage YouTube channel. Then gather students around their knapping site to make soap tools. Students should be sitting cross-legged or kneeling. They should scrape off flakes of soap away from their body and towards the paper. Get them to keep knapping until they have created an axe head roughout. It is important that students leave the flakes where they land for the next part of the activity. Do not tidy up yet!

EXPERIMENTAL ARCHAEOLOGY

Once all the group have finished their axe heads, get students to examine the scatter pattern of flakes on the paper. They could use measuring tape to measure how far they travelled and in which directions. Support students to plot their scatter pattern on squared paper, noting if any of their flakes landed in the fire.

Get them thinking about how challenging it would be to work out which cores each flake came from when they are all the same colour. See if they can suggest ways that archaeologists might be able to do it: for example, by carefully examining the shape of the flakes and leftover cores to match them up, a bit like pieces in a puzzle.

See if they can also suggest how archaeologists can tell there was a fire at a knapping site. Answers might include:

- signs of burning on the ground
- burned materials, such as wood, that were used in the fire
- flakes of flint that show signs of burning after having landed in the fire during knapping.