

Dippy at the Natural History Museum

Dippy on Tour: A Natural History Adventure is an exploration of the UK's natural history past, present and future. Dippy, the replica cast of a *Diplodocus* skeleton that was given to the Museum in 1905, is a catalyst for exploring different aspects of the natural world along the eight-stop tour to museums and cultural hubs.



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Dinosaurs and birds

Much of what scientists are learning about dinosaurs is supported by studying birds. In the 2000s a large number of fossilised feathered dinosaurs were discovered in China, along with very early birds in the same rocks. This has helped to further confirm the long-held idea that dinosaurs and birds are very closely related. Similarities include feathers, limbs adapted to flight and bone structure.

Dippy the *Diplodocus* was just one of many species of dinosaur living on the land that is now Wyoming in the USA during the Jurassic Period, about 150 million years ago. Other *Diplodocus* fossils have been found in Utah and Colorado (also in the USA), suggesting it was a widespread dinosaur. Other fossils found include: small mammals, turtles, crocodiles, fish and some of the plants that Dippy might have eaten.

Many scientists refer to extinct dinosaurs such as Dippy as non-avian dinosaurs – birds did not evolve from Dippy. Dippy is a sauropod – a plant-eating dinosaur that walked on four legs. Sauropods were an evolutionary dead-end. Birds that are alive today evolved from meat-eating dinosaurs. Palaeontologists (scientists who study dinosaurs) believe that birds are direct descendants of a group of meat-eating dinosaurs that also had feathers. Victorian scientists who investigated the very first dinosaur bones ever discovered spotted how similar some dinosaur bones are to bird bones. But all this has only been confirmed quite recently, following the discovery of the feathered dinosaur fossils in China.

There are lots of other similarities between dinosaurs and birds that give us clues about how closely related they are. Understanding birds through observation and other methods helps scientists to learn more about how dinosaurs might have looked and behaved.



Archaeopteryx. Painting by Maurice Wilson from his drawings collection (1950). © The Trustees of the Natural History Museum, London. All rights reserved.

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Dinosaur facts

What are fossils?

Fossils are the remains of once-living plants and animals that have been preserved in rock. These remains were buried in soft sediment such as sand or mud, which over millions of years became sedimentary rock. The fossils are part of the rock.

What are dinosaurs?

Dinosaurs are a group of reptiles that dominated life on land for more than 160 million years during the Mesozoic Era. Dinosaurs were different from the reptiles alive today because of their posture (how they stand). They stood upright whereas other groups of reptiles, such as crocodiles and lizards, stand with splayed legs – their thigh bones almost parallel to the ground.

When did dinosaurs live?

Dinosaurs lived between around 230 and 66 million years ago, during the Mesozoic Era. Not all types of dinosaurs lived at the same time. [Activity 1: Dinosaur timeline]

Where did dinosaurs live?

Dinosaurs lived on land all over the planet. Fossilised dinosaur remains have been found in countries on every continent, including Antarctica. Famous fossils have been found in Argentina, Australia, Brazil, Canada, China, France, Germany, India, Morocco, South Africa and the USA, as well as many other places, including all of the countries in the UK.

[Activity 2: Discover a dinosaur]

What is Dippy's scientific name?

All fossils have a scientific name. Dippy's proper name is *Diplodocus carnegii*.

The name *Diplodocus* means 'double beam'. This refers to the double-beamed chevron bones on the underside of the tail.

When did Dippy live?

Dippy lived during the Late Jurassic Period, around 150 million years ago. This is in the middle of the Mesozoic Era.

[Activity 1: Dinosaur timeline]

Where did Dippy live?

Dippy lived in what is now Wyoming in the USA.

What did Dippy eat?

Dippy ate plants, but not flowering plants because they had not yet evolved. [Activity 6: Dinosaur dinners]

Is Dippy a real fossil?

Dippy is not a real fossil. He is a cast plaster of Paris replica, carefully made from the fragile original bones. There are 10 other *Diplodocus* casts like Dippy in museums around the world. The original fossil skeleton is on display at the Carnegie Museum in Pittsburgh, USA.

What else was alive at the same time as Dippy?

- *Diplodocus* (sauropod dinosaur)
- *Allosaurus* (theropod dinosaur)
- *Camarasaurus* (sauropod dinosaur)
- *Ctenigenys* (a superficially crocodile-like reptile)
- *Docodon* (mammal)
- *Glyptops* (turtle)
- *Hoplosuchus* (small crocodylian)
- *Iridotriton* (salamander)
- *Mesadactylus* (pterosaur, winged reptile)
- *Mymoorapelta* (ankylosaur)
- *Stegosaurus* (stegosaur dinosaur)
- Wollemi pine conifer
- *Dickinsonia* (tree fern)

[Activity 10: Dinosaur habitats]

How are dinosaurs and birds related?

Birds are the living members of a group of dinosaurs called the theropods. They survived the huge extinction event that occurred 66 million years ago, which wiped out the non-avian dinosaurs as well as many other groups of land and sea animals, such as ammonites and plesiosaurs.

Fossils from Germany and China provide evidence that birds lived at the same time as dinosaurs during the Late Jurassic and Cretaceous periods.

What evidence do we have that birds and dinosaurs are related?

Victorian scientists suggested that birds might be related to reptiles because both groups of animals lay eggs. Clues from fossils that helped palaeontologists link birds to dinosaurs are the shape of their bones, the presence of feathers and their body shape. Like birds, some dinosaurs may have sat on eggs and cared for their young in a nest.

Who studies dinosaurs?

Scientists who study fossils, including dinosaurs, are called palaeontologists.

Activity 1: Dinosaur timeline

Make an arm-span timeline to help visualise time.

Learning outcomes

Children will:

- learn a strategy for thinking about very long periods of time that can be applied to other aspects of history
- understand that non-avian dinosaurs lived long before humans – they did not live together
- understand that Earth is more ancient than dinosaurs
- understand that humans have lived for a very short time compared to the age of the planet

Resources required

Provided in the Natural History Museum package:

- illustrated instructions

Provided by school:

- printing
- string
- parcel tags

Background

When did dinosaurs live?

Dinosaurs lived in the Mesozoic Era, during the Triassic, Jurassic and Cretaceous periods.

Diplodocus: 155–145 million years ago

Iguanodon: 129–120 million years ago

Hypsilophodon: 129–125 million years ago

Tyrannosaurus rex: 68–66 million years ago

Albertosaurus: 70–66 million years ago

Velociraptor: 75–72 million years ago

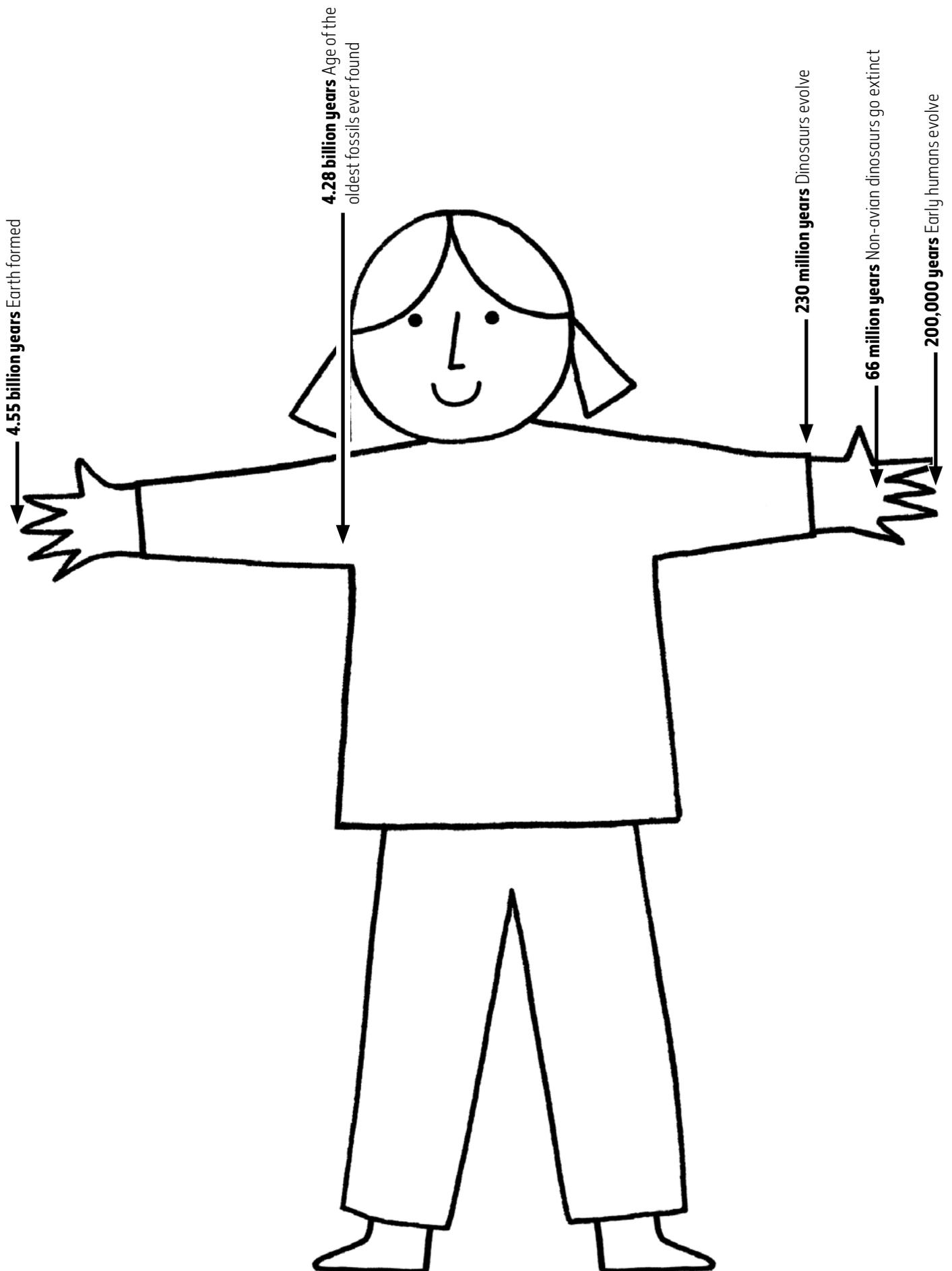
Looking at these dates, we know that *Diplodocus* would never have been hunted by a *T. rex*!

Earth is 4.55 billion years old and the earliest fossils are about 3.6 billion years old. This means that dinosaurs lived quite recently compared to trilobites and the early ancestors of fish.

The very first hominins (human ancestors) evolved around seven million years ago, and modern humans have only existed for 200,000 years. Animals like us have been on the planet for less time than *T. rex* existed!

Humans and non-avian dinosaurs have never been alive at the same time.

Activity 1: Dinosaur timeline





Activity 1: Teacher notes

Children could work in pairs and do this themselves, or you could model this with one child or yourself.

Stretch out your arms to represent the whole age of Earth, from right-hand fingertip to left-hand fingertip. First life starts at your right armpit – this is the age of the oldest fossils ever found. Dinosaurs start at the crease of your left wrist and end where your middle finger starts. The earliest humans evolve just below the tip of your middle finger of your left hand.

- you could choose one child to demonstrate this to the class and stretch a string or length of fabric across the arm span and use clothes pegs or glue to add pictures
- you could research other events in Earth's history from books and make a number line for the history of Earth
- you could apply this timeline technique to other historical events to help children visualise the time differences between other events in local, national or international history

English curriculum links (Key Stage 1)

Maths

Measurement

Pupils should be taught to:

- compare, describe and solve practical problems for: time [for example, quicker, slower, earlier, later]
- measure and begin to record the following:
 - sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]
- recognise and use language relating to dates, including days of the week, weeks, months and years

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

Foundation: Mathematics and numeracy

Measures

Pupils should be enabled to:

- sequence two or three familiar events
- compare two intervals of time talk about their observations in terms of took longer/shorter time
- explore time patterns
- choose and use, with guidance, non-standard units to measure time and talk about their work

Scottish curriculum links (Early and First)

Numeracy: Experiences and outcomes

Number money and measure: Number and number process

I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order. **MNU 0-02a**

Information handling: Data analysis

I can collect objects and ask questions to gather information, organising and displaying my findings in different ways. **MNU 0-20a**

MNU 0-20a

I can match objects, and sort using my own and others' criteria, sharing my ideas with others. **MNU 0-20b**

I have explored a variety of ways in which data is presented and can ask and answer questions about the information it contains. **MNU 1-20a**

MNU 1-20a

I have used a range of ways to collect information and can sort it in a logical, organised and imaginative way using my own and others' criteria. **MNU1-20b**

Welsh curriculum links (Foundation Phase)

Mathematical development

Using measuring skills – time.



Activity 2: Discover a dinosaur

The story of a new species of dinosaur discovered in 2004.

Learning outcomes

Children will:

- develop confidence and skills in creating and portraying a character through drama or writing
- express thoughts and feelings through writing, drama and storytelling
- understand that new dinosaurs are being found today

Story

In 2004 the remains of a very important new dinosaur was discovered by a seven-year-old South American boy called Diego Suarez. His parents were studying rocks in the mountains of Chile while he played nearby. He found an interesting shiny piece of rock and asked his mother about it. She recognised it as a fossilised bone!

Palaeontologists (scientists who study dinosaurs) came to look and discovered more bones nearby. It took nearly 10 years for the fossilised bones to be carefully removed from the rock and studied in detail to work out what the dinosaur looked like when it was alive. To help understand what the dinosaur might have looked when it was alive, the palaeontologists worked with an artist who drew detailed pictures.

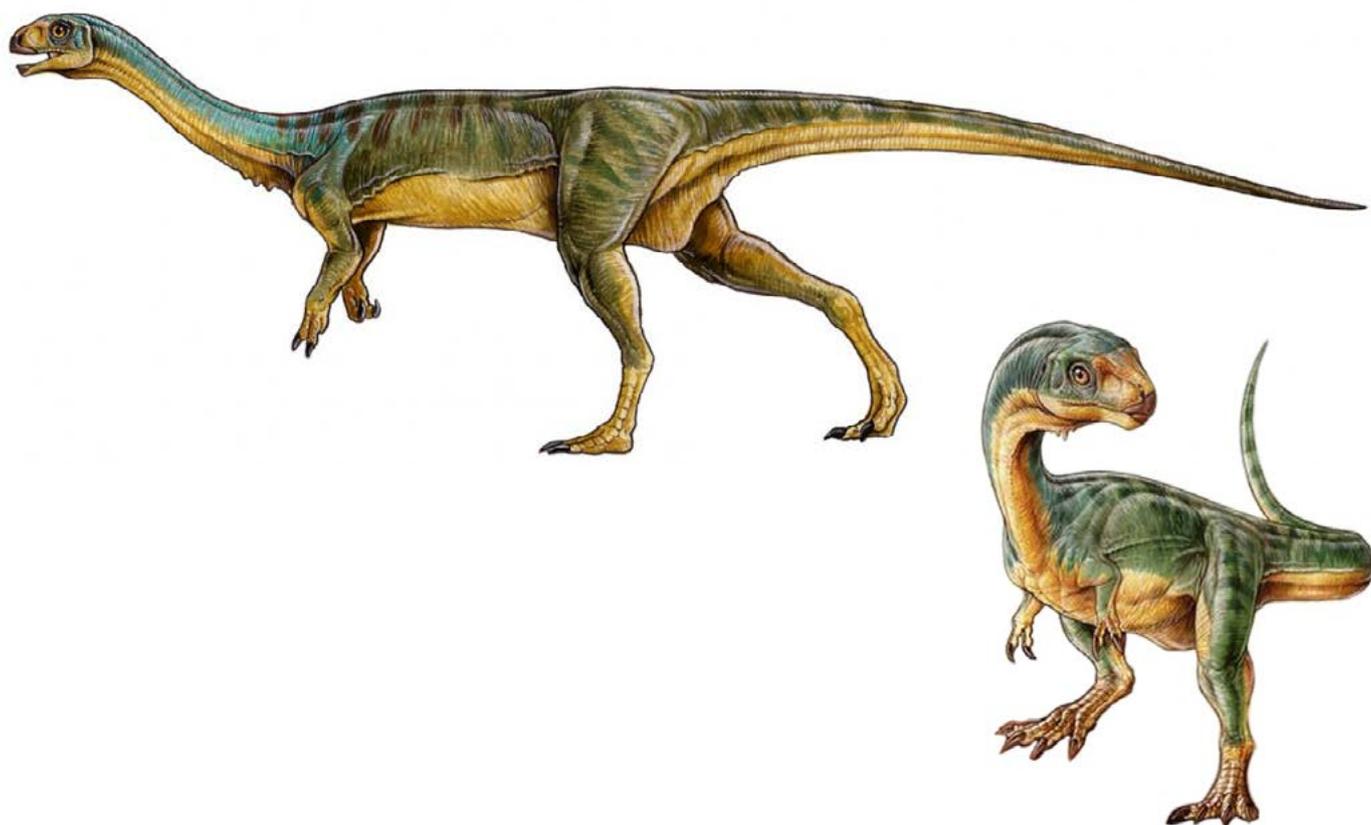
The palaeontologists concluded that Diego had discovered a very important fossil of a new species of dinosaur. It had claws and a body like a meat-eating dinosaur, but the teeth of a plant-eating dinosaur! In 2015, the dinosaur was named *Chilesaurus diegosuarezi* after the place where it was found and the boy who found it.

Activity 2: Discover a dinosaur

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Images © Gabriel Lío

Activity 2: Discover a dinosaur

Diplodocus fossils are still being found today.
Here is a *Diplodocus* skeleton being excavated in 2017.



© Dr Philip Manning

Activity 2: Discover a dinosaur

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© Dr Philip Manning



Activity 2: Teacher notes

There are several ways to use this story:

1. Read the story together like a big book from a screen, looking at the pictures alongside the text. You can learn more about this discovery from Professor Paul Barret at nhm.ac.uk/chilesaurus. You could create a comprehension exercise about the story.
2. Use this as a creative writing or drama activity. Imagine that you are Diego and tell the story of how you found a dinosaur bone and what happened next. How does it feel to have a dinosaur named after you? Tell the story through drawing, writing or drama.
3. Use this as a creative writing or drama activity. Imagine you have discovered a dinosaur and tell the story of this adventure through drawing, writing or drama.

You could use these stimulus questions in a writing frame to help develop story ideas.

- Where did you make your discovery?
- Did you look for a dinosaur or did you find it by chance?
- Who helped you to identify it?
- What is special about it? How do you know it is a new type of dinosaur?
- How did you feel when you made your discovery?
- What special feature makes your dinosaur discovery newsworthy?
- What is the dinosaur called?
- What other dinosaurs and animals might have lived at the same time?
- What habitat did it live in?
- How does it feel to have a dinosaur named after you?

You could adapt this activity for any rare or imaginary animal or bird, in any habitat (eg jungle or polar region).

You could work in pairs where one child is a journalist interviewing the other to find out the story of the discovery.

English curriculum links (Key Stage 1)

English

Year 1: Writing: Composition

Pupils should be taught to:

- write sentences by:
 - saying out loud what they are going to write about
 - composing a sentence orally before writing it
 - sequencing sentences to form short narratives
 - re-reading what they have written to check that it makes sense
- discuss what they have written with the teacher or other pupils
- read their writing aloud, clearly enough to be heard by their peers and the teacher

Year 2: Reading: Comprehension

Pupils should be taught to:

- develop pleasure in reading, motivation to read, vocabulary and understanding by:
 - discussing the sequence of events in books and how items of information are related
 - becoming increasingly familiar with and retelling a wider range of stories, fairy stories and traditional tales
 - being introduced to non-fiction books that are structured in different ways
 - recognising simple recurring literary language in stories and poetry
 - discussing and clarifying the meanings of words, linking new meanings to known vocabulary





Year 2: Writing: Composition

Pupils should be taught to:

- develop positive attitudes towards and stamina for writing by:
 - writing narratives about personal experiences and those of others (real and fictional)
 - writing about real events
 - writing for different purposes
- consider what they are going to write before beginning by:
 - planning or saying out loud what they are going to write about
 - writing down ideas and/or key words, including new vocabulary
 - encapsulating what they want to say, sentence by sentence
- make simple additions, revisions and corrections to their own writing by:
 - evaluating their writing with the teacher and other pupils
 - rereading to check that their writing makes sense and that verbs to indicate time are used correctly and consistently, including verbs in the continuous form
 - proofreading to check for errors in spelling, grammar and punctuation (for example, ends of sentences punctuated correctly)
- read aloud what they have written with appropriate intonation to make the meaning clear

Scottish curriculum links (Early and First)

Literacy: Experiences and outcomes

Writing: Creating texts

Within real and imaginary situations, I share experiences and feelings, ideas and information in a way that communicates my message. **LIT 0-09a**

I enjoy exploring events and characters in stories and other texts and I use what I learn to invent my own, sharing these with others in imaginative ways. **LIT 0-09b / LIT 0-31a**

When listening and talking with others for different purposes, I can exchange information, experiences, explanations, ideas and opinions, and clarify points by asking questions or by asking others to say more. **LIT 1-09a**

I can convey information, describe events or processes, share my opinions or persuade my reader in different ways.

LIT 1-28a / LIT 1-29a

Welsh curriculum links (Foundation Phase)

Language, literacy and communication skills

Range of experiences

Children should be given opportunities to:

- experience a language-rich environment that immerses them in the spoken and written word
- express themselves creatively and imaginatively
- access and share a variety of non-fiction texts, stories and traditional tales from Wales and around the world including those written by significant authors
- mark make or write in a range of genres
- communicate in a range of contexts for a variety of purposes and audiences.

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

Foundation Stage: Language and literacy

Framework for literacy development

Reading.

Writing.



Activity 3: Dinosaur skeleton

Find out about Dippy's skeleton and compare the shape and size of some of his body parts to your own.

Learning outcomes

Children will:

- recognise that dinosaurs and humans share a similar body structure, with a spine, four limbs, a ribcage and a skull
- be able to name and identify the positions of the spine, ribcage, skull, arms and legs on their own bodies and on a picture of a skeleton
- be able to identify parts of a dinosaur skeleton and relate these to associated parts of the human body
- be able to identify and describe the differences between a human and a *Diplodocus* skeleton

Resources required

Provided in the Natural History Museum package:

- drawing of a *Diplodocus* skeleton
- worksheets

Provided by school:

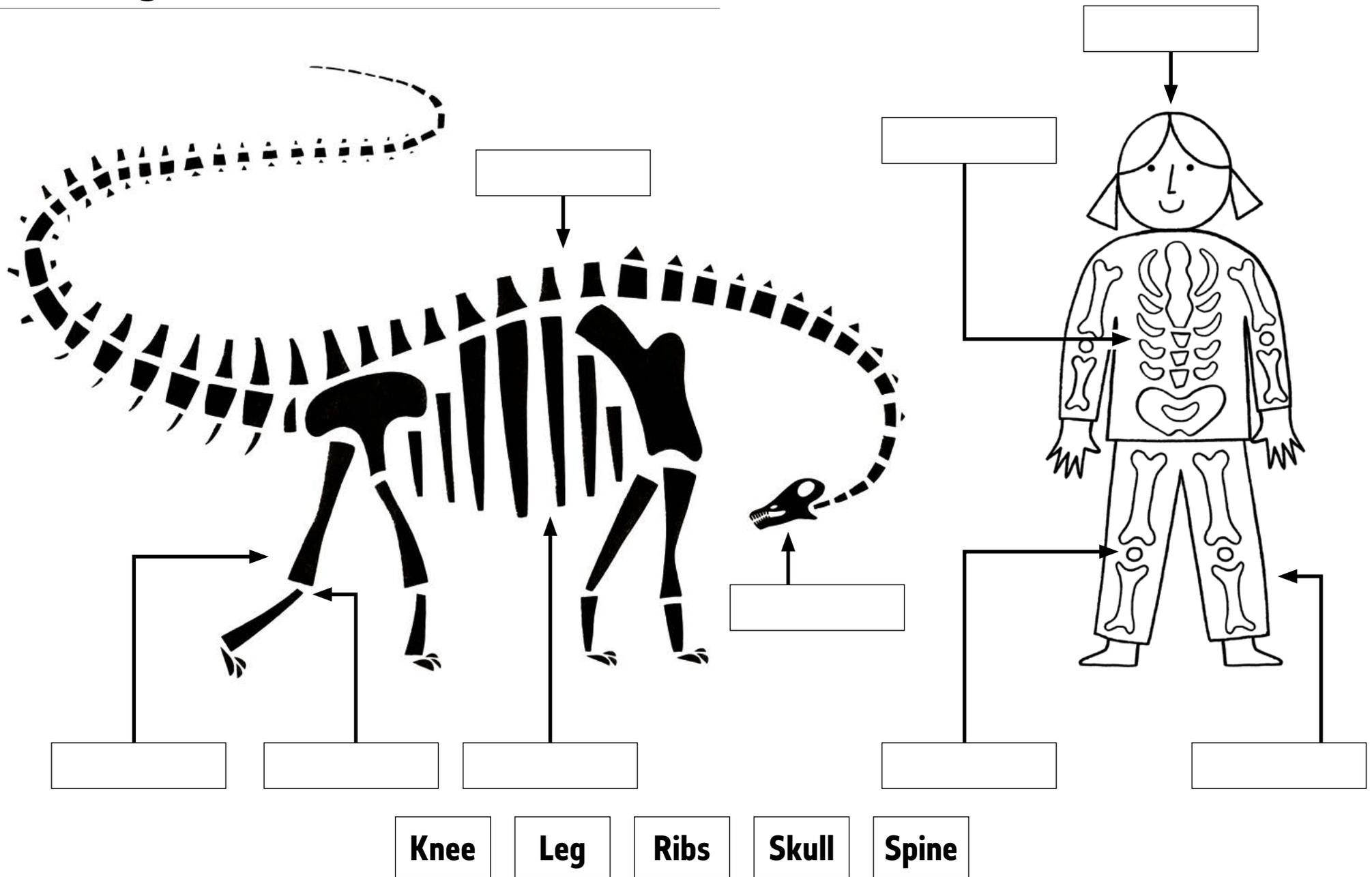
- printing
- scissors
- writing materials
- glue or sticky dots
- full-length mirror, if possible

Background

Dippy is a *Diplodocus*, a large herbivorous (plant-eating) dinosaur. He lived on the land that is now Wyoming in the USA during the Jurassic Period, about 150 million years ago.

The fossil bones were discovered by workmen digging a railway, and excavated by scientists in 1898.

Activity 3: Dinosaur skeleton





Activity 3: Teacher notes

Tell the children that palaeontologists (scientists who study fossils, including dinosaurs) put the *Diplodocus* bones that Dippy is cast from back together after they were carefully excavated from the rocks in which they were fossilised. The bones did not stay in the perfect position because the ground they were in moved about before the bones became fossilised. Scientists compared the bones to bones from animals alive today to help them to identify them.

Most animals with a backbone have a similar number of bones with similar functions, so we have bones in common with Dippy.

Look at and read the labels for different body parts. Can the children identify these features on their own bodies?

Cut out and stick the labels in the right place to identify the different body parts on the drawing of Dippy. Encourage the children to stand like Dippy (on all fours) to help them understand the different posture.

Ask the children to think about the similarities and differences between their bones and Dippy's bones. How is Dippy's body different to theirs?

- You could ask the class to trace around the flesh outline (or print a second copy with a blank reverse side) of the dinosaur shape to cut out. Use the plain side to draw on external body details and colour Dippy in. Stick the skin over the bones to give a flap-open version of the dinosaur so that both skeleton and external body parts are labelled.
- You could discuss why the children chose the colours or patterns they used to decorate Dippy and link this to habitat.
- You could ask the children to use a full-length mirror or work in pairs to identify the parts on their bodies that they have labelled on Dippy. Use post-its to label each other then check in with other pairs to self-assess, or draw portraits of each other or self-portraits to add labels to.

English curriculum links (Key Stage 1)

Science: Animals, including humans

Pupils should be taught to:

- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- identify, name, draw and label the basic parts of the human body and say what part of the body is associated with each sense

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The world around us

Interdependence

Pupils should be enabled to explore:

- Who am I?
- What am I?
- Am I the same as everyone else?
- What else is living?
- How do living things survive?

Progression

As pupils progress through the Foundation Stage they should be enabled to:

- identify similarities and differences between living things, places, objects and materials

Scottish curriculum links (Early and First)

Sciences: Experiences and outcomes

Biological systems: Body systems and cells

By researching, I can describe the position and function of the skeleton and major organs of the human body and discuss what I need to do to keep them healthy. **SCN 1-12a**

Welsh curriculum links (Foundation Phase)

Knowledge and understanding of the world: Range Myself and other living things

Children should be given opportunities to:

- learn the names and uses of the main external parts of the human body and plants
- observe differences between animals and plants, different animals, and different plants in order to group them
- identify the similarities and differences between themselves and other children



Activity 4: Longest bone

Discover the longest bone in your body and find out what dinosaur(s) were the same height as you!

Learning outcomes

Children will:

- make accurate measurements and record and analyse simple data
- identify the longest bone in their own body
- learn that not all dinosaurs are the same size
- discover that some animals have individual bones that are taller than children
- use mathematics to help answer a question
- understand that maths can be applied to learning about the human body

Background

The longest bone in the human body is called the femur, or thigh bone.

Scientists have worked out that in most children under eight years old and adults over 18, this bone is approximately a quarter of the total body height. The only time this changes is when children reach their teenage growth spurt at around 10–15 years old.

Resources required

Provided in the Natural History Museum package:

- worksheet
- paper-model of Dippy's femur to put together

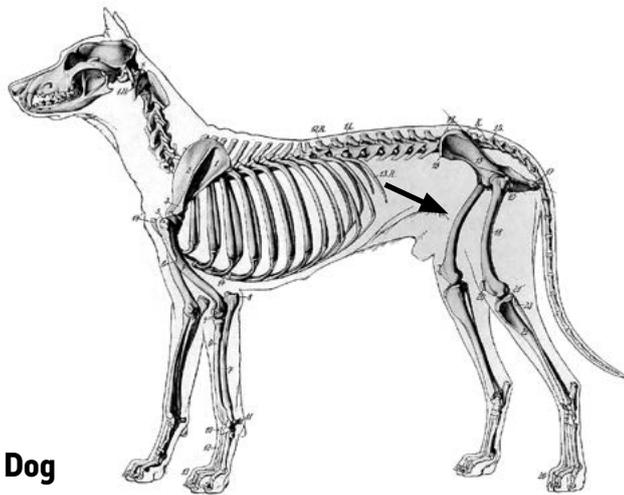
Provided by school:

- printing
- metre sticks, rulers or tape measures
- string
- dinosaur factual books or wall chart

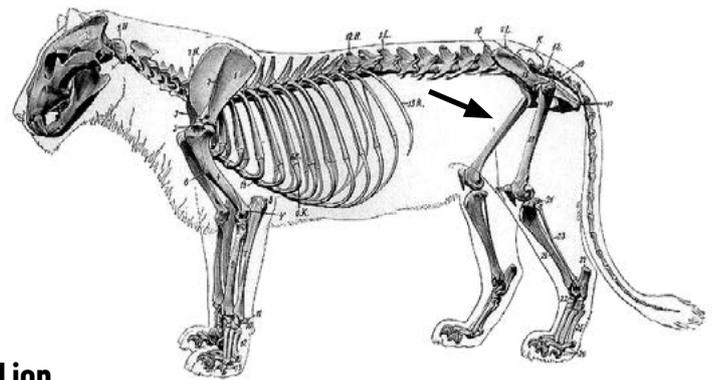
Activity 4: Longest bone



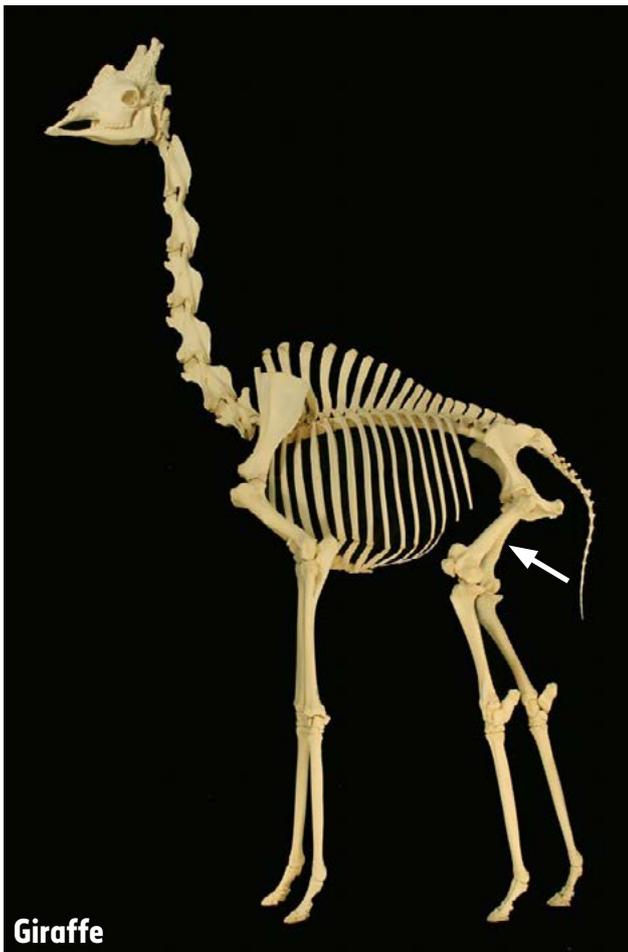
Activity 4: Longest bone



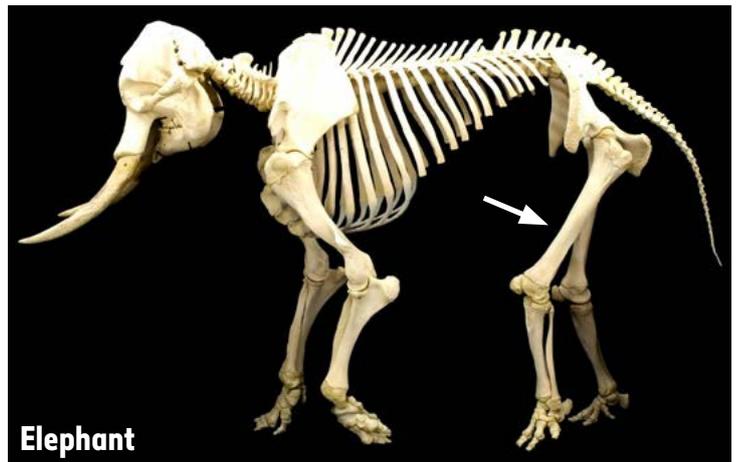
Dog



Lion



Giraffe

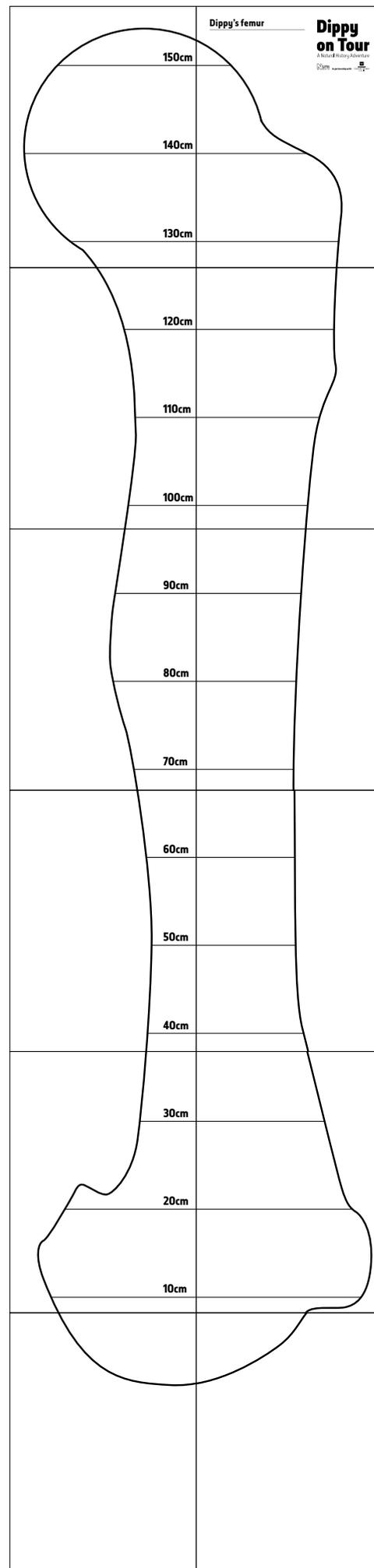


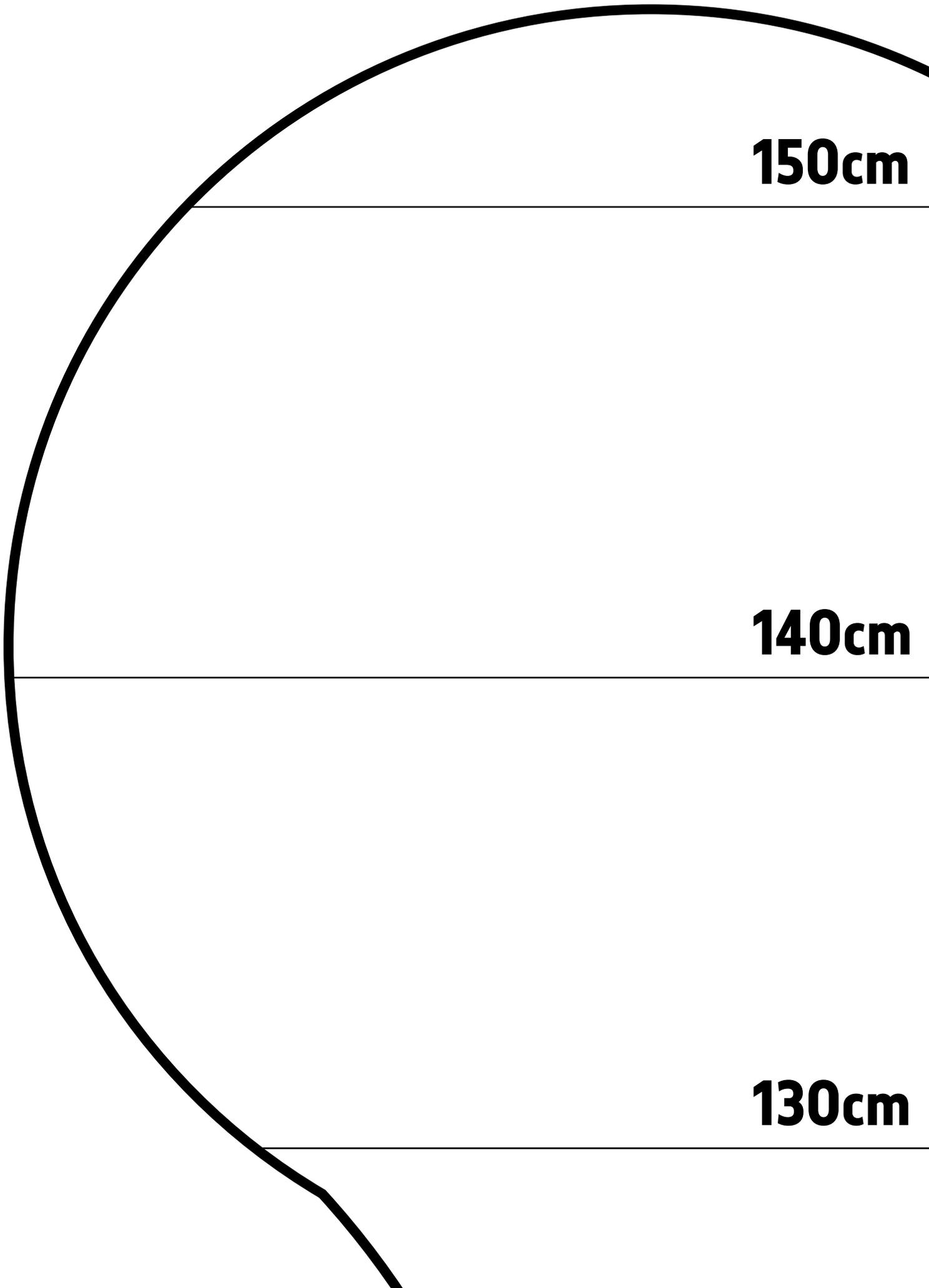
Elephant

Most land mammals and birds, many reptiles and some amphibians have femurs. In animals with four legs the femur is only found in the hind limbs (indicated by the arrows). The femur is the strongest bone in the body, and it is the longest bone in the human body.

Activity 4: Longest bone

Print the following 12 pages and tape them together to create a life-size *Diplodocus* femur. This can be used as a wall chart to measure and record children's heights.





150cm

140cm

130cm

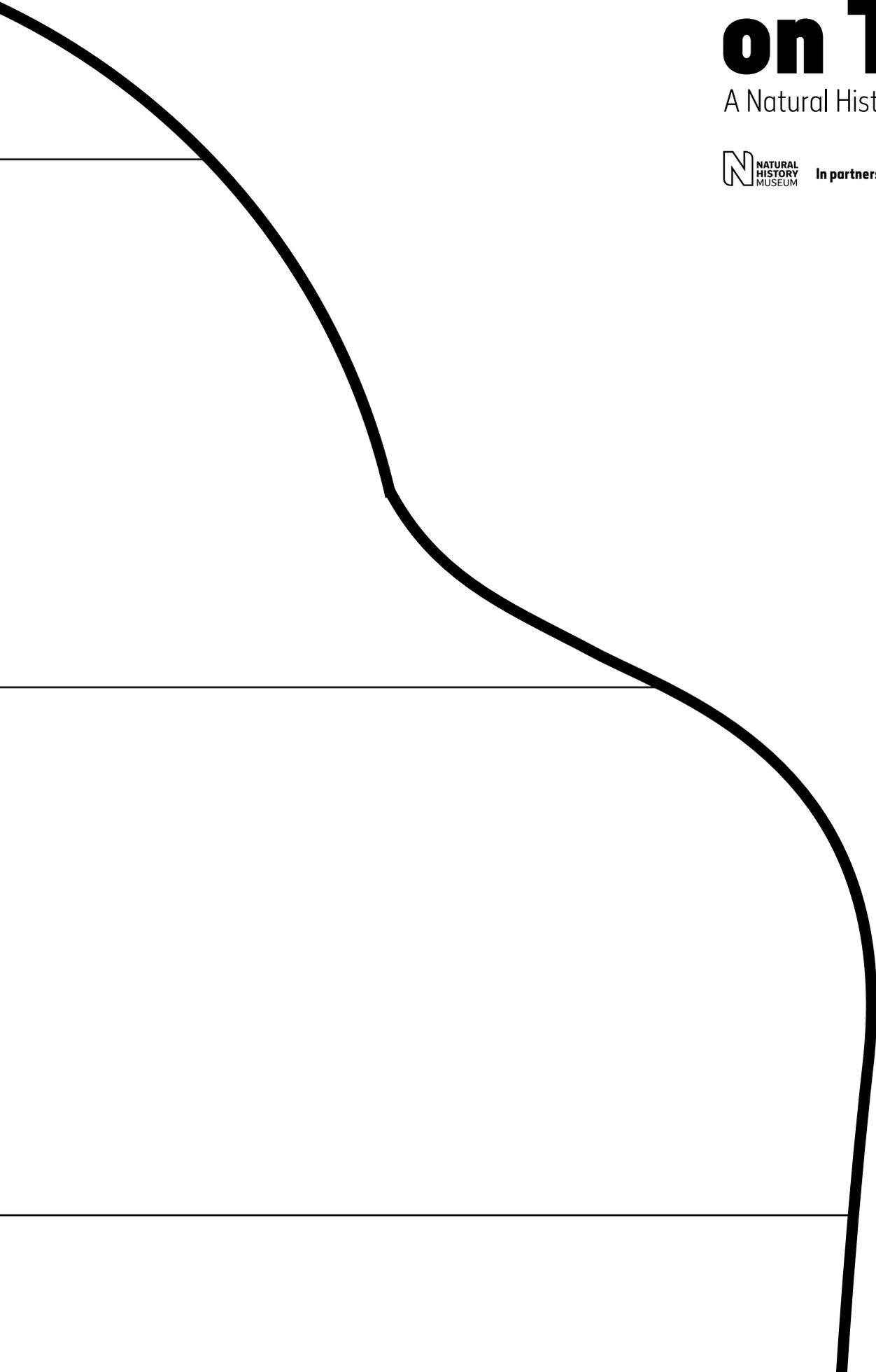
Dippy's femur

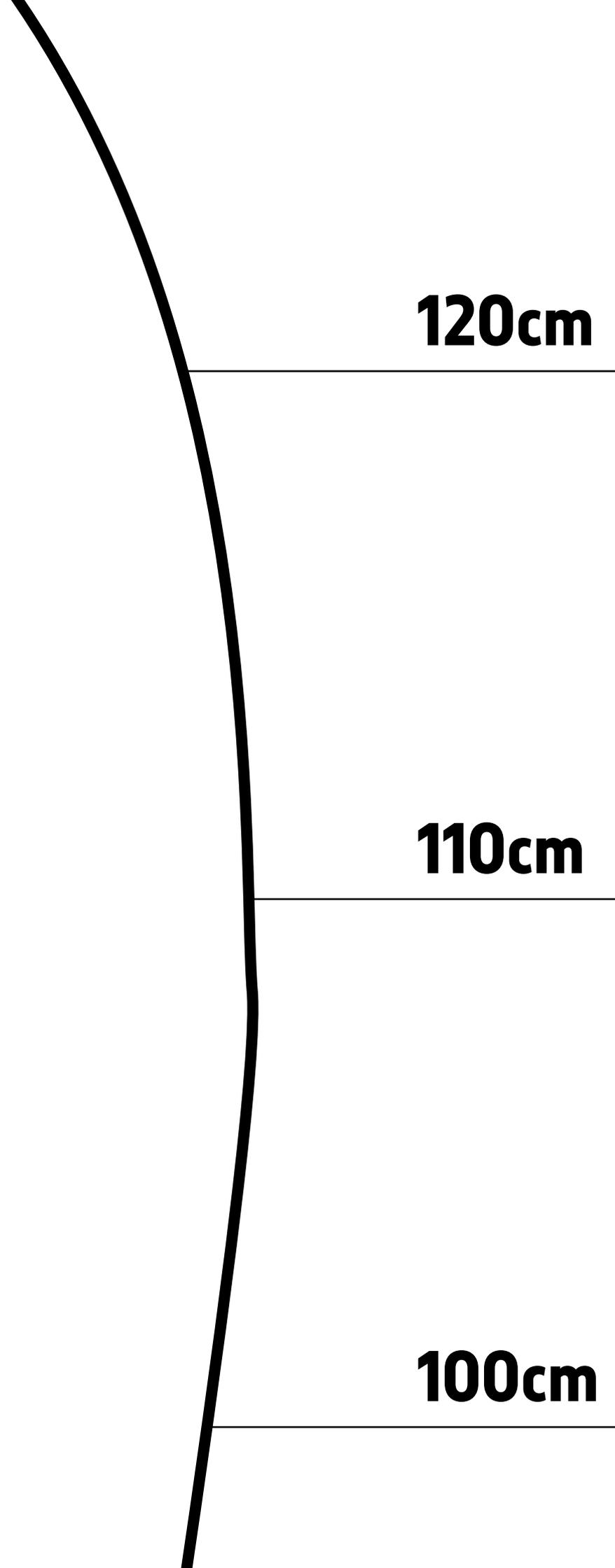
Dippy on Tour

A Natural History Adventure



In partnership with

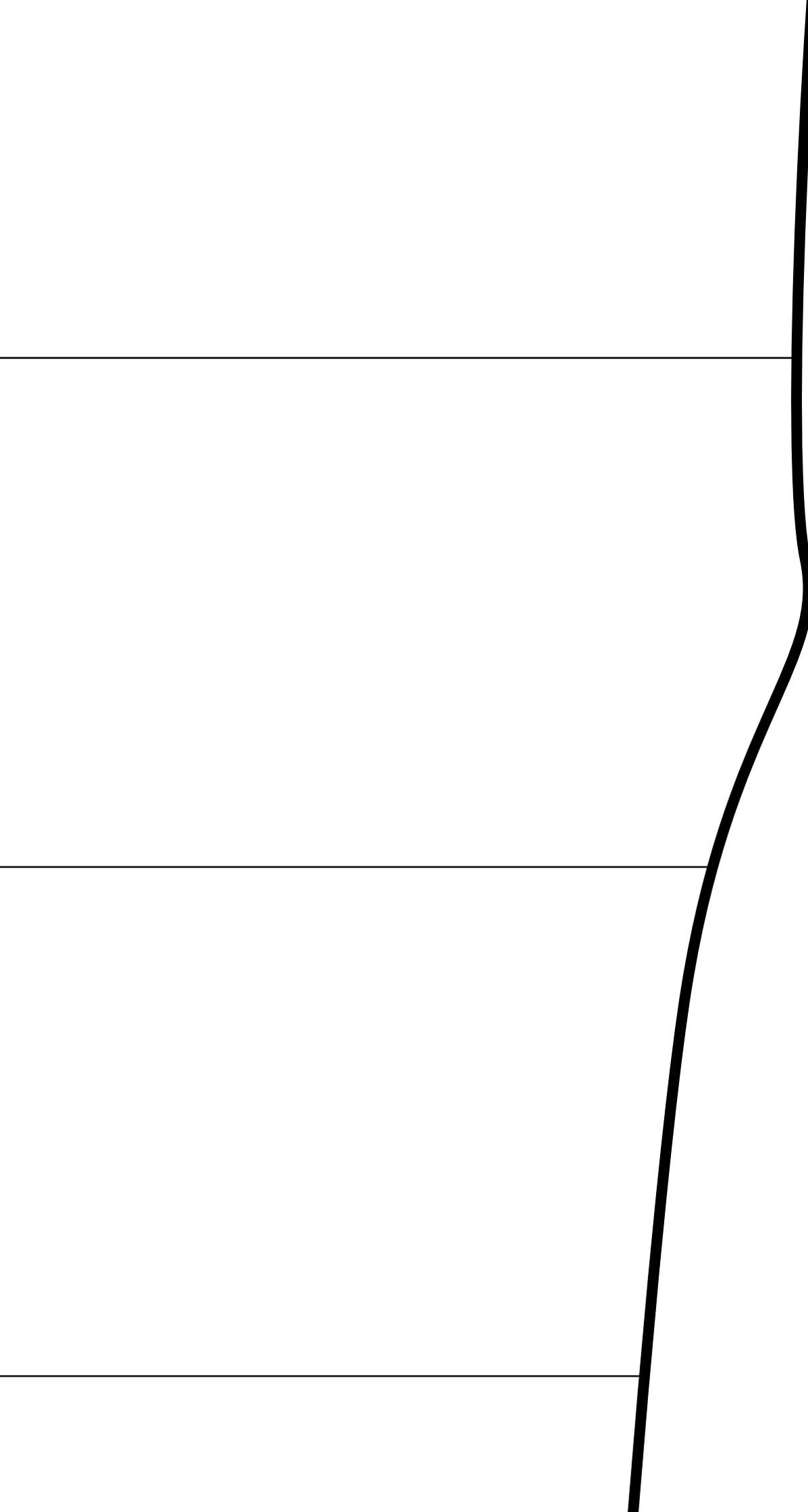


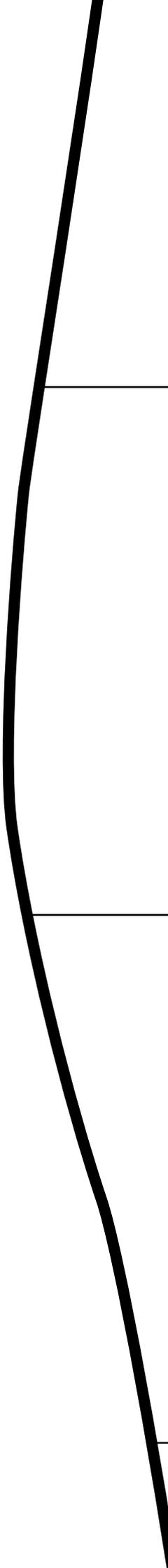


120cm

110cm

100cm

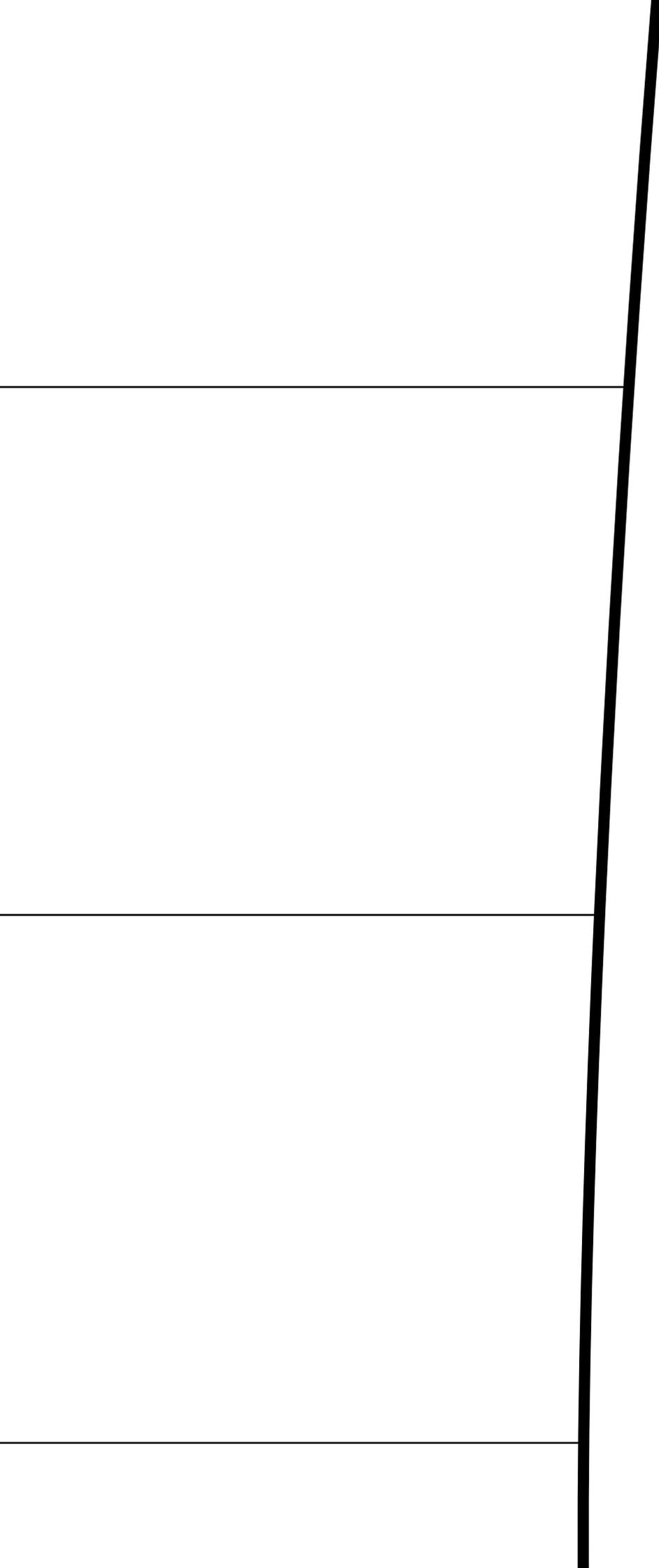


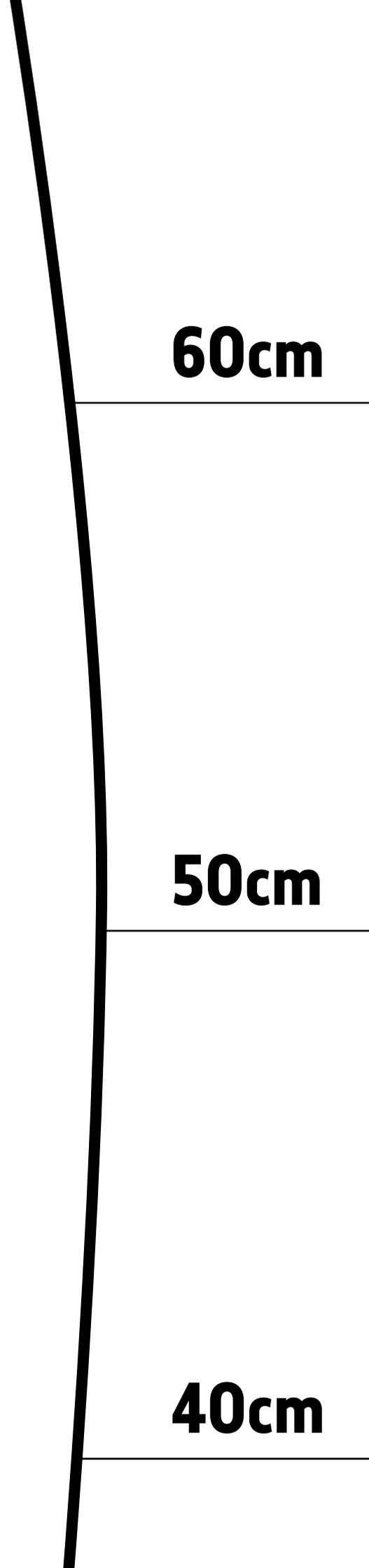


90cm

80cm

70cm

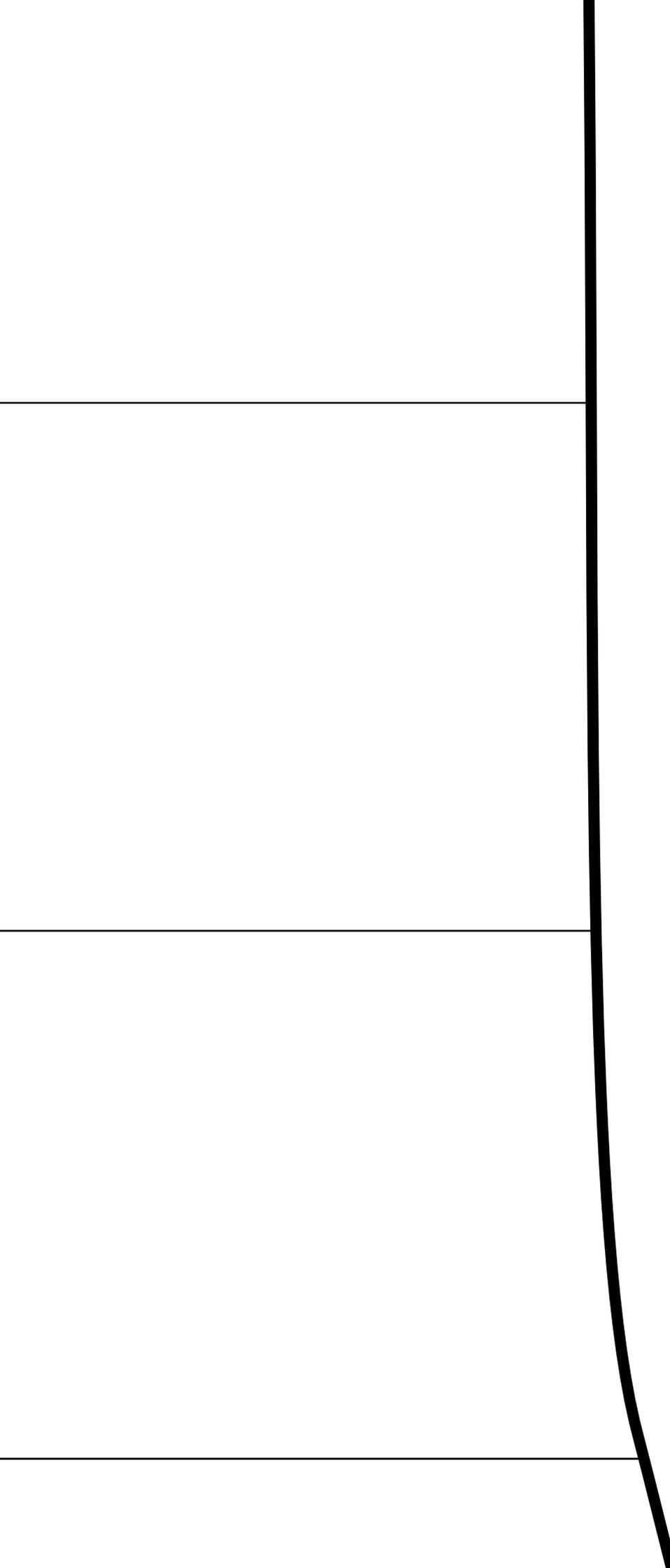


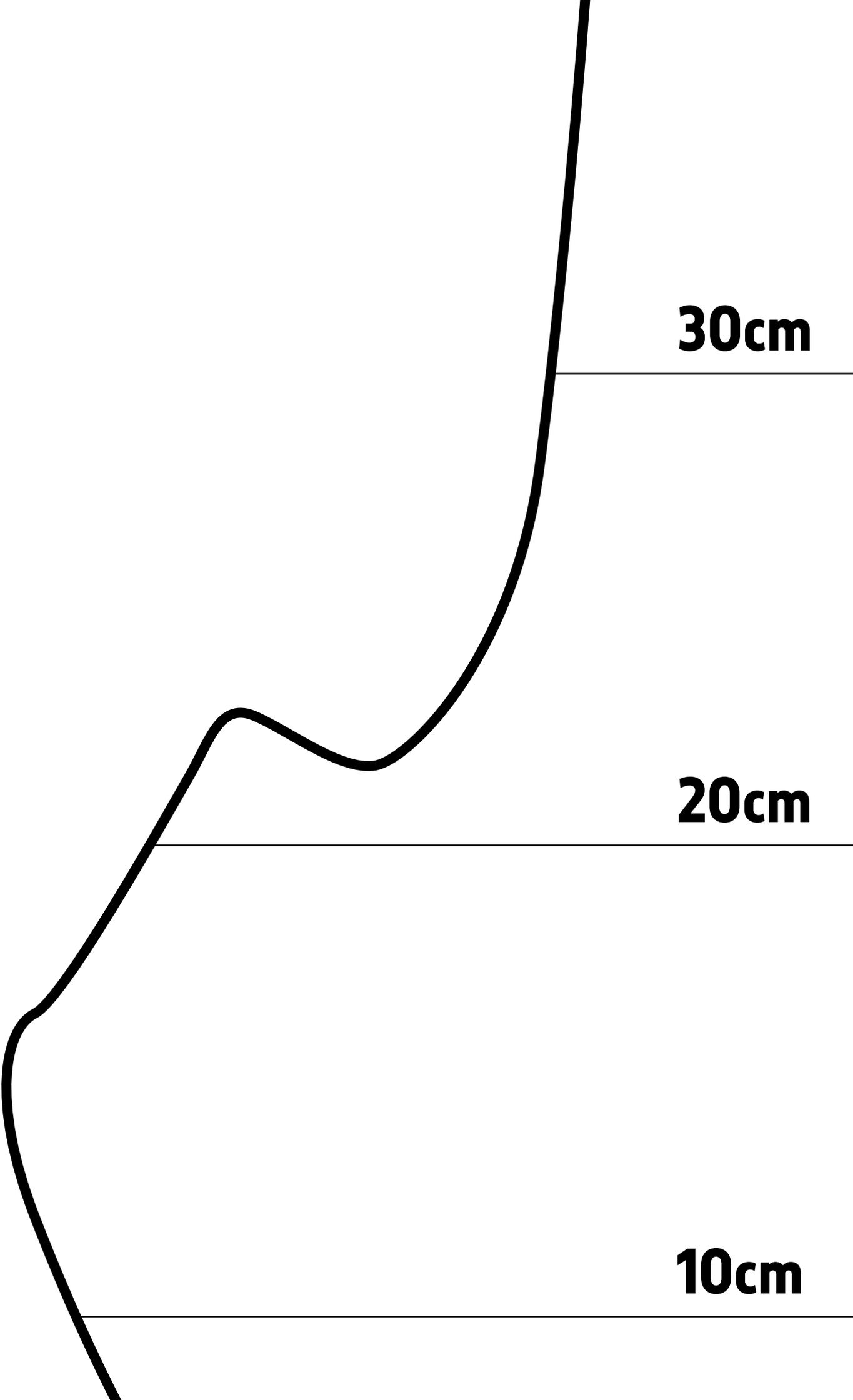


60cm

50cm

40cm

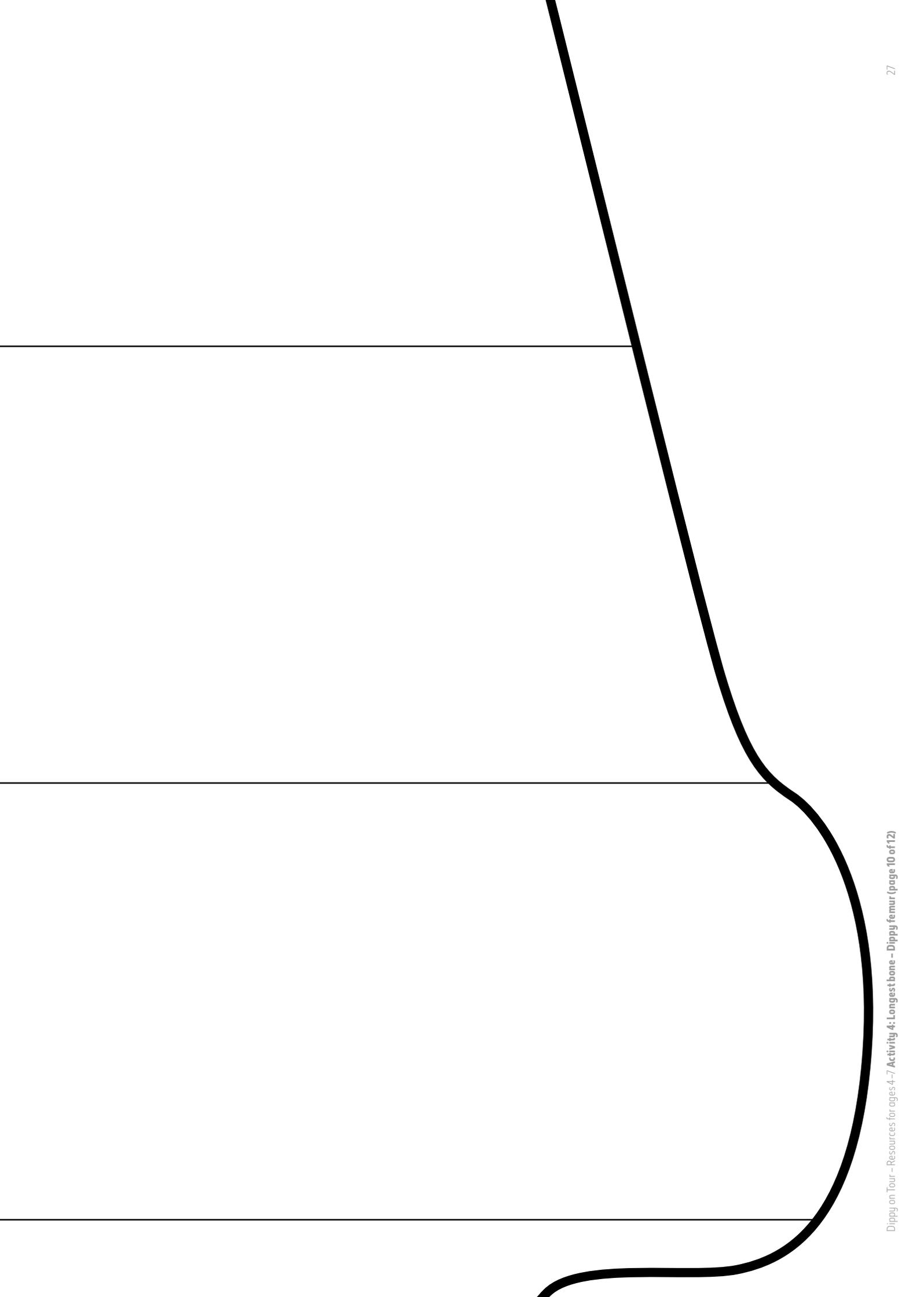


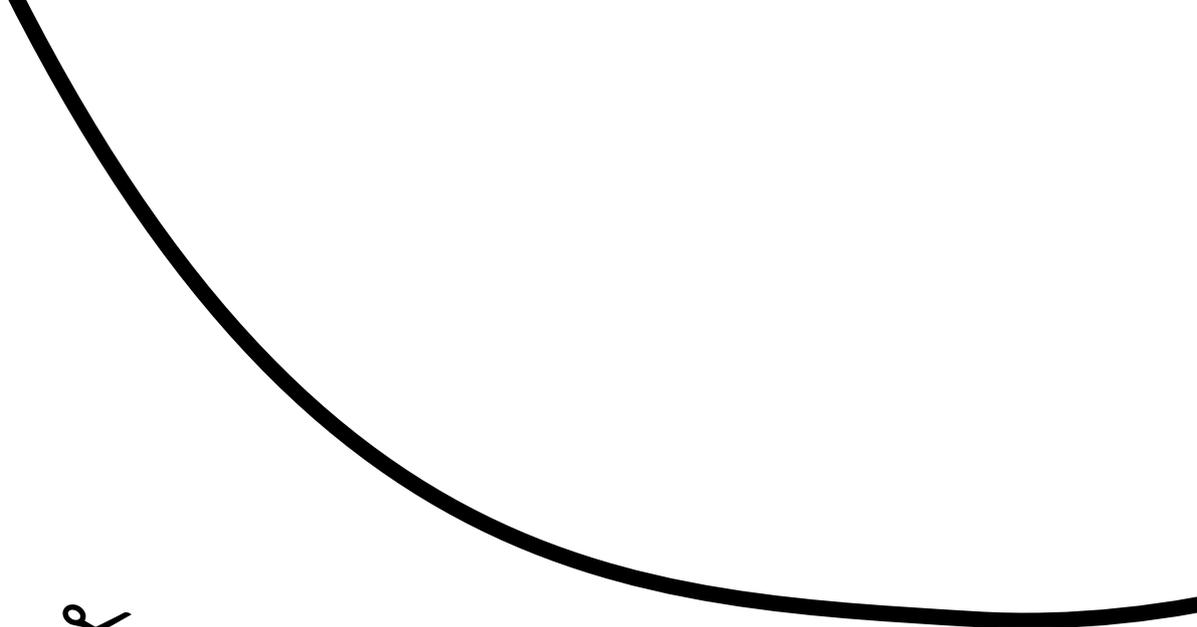
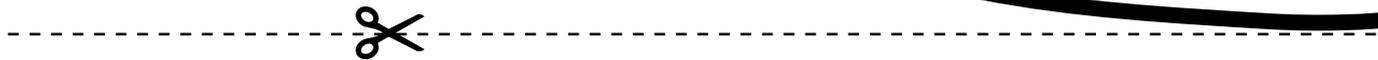


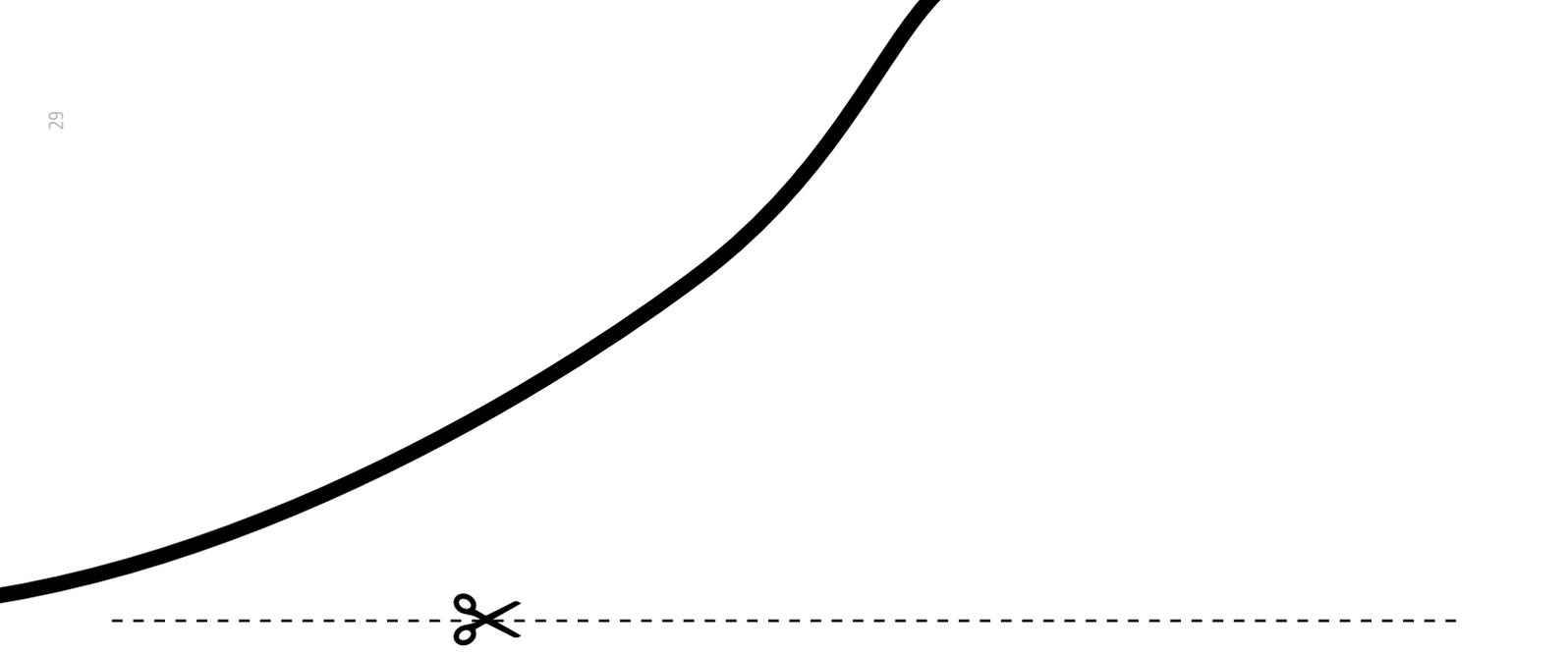
30cm

20cm

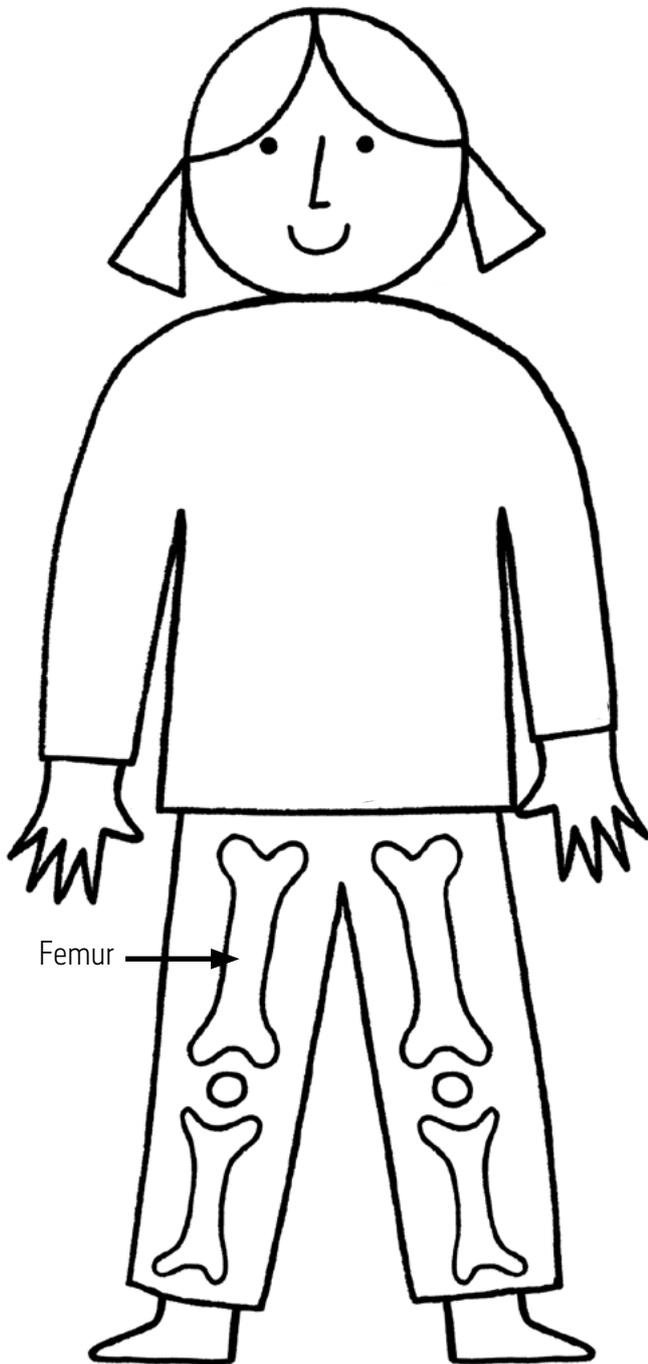
10cm







Activity 4: Longest bone



The longest bone in your body is called the **femur**, or **thigh bone**.

How long are your thigh bones? They are between your hip and your knee in each of your legs.

Measure and record the length of your thigh bone.

My thigh bone is cm long.

Measure and record the length of Dippy's thigh bone.

Dippy's thigh bone is cm long.

My thigh bone is **longer/shorter** than Dippy's thigh bone.

Not all dinosaurs were as big as Dippy. Can you find out the name of a dinosaur that was close to your height?

Measure yourself

My body length (height) is cm.

The name of a dinosaur that was the same length as me is



Activity 4: Teacher notes

Look at the worksheet and tell the children they are going to find out about their longest bone.

Compare the length to that of the same bone in Dippy, a *Diplodocus*. Can they see that all the animals on the worksheet share the same bone with them and Dippy?

Ask the children to identify their thigh bone, then measure and record the length of their thigh bones. They can then compare this mathematically to the length of Dippy's thigh bone from the life-size paper model and identify that their thigh bone is shorter. This could be done using lengths of string cut to the length of their thigh bones and counting how many times it fits into the length of Dippy's, or using metre sticks to measure both and using addition or subtraction to calculate the difference.

Dippy's thigh bone will be a similar length to the body length (standing height) of many of the children. Use this as the basis of a height chart for each child in the class. Each child can record their individual height on the worksheet.

Most sources of information on dinosaurs will give body length rather than height as a statistic. You could use this as part of a discussion about posture and how dinosaur height could vary depending on how the animal is standing (standing up tall, walking on all fours or crouching to hide). Measuring the length from nose to tail as if the animal is lying down will therefore be more consistent. You could ask the children to lie down on the floor with the femur model to take their body length measurements in the same way.

Ask the children to use reference books and information online, or print the cards from Activity 15 to find out the size of other dinosaurs and relate this to their own body length. Can each of them find the name of a dinosaur which was closest to them in length?

- You could use the femur length and height data to find out if the height fact is correct for the children in the class by using division or multiplication calculations. You could plot this data on a scatter chart, or make a bar or pie chart to show the range and frequency of different height to femur length ratios.
- You could use this information in a discussion about growth and development.
- You could make a display about what height different types of dinosaur are and who in the class would have been this type of dinosaur based on their height.

English curriculum links (Key Stage 1)

Mathematics

Number: addition and subtraction

Pupils should be taught to:

- read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- add and subtract one-digit and two-digit numbers to 20, including 0
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$

Number: fractions

Pupils should be taught to:

- recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity
- recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity

Measurement

Pupils should be taught to:

- compare, describe and solve practical problems for:
 - lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
- measure and begin to record the following:
 - lengths and heights

Year 2: Statistics

Pupils should be taught to:

- interpret and construct simple pictograms, tally charts, block diagrams and tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask-and-answer questions about totalling and comparing categorical data





Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The world around us

Interdependence

Pupils should be enabled to explore:

- Who am I?
- What am I?
- Am I the same as everyone else?
- What else is living?
- How do living things survive?

Foundation: Mathematics and numeracy

Measures

Pupils should be enabled to:

- compare two objects of different length/weight/capacity/area, understand and use the language of comparison
- find an object of similar length, weight, capacity, area talk about their findings in terms of 'just about the same' length, weight, capacity, area
- begin to explore the notion of conservation of length, weight, capacity in practical situations engage in discussion about their observations
- choose and use, with guidance, non-standard units to measure length/capacity/weight talk about their work

Scottish curriculum links (Early and First)

Numeracy and mathematics: experiences and outcomes

Number, money and measure: number and number process

I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways. **MNU 0-03a**

I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed. **MNU 1-03a**

Number, money and measure: Fractions, decimal fractions and percentages

I can share out a group of items by making smaller groups and can split a whole object into smaller parts. **MNU 0-07a**

Through taking part in practical activities including use of pictorial representations, I can demonstrate my understanding of simple fractions which are equivalent. **MTH 1-07c**

Measurement

I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others. **MNU 0-11a**

Welsh curriculum links (Foundation Phase)

Knowledge and understanding of the world

Skills

To experience the familiar world through investigating the indoor and outdoor environment, children should be encouraged to be curious and find out by:

- making comparisons and identifying similarities and differences

Range

Myself and other living things

Children should be given opportunities to:

- learn the names and uses of the main external parts of the human body and plants
- observe differences between animals and plants, different animals, and different plants in order to group them
- identify the similarities and differences between themselves and other children
- learn about the senses that humans and other animals have and use to enable them to be aware of the world around them



Activity 5: Dinosaur feet

Investigate foot length and structure in humans, dinosaurs and living animals.

Learning outcomes

Children will:

- make measurements and record simple data
- estimate proportions and test the answer with measurements and using mathematics
- use mathematics to help answer scientific questions
- understand that other animals have differently shaped feet to people
- understand that different types of dinosaurs had differently shaped feet to each other

Resources required

Provided in the Natural History Museum package:

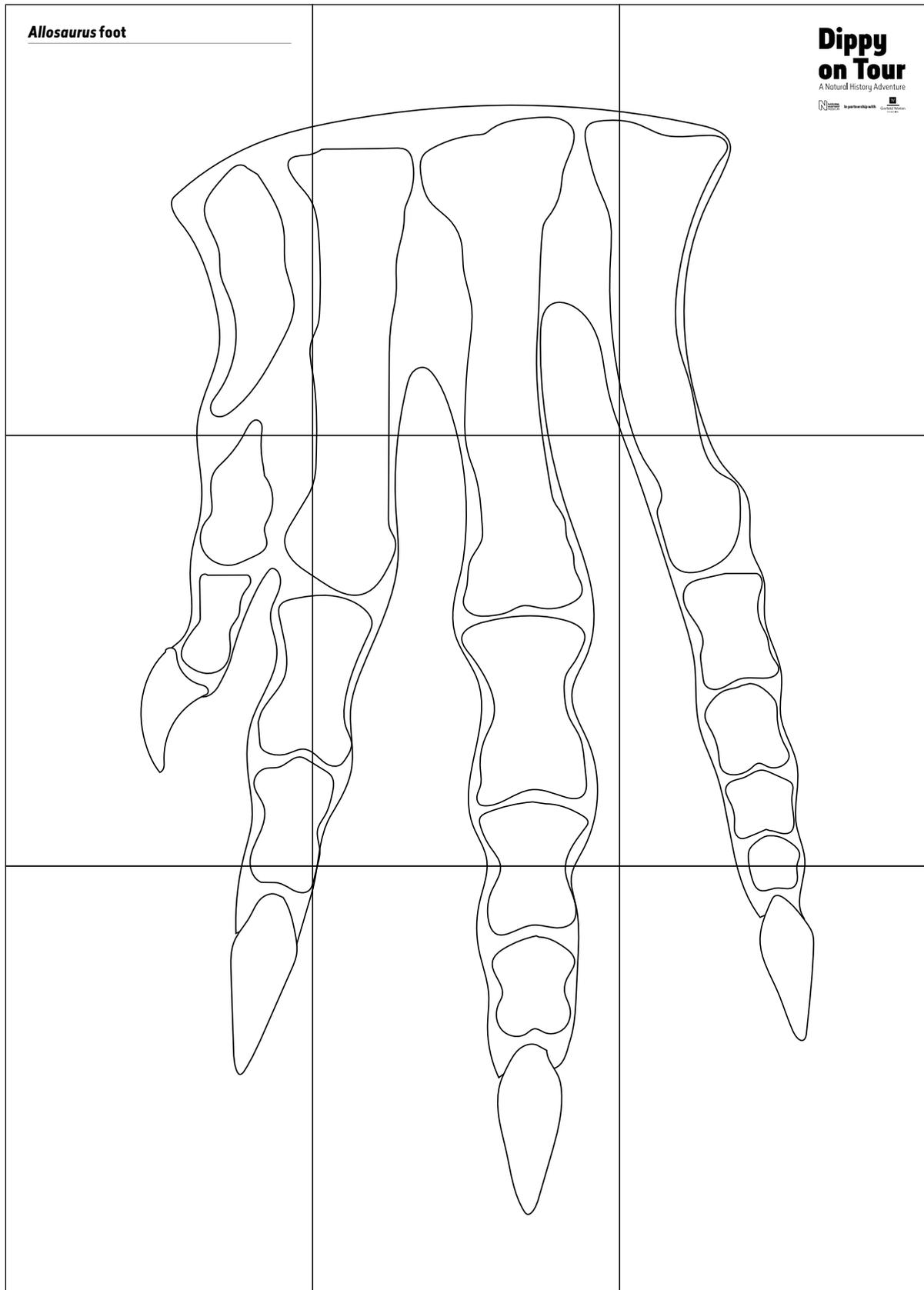
- paper outlines of *Allosaurus* (2), *Hypsilophodon* (2), *Diplodocus* (4), elephant (4) and emu (2) feet
- drawings of human foot bones

Provided by school:

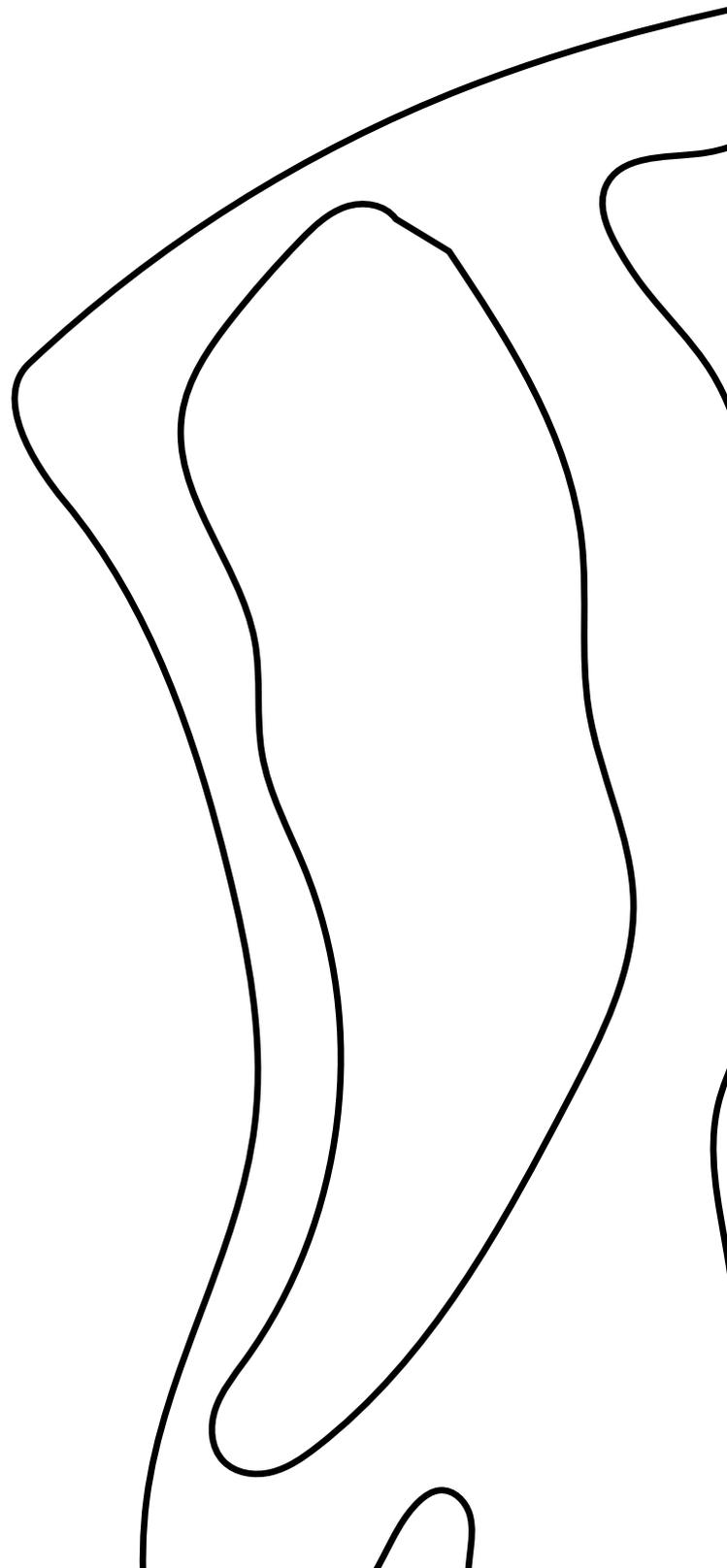
- printing

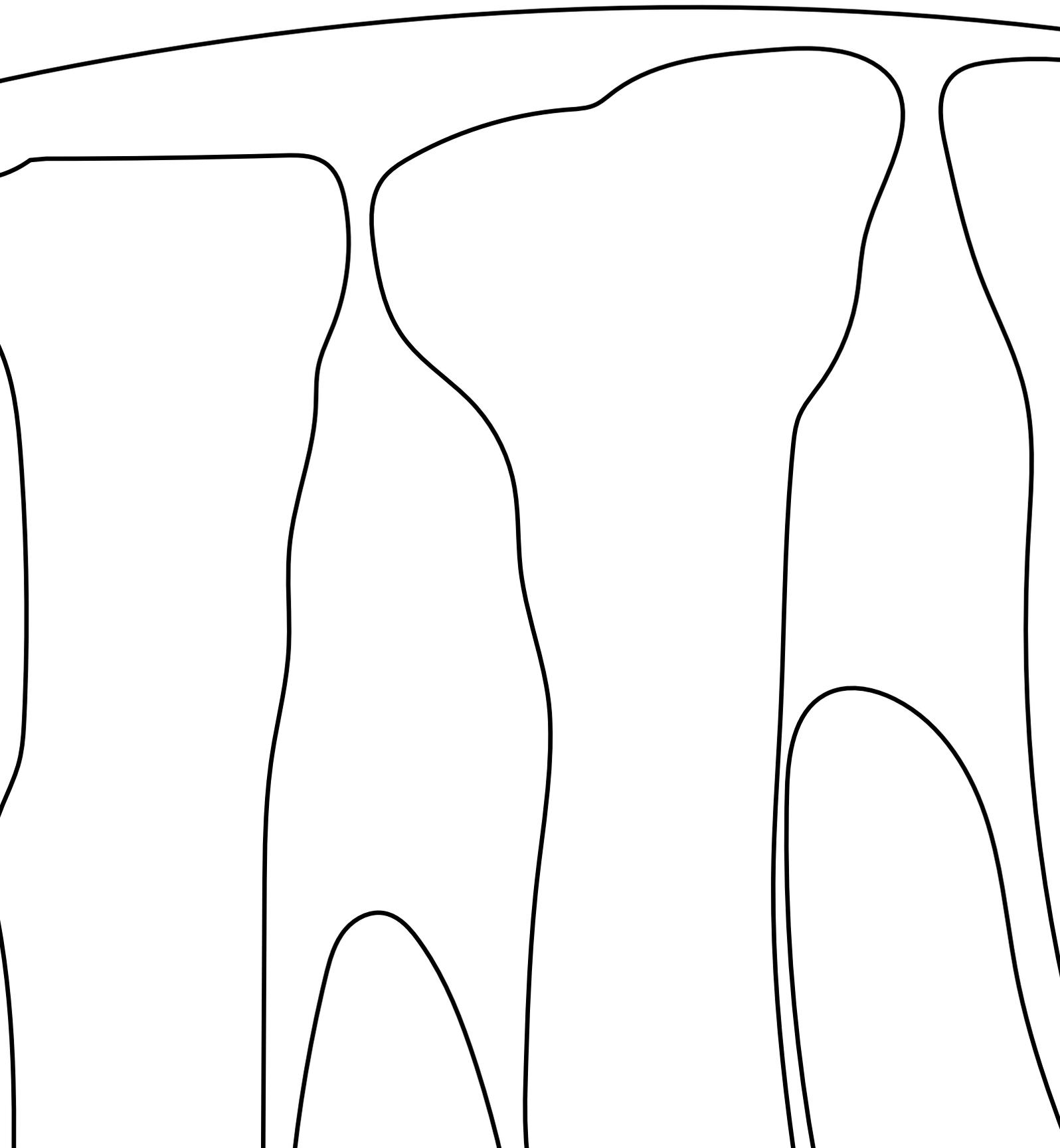
Activity 5: Dinosaur feet

Print the following nine pages and tape them together to create a life-size *Allosaurus* foot.



***Allosaurus* foot**



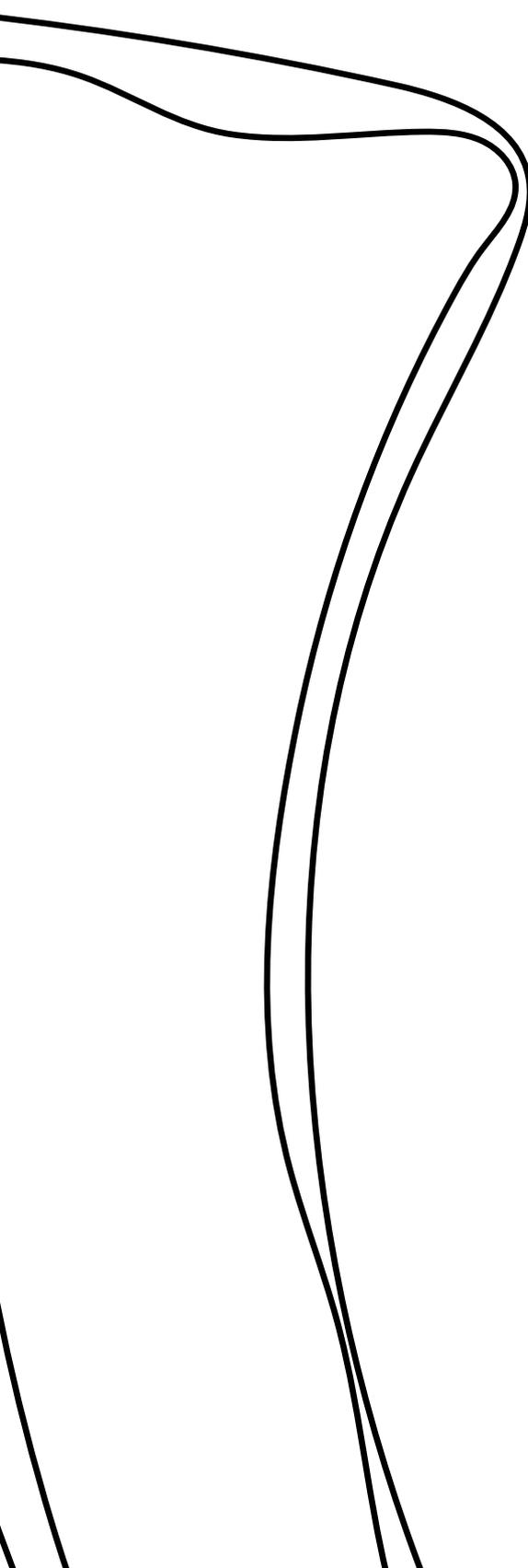


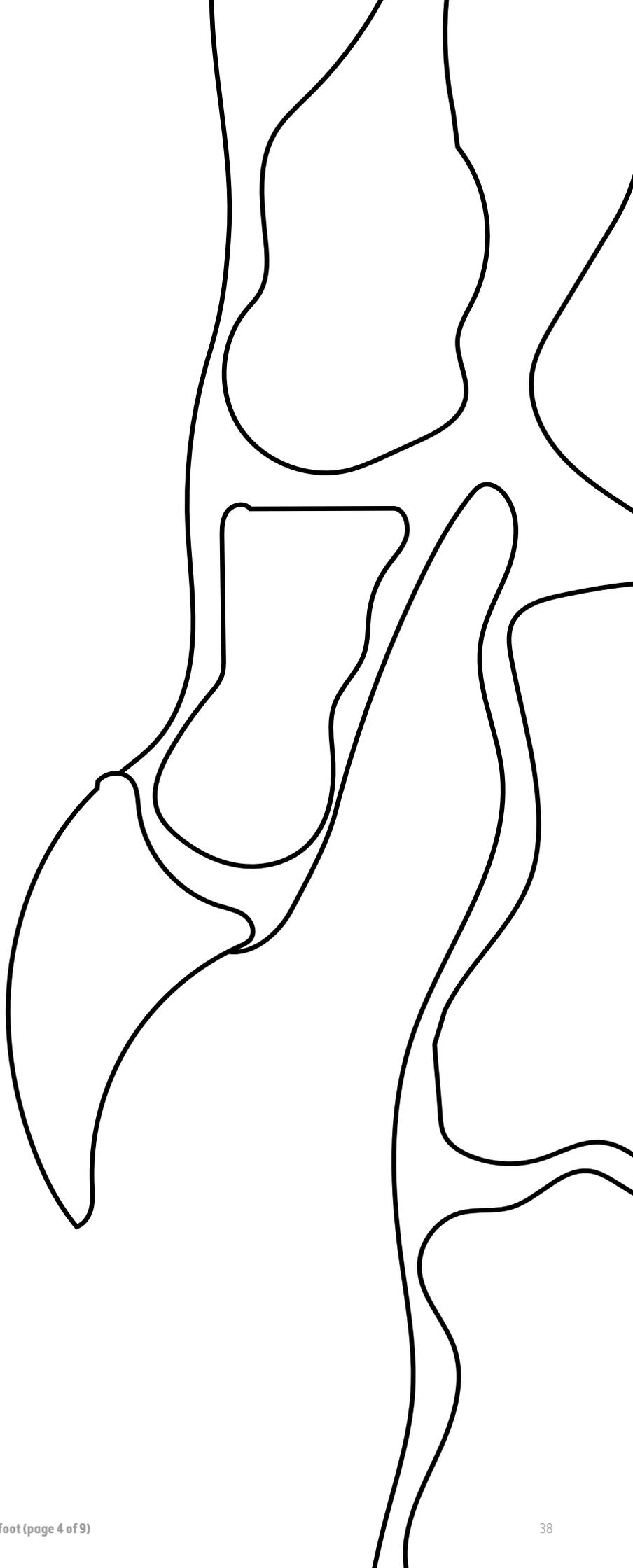
Dippy on Tour

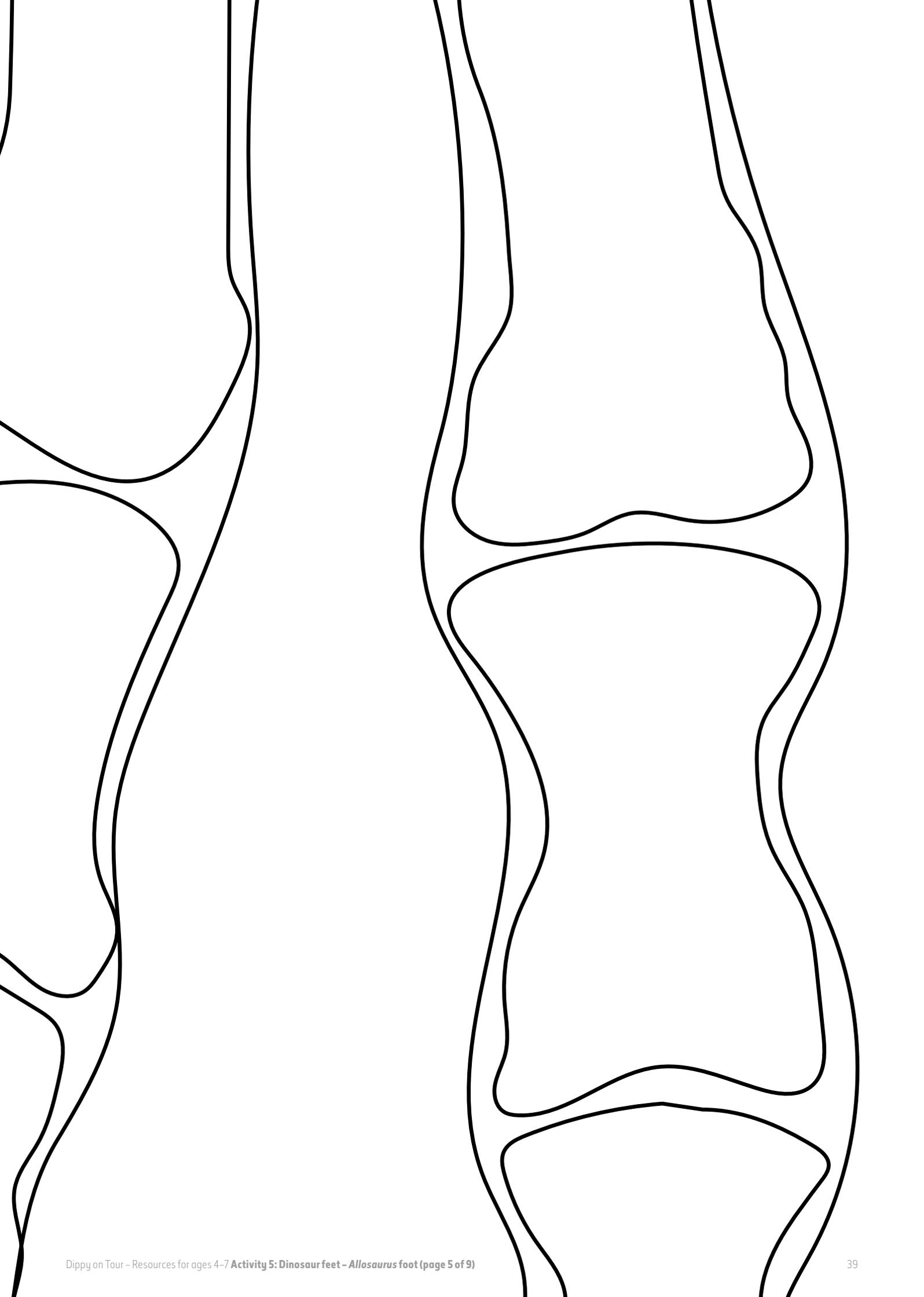
A Natural History Adventure

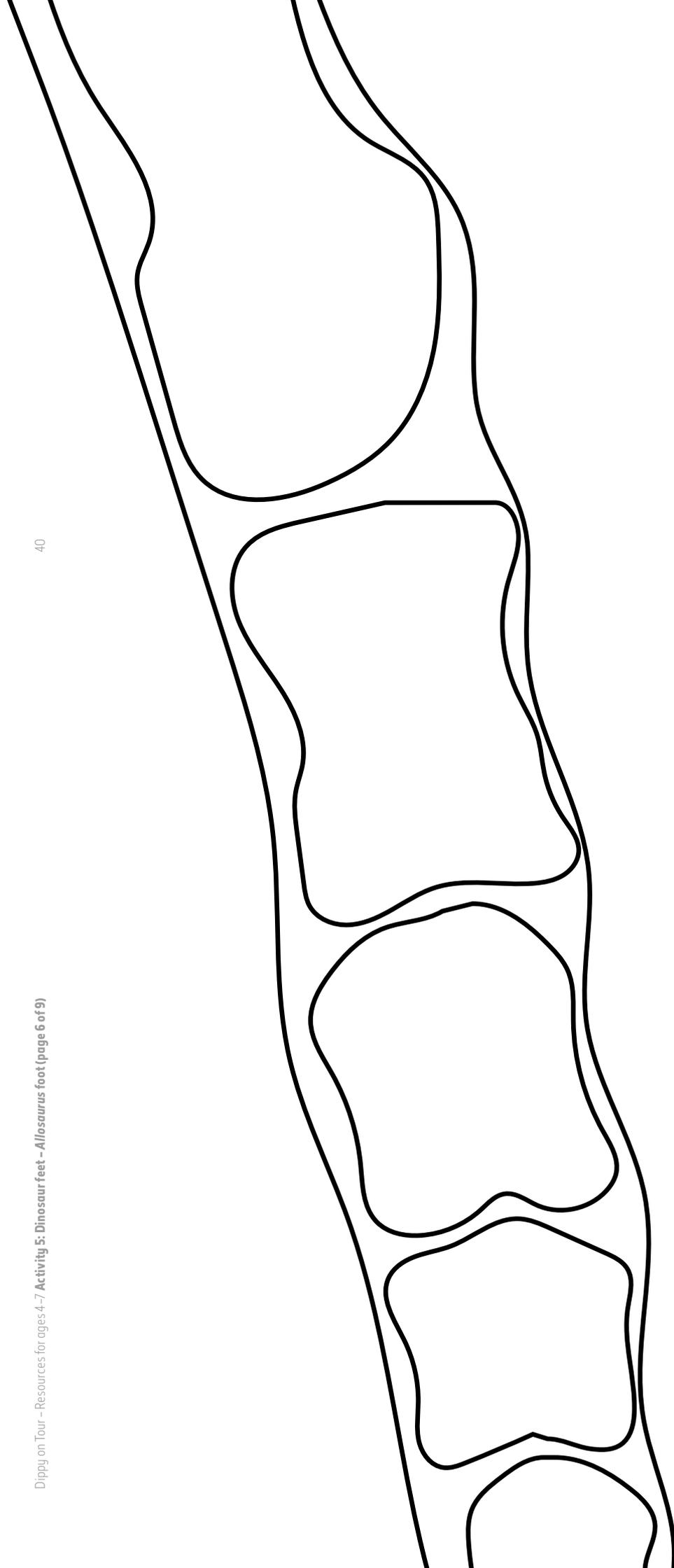


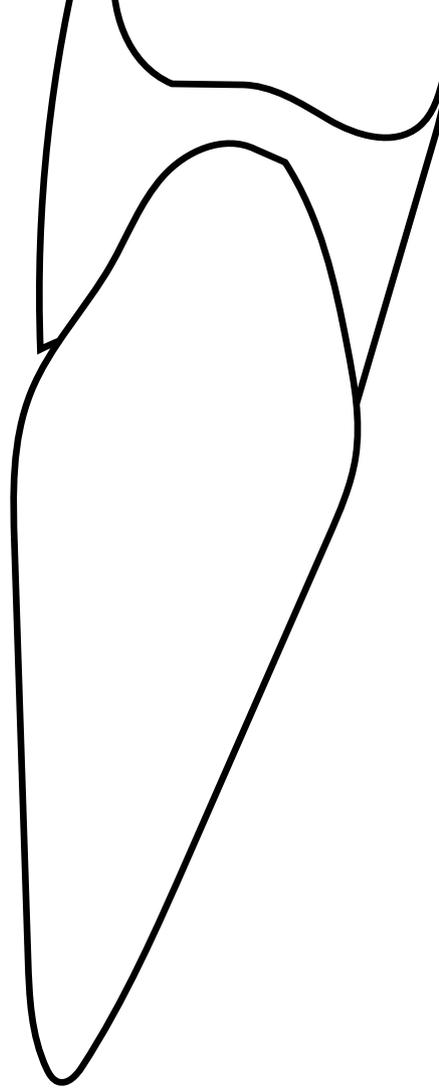
In partnership with

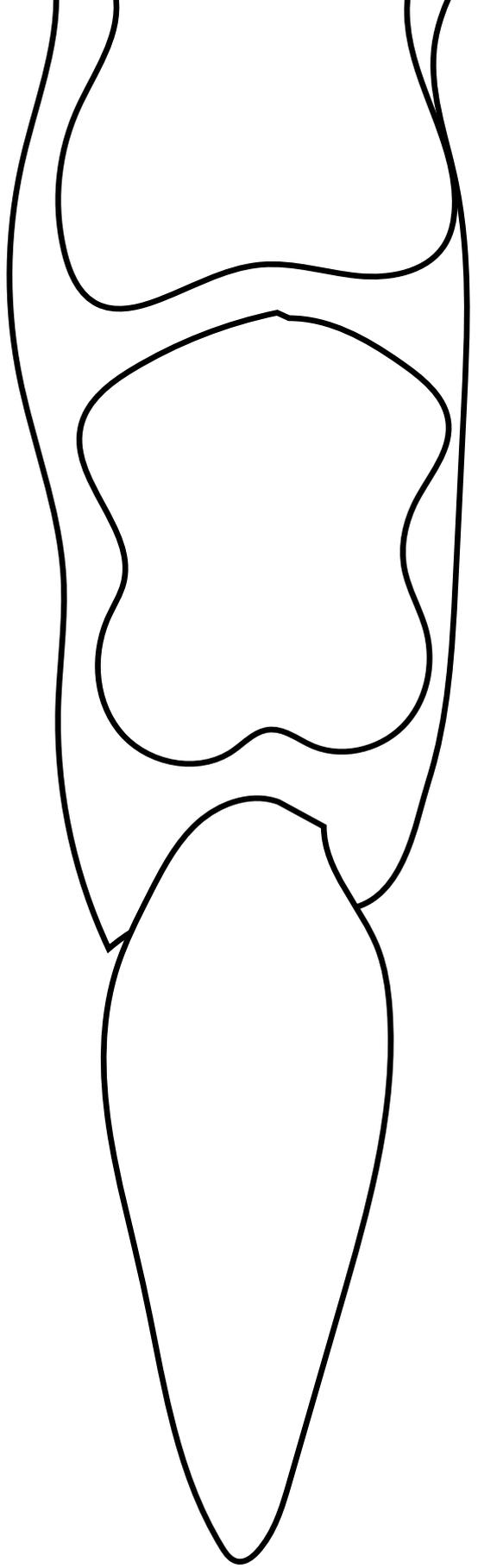








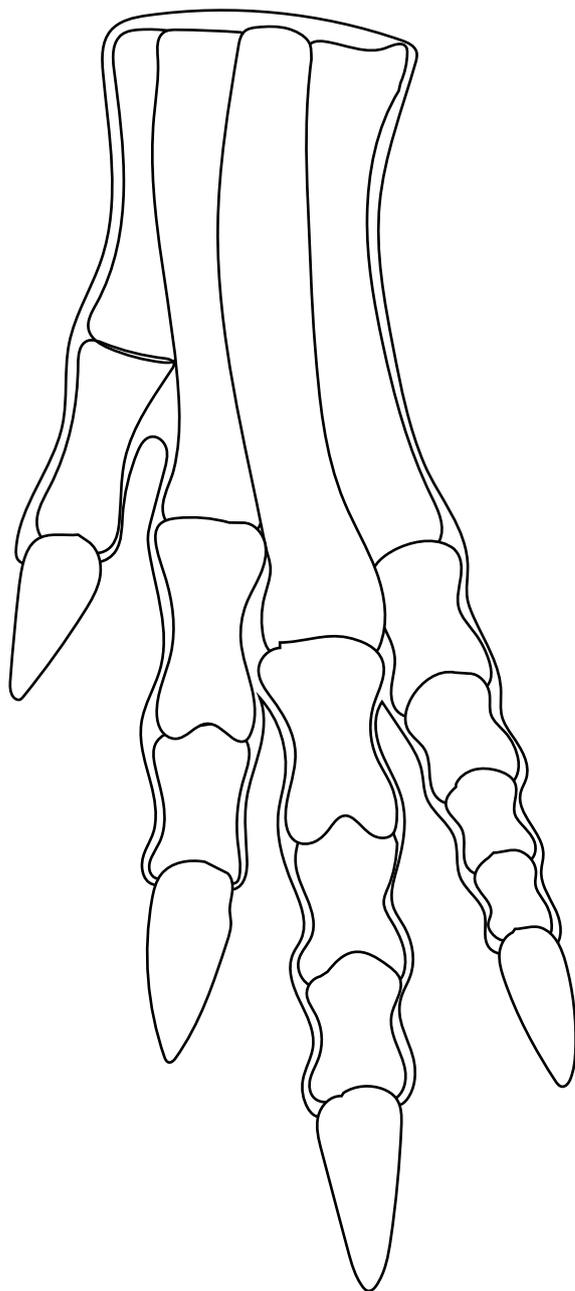






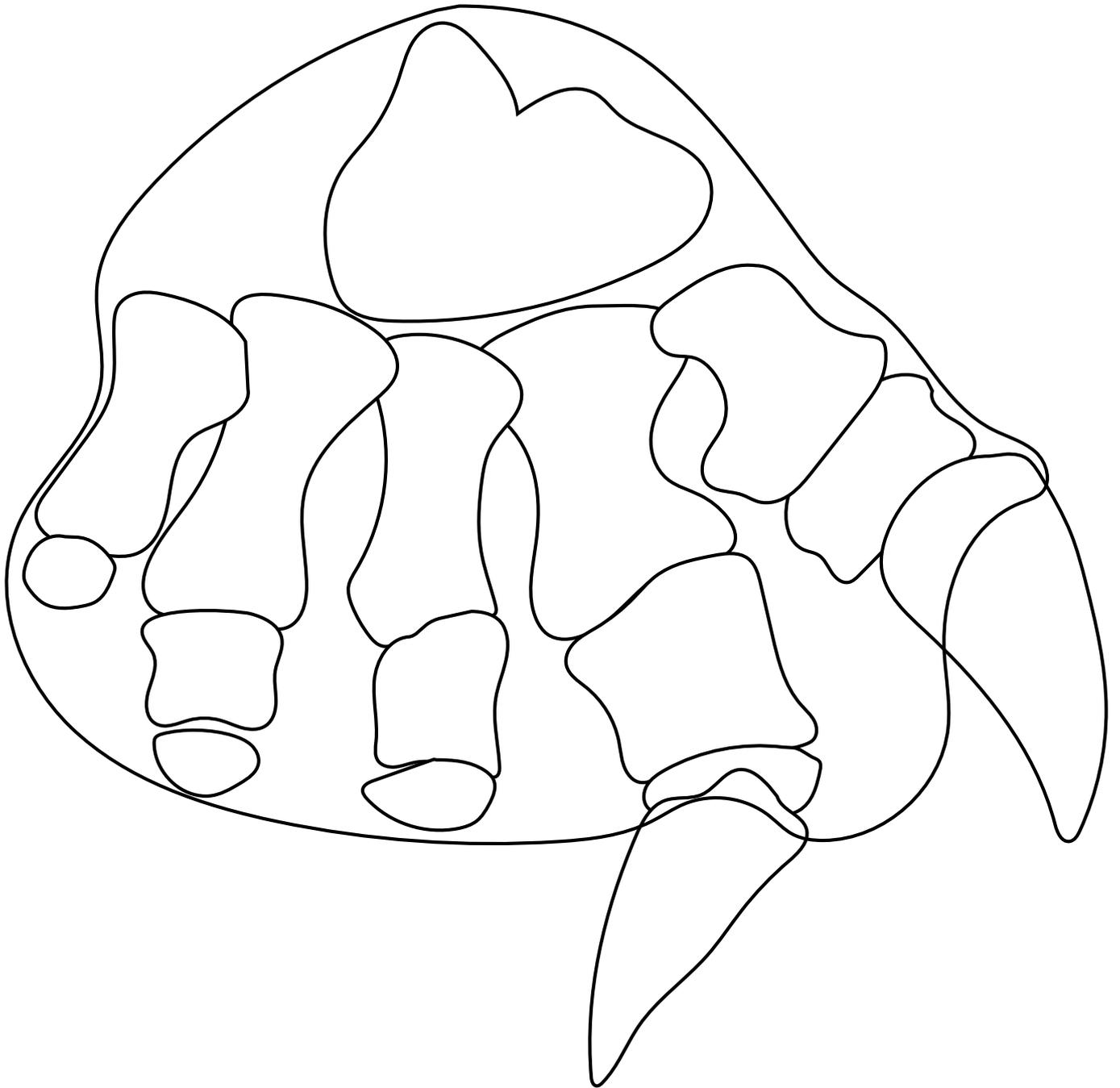
Activity 5: Dinosaur feet

Life-size *Hypsilophodon* foot.



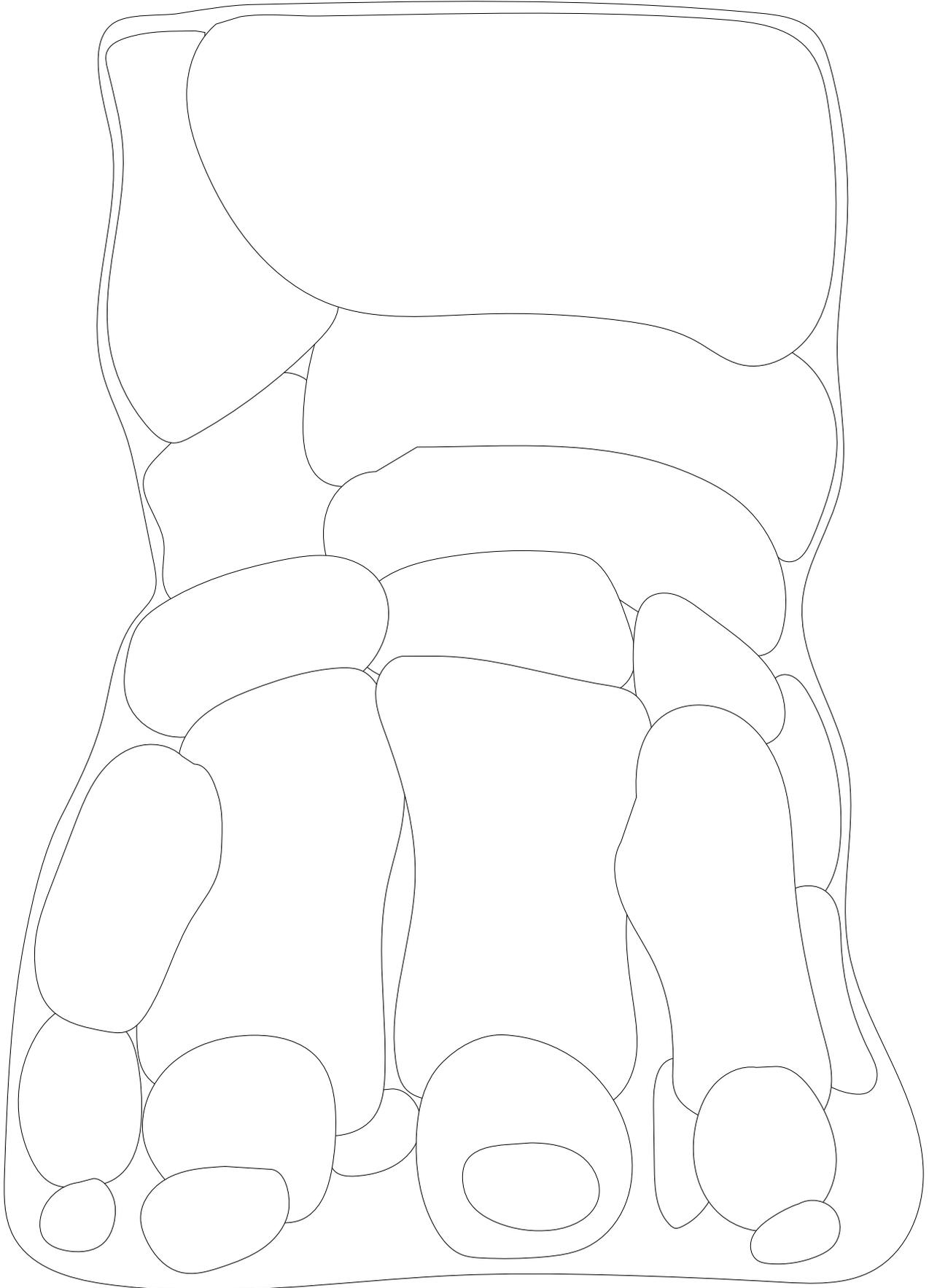
Activity 5: Dinosaur feet

Diplodocus foot (approximately 30 per cent life-size).
Enlarge by 333 per cent for a life-size print.



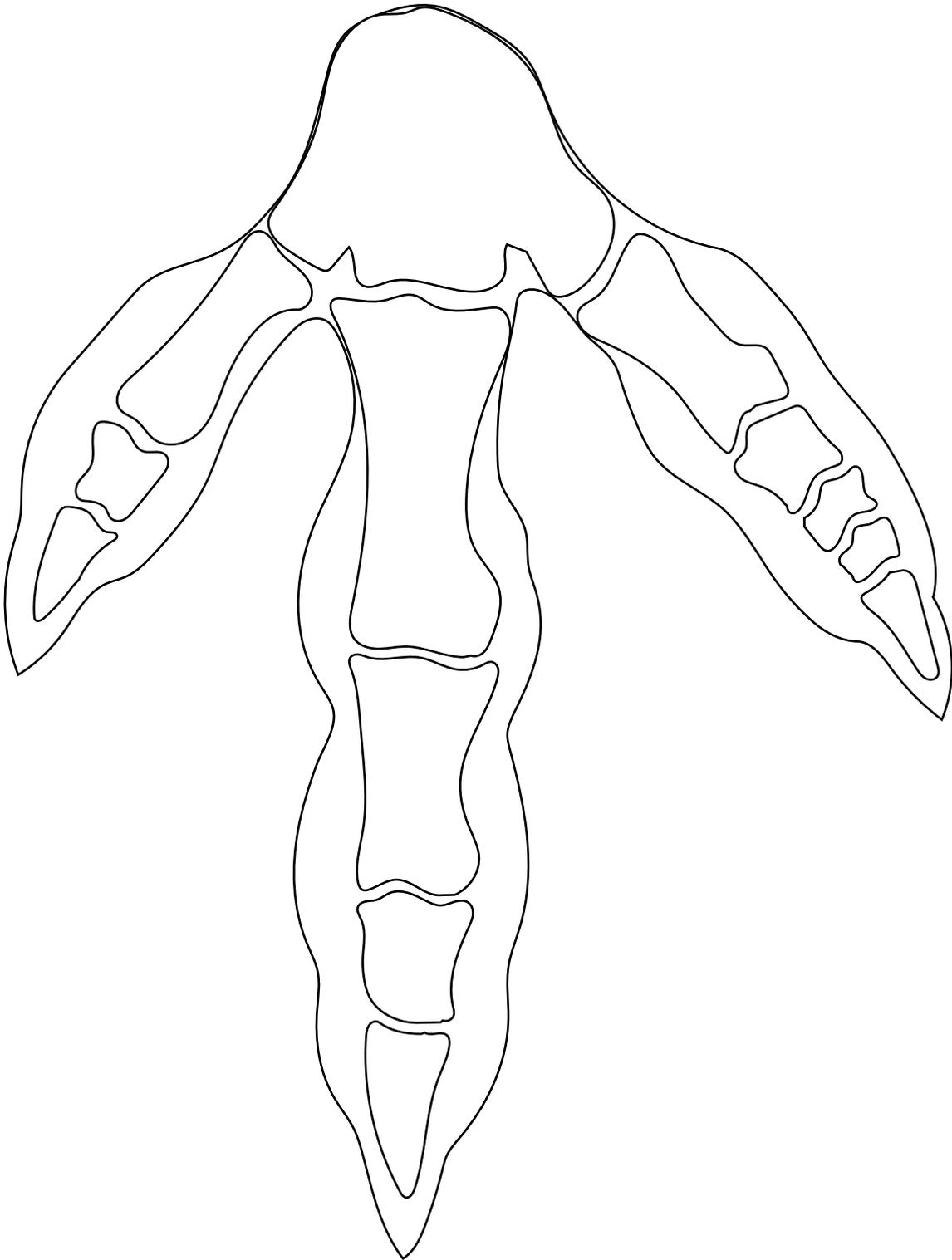
Activity 5: Dinosaur feet

Elephant foot (approximately 35 per cent life-size).
Enlarge by 286 per cent for a life-size print.



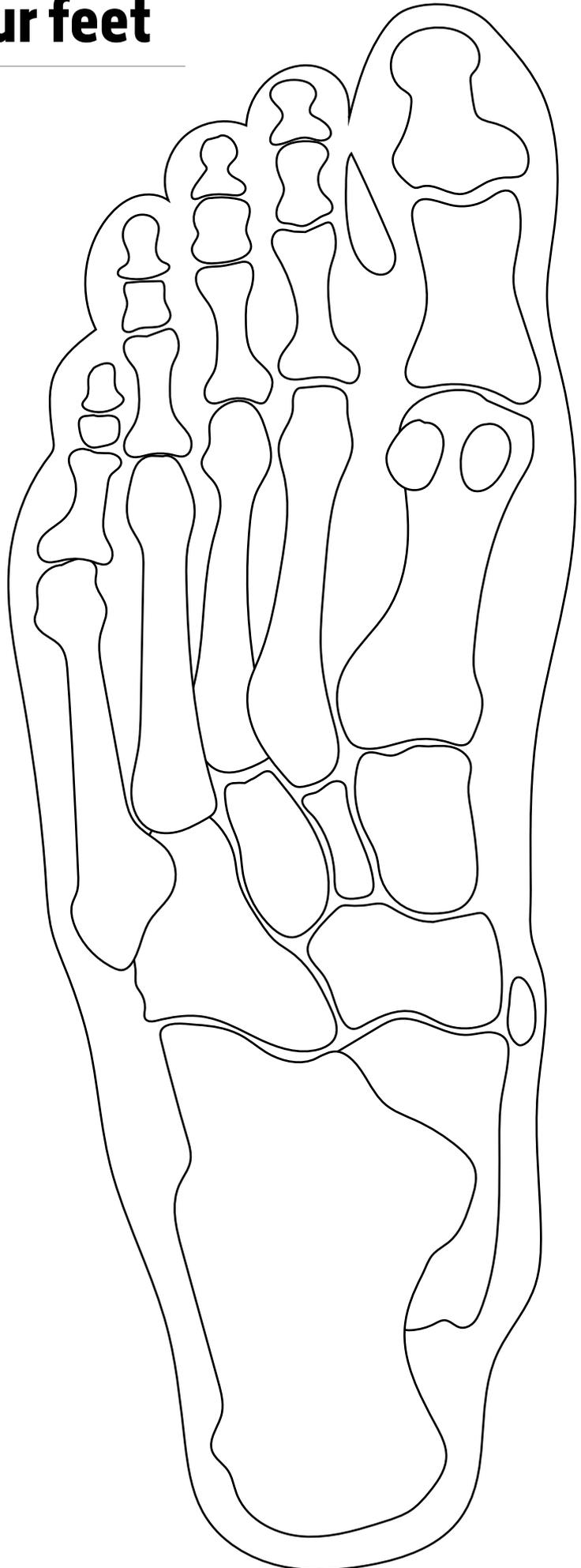
Activity 5: Dinosaur feet

Life-size emu foot.



Activity 5: Dinosaur feet

Life-size human foot.





Activity 5: Teacher notes

Dippy had huge, rounded feet and left circular footprints, a bit like those of an elephant, though much bigger.

Allosaurus had feet with three long toes and left very distinctive prints, a bit like those of a crow, though much bigger.

Look at your feet and compare them to dinosaur feet. Talk about the similarities and differences.

Look at your foot length and estimate the number of times it would fit into the length of the dinosaur foot.

Check your estimate by measuring the length of your feet. Pick the largest measurement work out how many times your foot length would fit into the length of the dinosaur feet.

Count the number of toes. Who has the most toes? Who has the least toes? You, Dippy or *Allosaurus*?

How many toes in total does each dinosaur have? Count or use multiplication. *Diplodocus* walked on four limbs.

Palaeontologists (scientists who study dinosaurs) use the length of a footprint to give an estimate of the total height of some types of dinosaur. The larger the footprint, the taller the dinosaur. Does this work for the children in the class? Record the height of each child and put both height and foot length in order. Do the tallest children have the longest feet?

- you could compare the number of toes of other animals from pictures
- you could look at the shape of the feet of other animals from pictures and sort and classify them

English curriculum links (Key Stage 1)

Working scientifically

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- gathering and recording data to help in answering questions

Measurement

Pupils should be taught to:

- compare, describe and solve practical problems for:
 - lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
- measure and begin to record the following:
 - lengths and heights

Number: Multiplication and division

Pupils should be taught to:

- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

Mathematics and numeracy

Number

Understanding number and number notation.

Counting and number recognition.

Foundation: Measures

Pupils should be enabled to:

- compare two objects of different length/weight/capacity/area understand and use the language of comparison
- order three objects of different length, weight, capacity, area talk about the ordering using appropriate language
- find an object of similar length, weight, capacity, area talk about their findings in terms of 'just about the same' length, weight, capacity, area
- begin to explore the notion of conservation of length, weight, capacity in practical situations engage in discussion about their observations
- choose and use, with guidance, non-standard units to measure length/capacity/weight talk about their work





Key Stage 1: Measures

Pupils should be enabled to:

- understand and use the language associated with length, 'weight', capacity, area and time
- use non-standard units to measure and recognise the need for standard units
- know and use the most commonly used units to measure in purposeful contexts
- make estimates using arbitrary and standard units
- choose and use simple measuring instruments, reading and interpreting them with reasonable accuracy

Scottish curriculum links (Early and First)

Numeracy and mathematics: Experiences and outcomes

Number, money and measure: Estimation and rounding

I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me. **MNU 0-01a**

I can share ideas with others to develop ways of estimating the answer to a calculation or problem, work out the actual answer, then check my solution by comparing it with the estimate.

MNU 1-01a

Number, money and measure: Number and number process

I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed. **MNU 1-03a**

Welsh curriculum links (Foundation Phase)

Mathematical Development

Using number skills

- use number facts and relationships

Using measuring skills

- length, weight/mass, capacity

Using data skills

- collect and record data
- present and analyse data
- interpret results



Activity 6: Dinosaur dinners

Sort and match dinosaur diets and learn about how different diets are classified as carnivore, herbivore and omnivore.

Learning outcomes

Children will:

- learn that dinosaurs had different diets
- learn or test existing understanding of the words carnivore, herbivore and omnivore
- match dietary terms to different food materials to demonstrate understanding of what is part of different diets

Resources required

Provided in the Natural History Museum package:

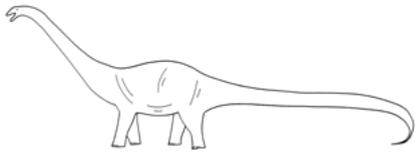
- word and picture cards

Provided by school:

- printing – enough for pair, small group or individual activity

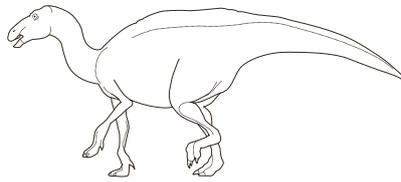
Please remember to print the cards on one side only.

Activity 6: Dinosaur dinners



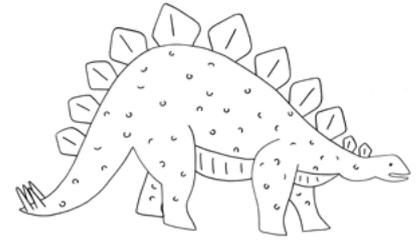
Diplodocus

Ate plants: probably leaves from trees, mostly tree ferns and conifers.



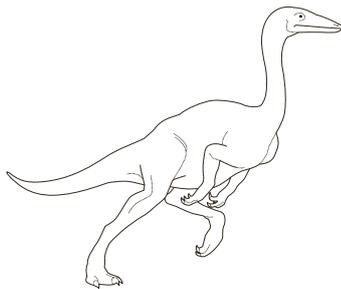
Iguanodon

Ate plants: probably ginkgo, tree fern, conifers and horsetails.



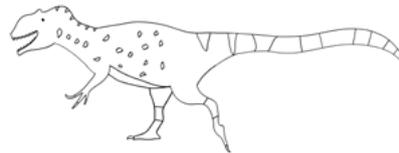
Stegosaurus

Ate plants: horsetails, mosses, tree fern and ginkgos.



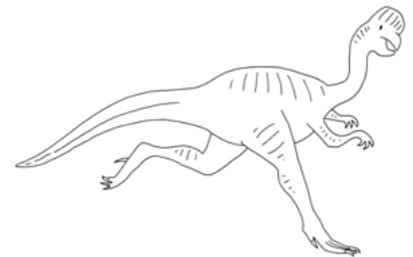
Coelophysis

Preyed on insects and small lizards.



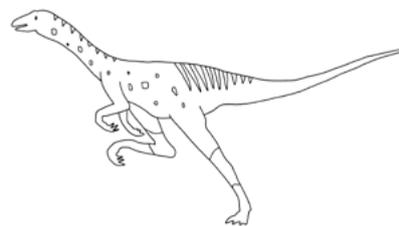
Allosaurus

Preyed on other dinosaurs, including *Diplodocus*.



Oviraptor

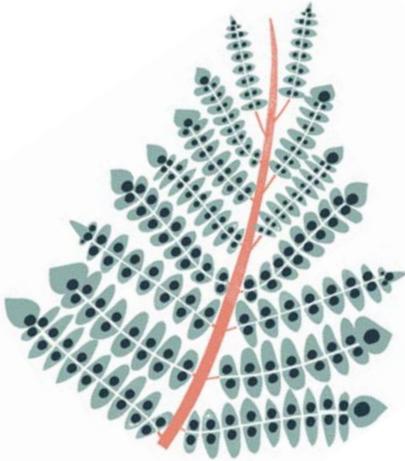
Ate low plants, small lizards and possibly eggs.



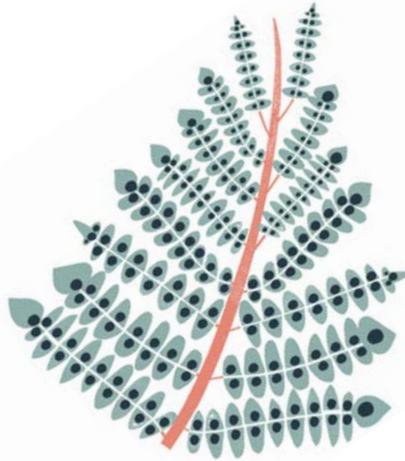
Ornithomimus

Ate insects, crustaceans, fruits, eggs, leaves, lizards and small mammals.

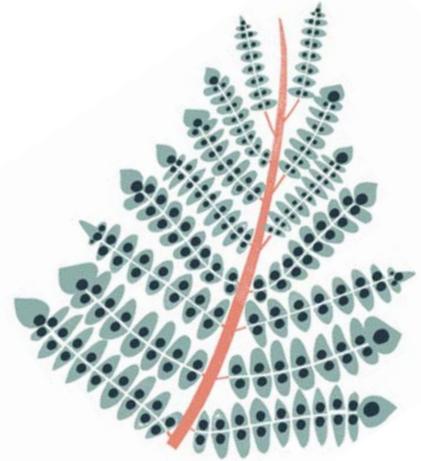
Activity 6: Dinosaur dinners



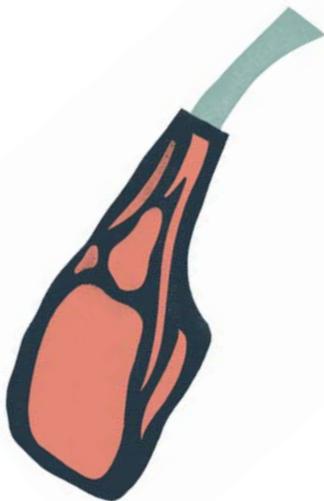
Herbivore



Herbivore



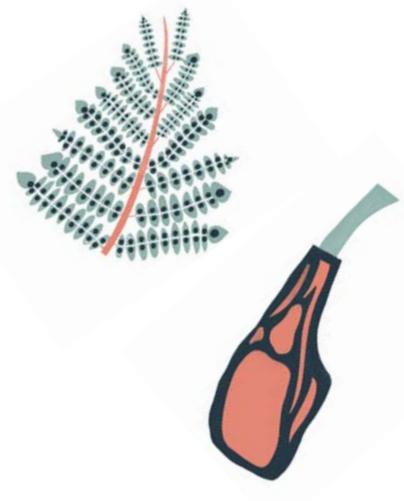
Herbivore



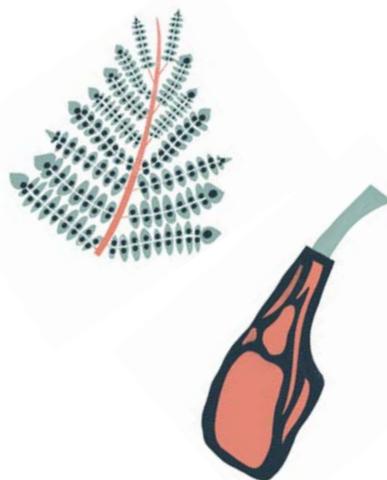
Carnivore



Carnivore



Omnivore



Omnivore



Activity 6: Teacher notes

Use this activity to introduce or reinforce understanding of the terms carnivore, omnivore and herbivore.

Tell the children that clues about dinosaur diet come from their teeth. Without seeing a living animal, palaeontologists (scientists who study dinosaurs) can use clues from fossilised bones, teeth and body shape to work out how an animal behaved by comparing these fossilised features with those of living animals.

Challenge children to use the cards to sort diets into carnivore, omnivore and herbivore.

You could look at pictures of the whole dinosaur for each example and look for other clues about feeding and behaviour such as claws, long necks, powerful limbs for running and feathered forelimbs for gliding or flight.

You could adapt this idea to investigate birds by looking at pictures in books or online. Modern birds don't have teeth, but the shape of their beak and skull is adapted to their diet and feeding. This links well to Activity 7.

English curriculum links (Key Stage 1)

Science

Year 1: Animals, including humans

Pupils should be taught to:

- identify and name a variety of common animals that are carnivores, herbivores and omnivores

Year 2: Animals, including humans

Pupils should be taught to:

- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene

Living things and their habitats

Pupils should be taught to:

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify and name a variety of plants and animals in their habitats, including microhabitats
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The world around us

Interdependence

Pupils should be enabled to explore:

- how plants and animals rely on each other within the natural world
- interdependence of people, plants, animals and place

Place

Pupils should be enabled to explore:

- how place influences plant and animal life
- ways in which living things depend on and adapt to their environment

Scottish curriculum links (Early and First)

Sciences: Experiences and outcomes

Planet Earth: Biodiversity and interdependence

I can distinguish between living and non living things. I can sort living things into groups and explain my decisions. **SCN 1-01a**

I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food.

SCN 1-02a

Welsh curriculum links (Foundation Phase)

Knowledge and understanding of the world: Range

Myself and other living things

Children should be given opportunities to:

- observe differences between animals and plants, different animals, and different plants in order to group them



Activity 7: Feed the birds

Make bird cakes in recycled containers then use these to encourage wildlife. Learn about birds' diets.

Learning outcomes

Children will:

- learn that birds eat a variety of foods and can be herbivores, omnivores and carnivores
- understand that different types of birds look different and can be identified from their shape, size, colour and other features
- understand that plastic containers can be recycled to make new objects that encourage wildlife into your garden
- follow instructions and use a variety of tools and materials safely to make a useful product

Resources required

Provided in the Natural History Museum package:

- recipe card
- bird ID card and images

Provided by school:

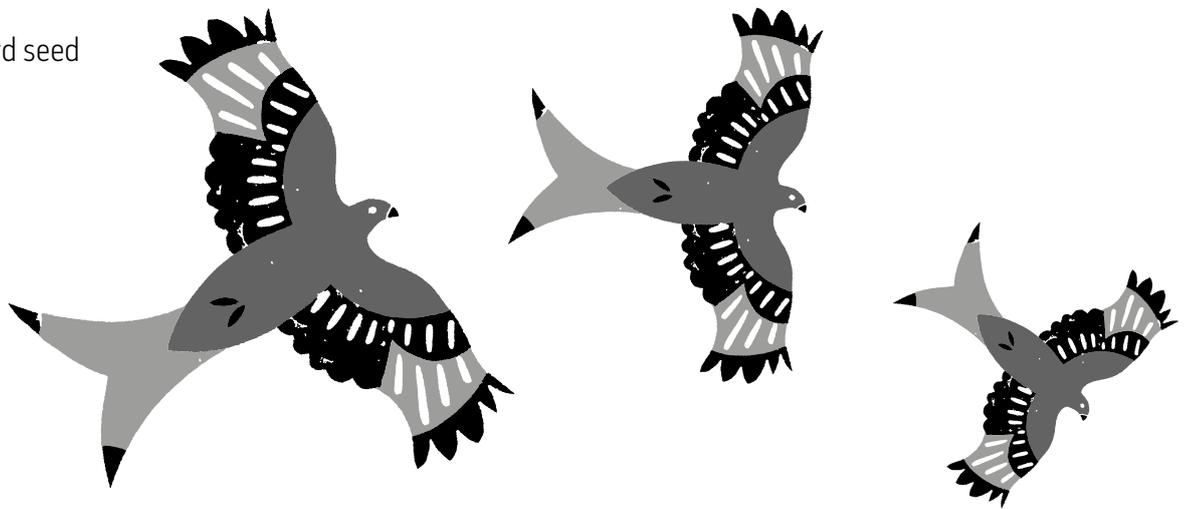
- printing
- yogurt pots, plastic cups or other small, recycled, plastic food containers
- string or wool yarn
- bird cake ingredients: lard or suet, bird seed, raisins, sultanas and grated cheese
- mixing bowl
- scissors

Activity 7: Feed the birds

Bird cake recipe

You will need:

- good-quality bird seed
- raisins
- sultanas
- grated cheese
- suet or lard
- yogurt pots
- string
- a mixing bowl
- scissors



Instructions

1. Very carefully make a small hole in the bottom of a yogurt pot or other container.
2. Thread a length of string through the hole and tie a knot on the inside so the string won't slip out. Leave enough string so that you can tie the pot to a tree or your bird table.
3. Allow the lard to warm up to room temperature, but don't melt it. Then cut it up into small pieces and put it in the mixing bowl.
4. Add the other ingredients to the bowl and mix them together with your finger tips. Keep adding the seed/raisin/cheese mixture and squishing it until the fat holds it all together.
5. Fill your container with the bird cake mixture and press it down firmly.
6. Place the bird cake in the fridge to set for an hour or so.
7. Use the string to hang the bird cake from a tree or bird-feeding station.

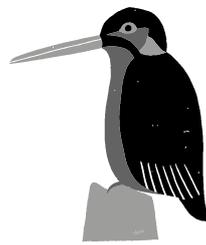
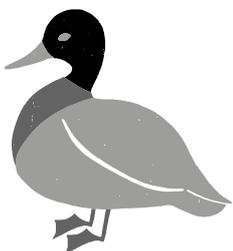
Please note: bird seed may make this recipe not suitable for children with nut allergies.

Bird food is not suitable for human consumption.

Wash your hands thoroughly after preparing the bird cakes.

For alternative illustrated instructions please visit:

www.gardenersworld.com/how-to/diy/how-to-make-fat-cakes-for-birds/



Activity 7: Feed the birds

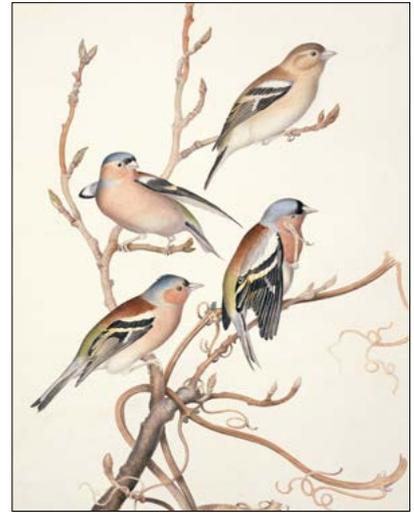
Bird ID card



Blackbird



Blue tit



Chaffinch



Great tit



Greenfinch



Robin



Starling



House sparrow



Wood pigeon



Activity 7: Teacher notes

You can encourage birds into gardens or other outdoor spaces by providing supplementary food sources and fresh water for drinking and bathing. Top up the water every day and keep the area clean, as it can take a while for birds to recognise this new resource.

Encourage the children to watch the birds quietly, and try to identify the birds that visit using the ID card. Keep a tally of the number of different birds you see.

Ask the children to find out more about what the birds on the cards eat from books or by looking online. Sort them into herbivores, carnivores and omnivores.

Only a few birds are exclusively herbivores and eat only fruits or nectar. Examples are hummingbirds, most parrots, toucans and hornbills. There are no birds native to the British Isles that have a completely herbivorous diet.

Most birds are omnivores – as well as fruits and seeds they eat worms, caterpillars, butterflies and spiders. They can also eat reptiles and amphibians.

Birds of prey are carnivores. They eat small mammals and other birds. They have sharp, hooked beaks and strong, sharp claws.

You could take part in the RSPB's Big Schools Birdwatch. <https://www.rspb.org.uk/fun-and-learning/for-teachers/schools-birdwatch/>

English curriculum links (Key Stage 1)

Working scientifically

- observing closely, using simple equipment
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Living things and their habitats

Pupils should be taught to:

- explore and compare the differences between things that are living, dead and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

Design and technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The world around us

Interdependence

Pupils should be enabled to explore:

- how plants and animals rely on each other within the natural world
- interdependence of people, plants, animals and place

Place

Pupils should be enabled to explore:

- how place influences plant and animal life
- ways in which living things depend on and adapt to their environment





Scottish curriculum links (Early and First)

Sciences: Experiences and outcomes

Planet Earth: Biodiversity and interdependence

I can distinguish between living and non living things. I can sort living things into groups and explain my decisions. **SCN 1-01a**

I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food.

SCN 1-02a

Technologies: Experiences and outcomes

Craft, design, engineering and graphics: Design and construct models/product

I explore ways to design and construct models. **TCH 0-09a**

I can design and construct models and explain my solutions.

TCH 1-09a

Welsh curriculum links (Foundation Phase)

Knowledge and understanding of the world: Range

Myself and other living things

Children should be given opportunities to:

- observe differences between animals and plants, different animals, and different plants in order to group them
- identify some animals and plants that live in the outdoor environment

Creative development: Range

Children should have opportunities to:

- explore, investigate and use the indoor and outdoor learning environments
- be involved in activities that allow them to work as individuals and in groups
- use a wide range of resources and stimuli



Activity 8: Animal architects

Experiment with different natural materials to discover how birds build nests in different habitats.

Learning outcomes

Children will:

- learn that birds use different materials for their nests determined by the habitat in which they live and what is around them
- experiment with, and use understanding of, different natural materials to determine how they could be used for building nests
- work collaboratively to solve simple problems
- discover that some birds are much better builders with their bills than humans are with their hands
- understand that birds and dinosaurs both lay eggs

Resources required

Provided in the Natural History Museum package:

- films of birds with their nests
- habitat clue cards

Provided by school:

- trays containing sand, pebbles, water and twigs – one for each group of students
- a supply of natural building materials, such as fine twigs, long grass stems, feathers, reed, straw, moss and leaves

Activity 8: Animal architects

Ponds, rivers and wet places



Can you design and build a nest that floats?

Pebble beaches



Can you design and build a nest that cannot be seen among the pebbles?

Sandy and dry places



Can you design and build a nest hidden in the sand?

Woodland, hedgerows and heath



Can you design and build a nest that cannot be seen in a tree or bush?



Activity 8: Teacher notes

Look at the films of birds with their nests. Discuss the reason birds build nests, and what the purpose of a nest is. You could also think about other types of animals that dig or build structures to protect their eggs (eg turtles, snakes and some fish), or discuss how some types of dinosaur made nests.

Nesting in trees and bushes

Long-tailed tits nest building:

<https://www.youtube.com/watch?v=UC6QODKkRAs>

Robin nest building:

<https://www.youtube.com/watch?v=c2bG4rh8mOQ>

Female chaffinch collecting nest materials and feeding chicks:

<http://www.arkive.org/chaffinch/fringilla-coelebs/video-09a>

Nesting on water

Great-crested grebe nest:

<https://www.youtube.com/watch?v=EaGxQmDwMNY>

Burrowing

Puffin arranging nest materials in burrow:

<https://www.youtube.com/watch?v=HGBbzFABUCU>

Nesting by the shore

Avocet pair making a nest:

https://www.youtube.com/watch?v=ytQmcpP-R_4

Nesting in holes

Nuthatch lining nest hole with leaves:

<https://www.youtube.com/watch?v=8o8mnGNHnRA>

Female great-spotted woodpecker making nest hole:

<http://www.arkive.org/great-spotted-woodpecker/dendrocopos-major/video-09a.html>

Divide the children into small groups and provide each group with a habitat card. Ask the children to imagine they are birds living in this habitat. Make sure that each group knows what habitat they are living in and give them their habitat tray, which is their nesting site. Show them the available materials and challenge them to make a nest to protect their eggs.

Ask them to record how they solved the nest-building challenge. Was it quick or slow to build with different materials? What were the main methods you had to use with each material? You could use this activity to build or use new vocabulary to describe their actions (eg digging, shovelling, lifting, rolling, weaving and pressing).

Ask the children to look at the solutions that other groups have come up with by swapping trays. Can they work out how they have solved their construction challenge. Would they have done the same?

Remind the children that birds don't have hands – they use their beaks and feet to build with.

- You could link this to investigating eggs. Look at pictures of different bird eggs and see how different bird eggs vary in colour and shape and how this relates to habitat.
- You could decorate polystyrene balls or eggs with decoupage or paint. Investigate what colours and patterns are best to keep the eggs hidden safely in different types of nest.
- You could have a discussion about why dinosaurs and birds want to hide or protect their eggs in nests (you could relate this to Activity 6, considering what other dinosaurs ate).
- You could find out about other types of animals that lay eggs and how they protect their eggs.
- You could read *Dino Babies!* by Robert Bakker and find out about how some dinosaurs also cared for their young like birds do today.
- You could collect the building materials outdoors.





English curriculum links (Key Stage 1)

Science

Living things and their habitats

Pupils should be taught to:

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other

Design and technology

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The world around us

Place

Pupils should be enabled to explore:

- how place influences plant and animal life
- ways in which living things depend on and adapt to their environment

The Arts

Art and design

Pupils should be enabled to:

- investigate and respond to direct sensory experience including visual, verbal, spatial and tactile dimensions, memory and imagination
- look at and talk about resource material to stimulate their own ideas
- explore the visual elements of colour, tone, line, shape, form, space, texture and pattern to express ideas
- talk about their own and others' work and how it was made, use observations to identify difficulties and suggest modifications
- experiment with a range of media, materials, tools and processes such as: drawing, painting, printmaking, malleable materials, textiles and three-dimensional construction

Scottish curriculum links (Early and First)

Sciences: Experiences and outcomes

Planet Earth: Biodiversity and interdependence

I have observed living things in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a**

I can distinguish between living and non living things. I can sort living things into groups and explain my decisions. **SCN 1-01a**

I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food.

SCN 1-02a

Technologies: Experiences and outcomes

Craft, design, engineering and graphics: Design and construct models/product

I explore ways to design and construct models. **TCH 0-09a**

I can design and construct models and explain my solutions.

TCH 1-09a

Exploring uses of materials

I explore everyday materials in the creation of pictures/models/concepts. **TCH 0-10a**

I can recognise a variety of materials and suggest an appropriate material for a specific use. **TCH 1-10a**

Art and design

Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**

I can use exploration and imagination to solve design problems related to real-life situations. **EXA 1-06a**





Welsh curriculum links (Foundation Phase)

Creative development: Skills

Art, craft and design

Children's art, craft and design skills should be fostered and promoted through using their senses, imagination and experience. Creative art, craft and design activities in the Foundation Phase should enable children to express themselves freely and make progress in their ability to:

- explore and experiment with a variety of techniques and materials
- make choices when choosing materials and resources
- mix, shape, arrange and combine materials to create their own images and objects that communicate and express their ideas, feelings and memories creatively
- develop and use their understanding of colour, line, tone, texture, pattern, shape and form
- develop their understanding of planning, designing, modelling, modifying and reflecting
- use a variety of materials and tools for experimentation and problem solving
- design and make simple products and mechanisms



Activity 9: Build a bird

Design a bird from a selection of wings, feet and beaks that make it well suited to a particular habitat.

Learning outcomes

Children will:

- understand that birds' bodies are adapted to live in different habitats that provide their food source
- understand that birds that look similar often live in the same habitat
- learn to explain why a bird is adapted to a particular habitat and answer questions about it
- understand that living things in a habitat depend on each other for food

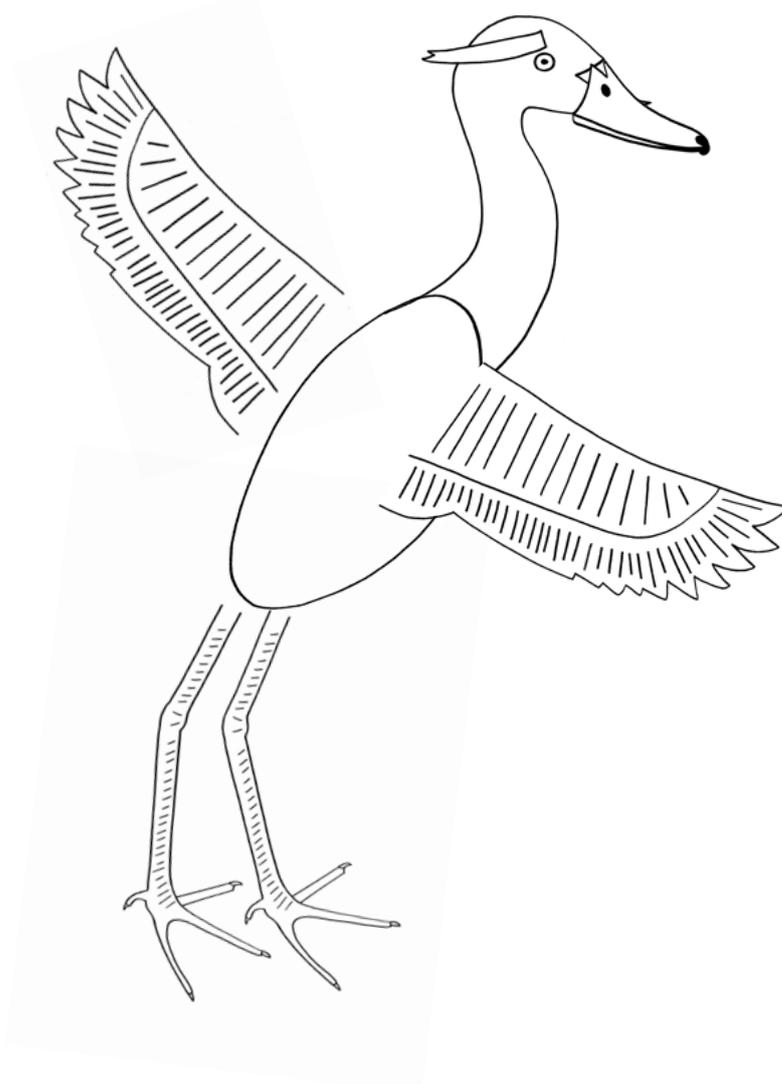
Resources required

Provided in the Natural History Museum package:

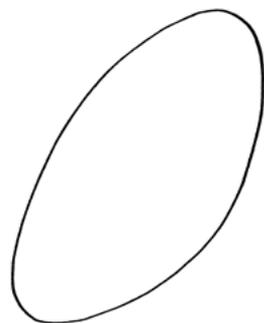
- bird features and worksheet

Provided by school:

- coloured pencils or pens
- glue



Activity 9: Build a bird

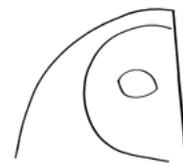
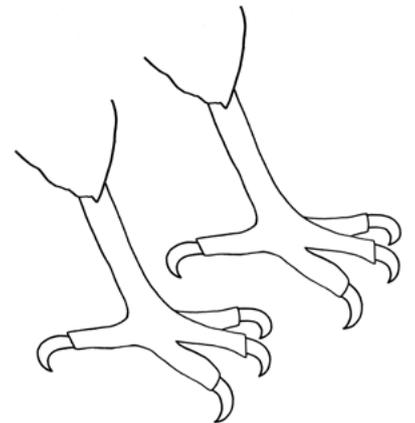
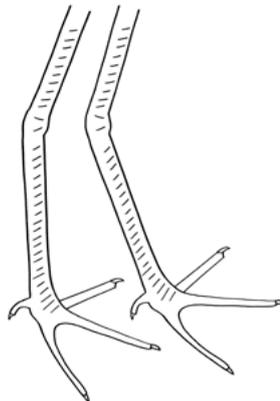
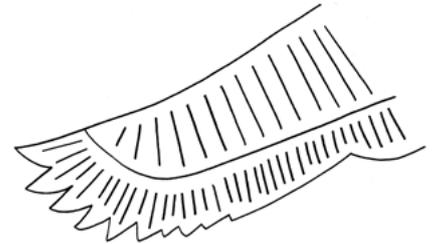
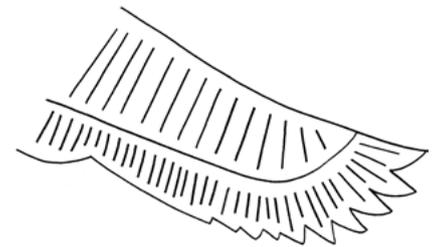
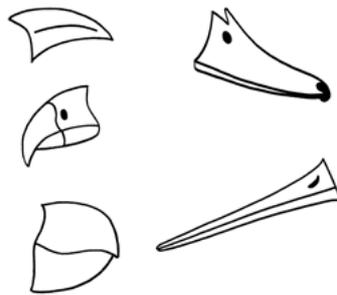
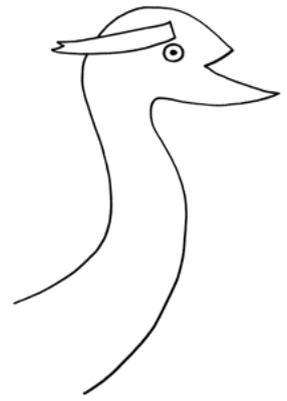
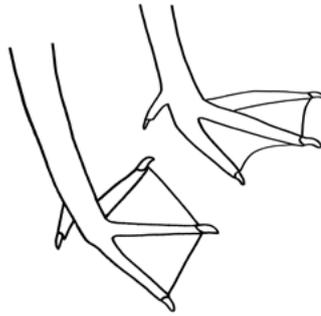
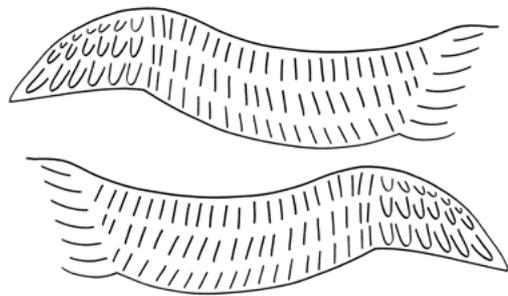


This is my bird. It is called a

It feeds on

It lives

Activity 9: Build a bird





Activity 9: Teacher notes

Birds live in lots of different habitats. They have different shaped bodies, feet and beaks that are adapted to where they live and the food they eat.

- shore and wetland birds – waders, longer legs, beaks adapted to probing for shellfish and long wings (eg spoonbill, curlew, avocet and oystercatcher)
- water birds – webbed feet, maybe long necks for catching fish, long legs and flat beaks for dabbling (eg great-crested grebe, grey heron, mallard and black-headed gull)
- woodland birds – feet for clinging, beaks for breaking seeds, nuts, fruits and insects and short wings to fly through foliage (eg blackbird, jay, robin, blue tit and crossbill)
- birds of prey – hooked beaks, tearing claws and very good eyesight (eg kestrel, golden eagle, sparrow hawk and tawny owl)

Tell the children that birds live in lots of different habitats. They have different shaped bodies, feet and beaks that are adapted to where they live and the food they eat. Ask if they can name birds they have seen and where they have seen them. Discuss whether they have seen how birds are specially adapted for their habitat, for example webbed feet or long necks for water birds.

Tell the children they are going to design a bird to live in one of the habitats named on the information sheet using the bodies, wings, beaks, legs and feet. They can choose and cut out the different elements for their design and stick them together. Encourage them to draw in any features that they think are missing or not quite right, and to colour the bird in.

Give the children a writing frame and ask them to invent a name for the bird and write down what it feeds on.

Organise the children into small groups. Each child takes it in turns to tell the group the name of their bird and what it eats, then ask the other children to guess what habitat their bird lives in and how they know this. This could be a questioning game. Each group sorts the birds according to their habitat and looks for any similarities and differences they can see.

- You could make a classroom wall display of backgrounds to group all the birds the class have made according to their habitat (eg a beach, a woodland or a lake). Look at similarities and differences between the birds in each habitat. Do the habitats of carnivores vary?

- You could find out about and add in pictures of some food sources for each habitat and use this to construct simple food chains. For example, plant – caterpillar – bird – bird of prey.
- You could link this to Activity 8.
- You could use different kitchen tools to try picking up and breaking open different shapes of food, to help the children understand how some beak shapes are adapted to their food source. This could be linked to learning about how different human cultures use different tools for eating.
- You could read Aesop's story *The Stork and The Fox* to learn about how different animals need to eat differently.

Please share your birds with us by emailing pictures to DippyOnTour@nhm.ac.uk with the subject line **Pictures**.

English curriculum links (Key Stage 1)

Science

Living things and their habitats

Pupils should be taught to:

- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The world around us

Place

Pupils should be enabled to explore:

- how place influences plant and animal life
- ways in which living things depend on and adapt to their environment





Scottish curriculum links (Early and First)

Sciences: Experiences and outcomes

Planet Earth: Biodiversity and interdependence

I can distinguish between living and non living things. I can sort living things into groups and explain my decisions. **SCN 1-01a**

I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food.

SCN 1-02a

Welsh curriculum links (Foundation Phase)

Knowledge and understanding of the world: Range

Myself and other living things

Children should be given opportunities to:

- observe differences between animals and plants, different animals, and different plants in order to group them
- learn about the senses that humans and other animals have and use to enable them to be aware of the world around them
- identify some animals and plants that live in the outdoor environment
- identify the effects the different seasons have on some animals and plants

Creative development: Skills

Art, craft and design

Children's art, craft and design skills should be fostered and promoted through using their senses, imagination and experience. Creative art, craft and design activities in the Foundation Phase should enable children to express themselves freely and make progress in their ability to:

- explore and experiment with a variety of techniques and materials
- make choices when choosing materials and resources
- mix, shape, arrange and combine materials to create their own images and objects that communicate and express their ideas, feelings and memories creatively



Activity 10: Dinosaur habitats

Discover Dippy's world and imagine a day in a dinosaur's life.

Learning outcomes

Children will:

- learn that some types of animals and plants that were alive at the same time as the *Diplodocus* Dippy was cast from are still alive today
- be able to classify animals by different criteria based on existing knowledge and research from secondary information sources
- use imagination and knowledge to create a story
- have the confidence and skill to share the story
- work with others to put on a performance to tell a story

Resources required

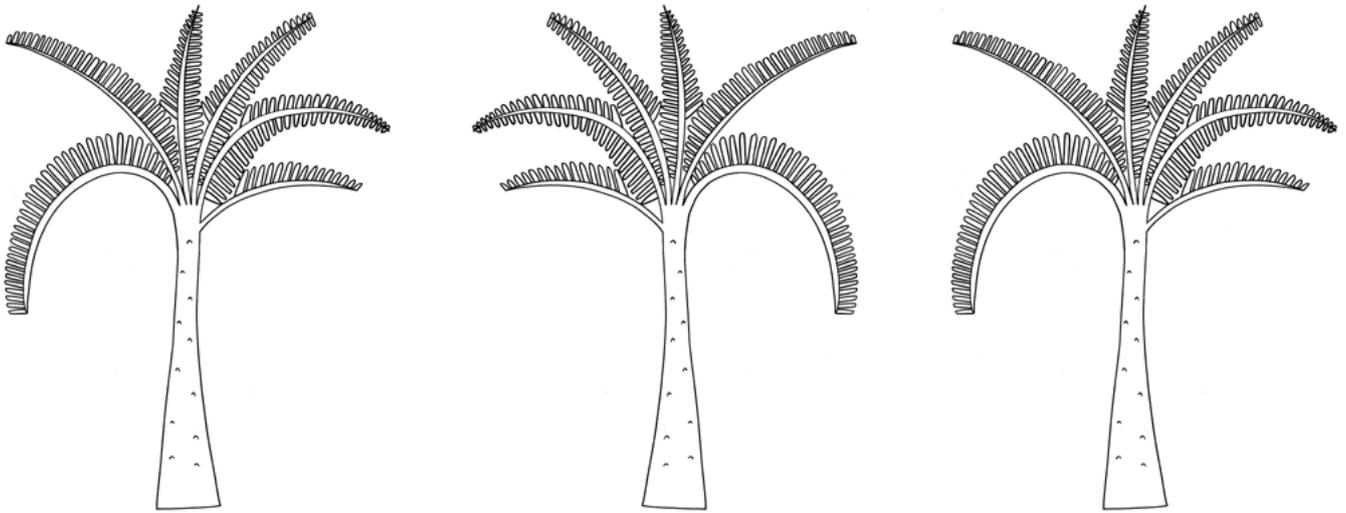
Provided in the Natural History Museum package:

- images of animals and plants that lived at the same time as Dippy

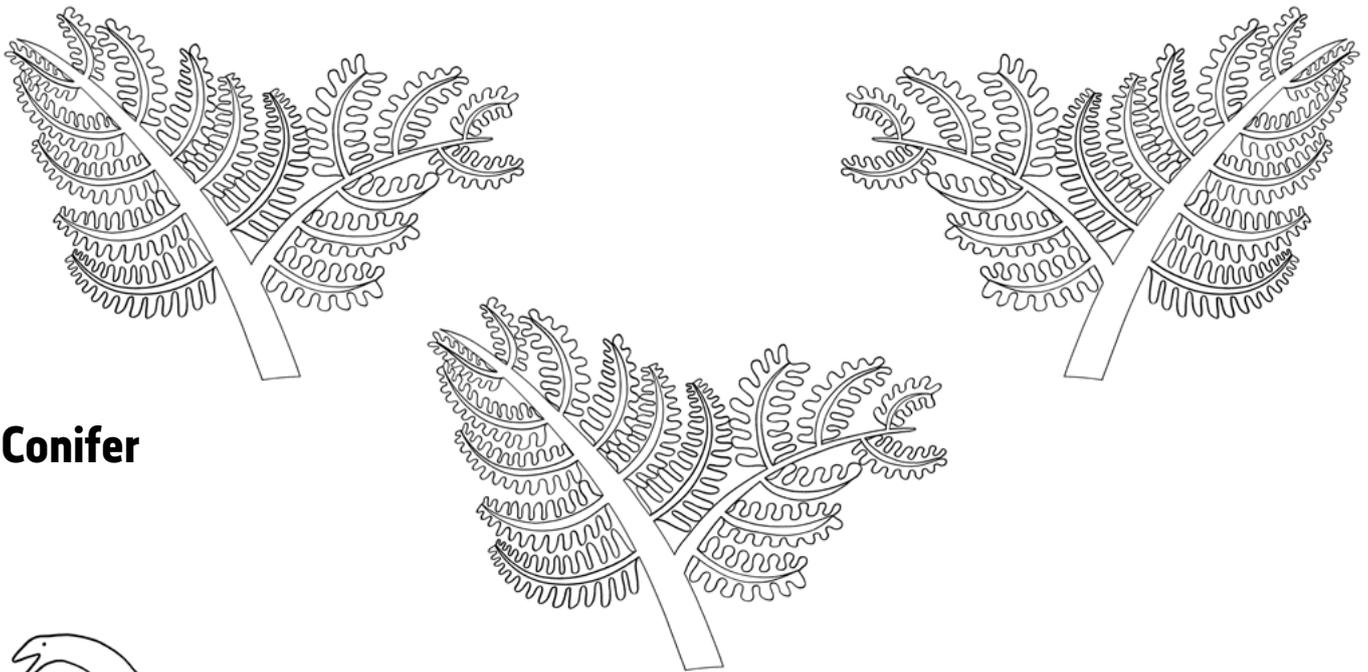
Provided by school:

- scissors, colouring pencils or pens
- box, frame or other miniature world setting

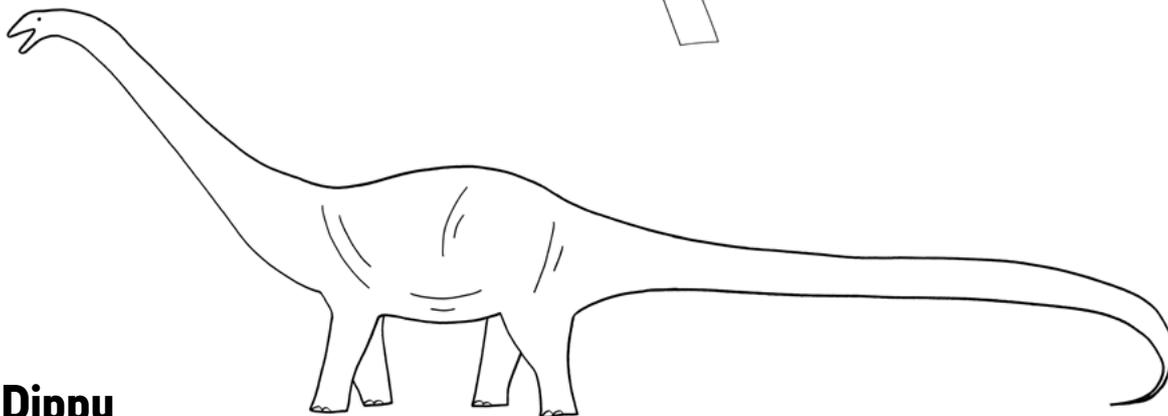
Activity 10: Dinosaur habitats



Fern tree



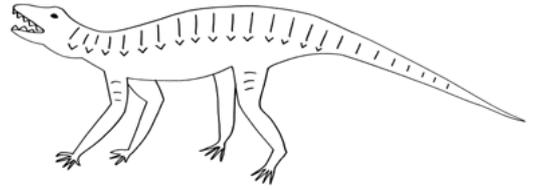
Conifer



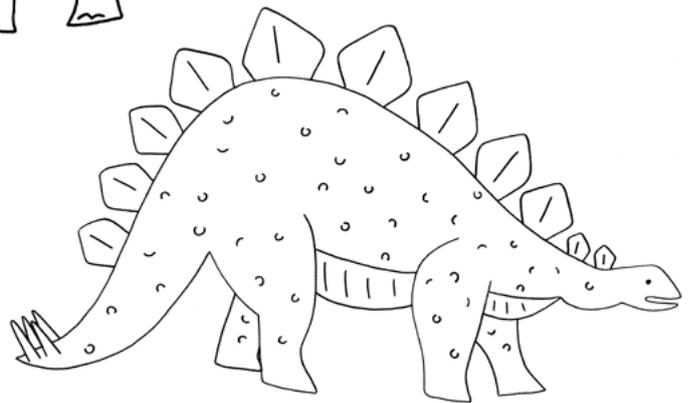
Dippy

Activity 10: Dinosaur habitats

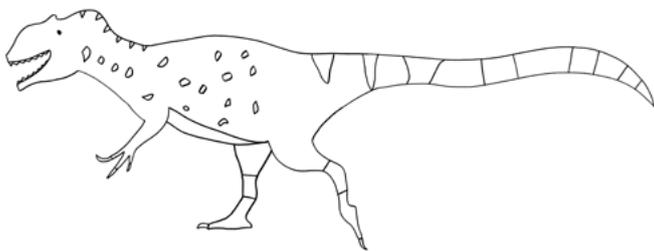
Hoplosuchus kayi



Camarasaurus



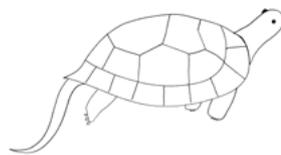
Stegosaurus



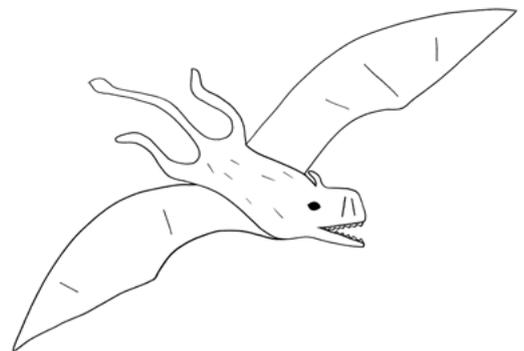
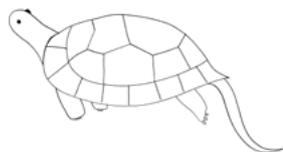
Allosaurus



Docodon



Glyptops



Mesadactylus



Activity 10: Teacher notes

Palaeontologists (scientists who study fossils and dinosaurs) piece together evidence for where dinosaurs lived and what other animals and plants lived at the same time. They do their detective work by looking at fossils that are preserved close together and in the same sort of rock.

Other fossils found near Dippy help us to put together a picture of the world that he lived in – the plants he would have eaten, the smaller animals that lived on the ground around him, insects that would have flown around and other dinosaurs that might have tried to prey on him. Artists work with palaeontologists to bring the fossilised bones back to life through detailed drawings.

Display on the whiteboard the palaeoartist's reconstruction of Dippy's world and the animals and plants that lived with Dippy. Discuss what is happening, whether they recognise any of the animals. Count different elements of the image (eg number of dinosaurs or number of legs).

Explain that these are images of the plants and animals that lived with Dippy. Some of the same types of plants are still found alive today. Also alongside the dinosaurs are familiar animals such as frogs and turtles that are very like those alive today.

Look at books and online to find out where and when Dippy lived and about the other types of animals that lived at the same time. You could sort and classify them by diet, alive or no longer alive, or live on land or in water.

Ask the children to think about Dippy's day from the moment he wakes up to when he goes to sleep. Who would he meet, and what might happen?

Ask them to imagine you are Dippy and tell the story of his day. What would a dinosaur do?

Use this to stimulate writing and reading aloud, or plan and tell the story through drama or using puppets. Include a range of different sensations and observations about the world as well as action.

- I eat...
- I smell...
- I hear...
- I see...
- Beneath my feet is/are
- Over my head is/are
- Around me is/are

Cut out and colour in the illustrations of animals and plants and design a small world to show one of the events in their story, or to use to tell the story.

- You could create a list poem about Dippy's world.
- You could make a puppet theatre from a cardboard box and create a Jurassic diorama as a setting. Use the cut-out drawings of animals to make paper puppets and tell the story through drama.
- You could add sensory stimuli such as leaves, twigs, sand and gravel.
- You could use models or toys if you or the children have them.
- You could think about food chains that exist between the plants and animals that lived at the same time as Dippy.
- You could link this to Activity 16 and add an imaginary Jurassic soundscape.

Please share your dinosaur habitats with us by emailing pictures to DippyOnTour@nhm.ac.uk with the subject line **Pictures**.

English curriculum links (Key Stage 1)

Science

Living things and their habitats

Pupils should be taught to:

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify and name a variety of plants and animals in their habitats, including microhabitats
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food





Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The world around us

Interdependence

Pupils should be enabled to explore:

- how plants and animals rely on each other within the natural world
- interdependence of people and the environment
- the effect of people on the natural environment over time
- interdependence of people, plants, animals and place

Place

Pupils should be enabled to explore:

- how place influences plant and animal life
- ways in which living things depend on and adapt to their environment
- features of the immediate world and comparisons between places
- change over time in local places

Change over time

Pupils should be enabled to explore:

- ways in which change occurs in the natural world
- how people and places have changed over time
- positive change and how we have a responsibility to make an active contribution

Scottish curriculum links (Early and First)

Sciences: Experiences and outcomes

Planet Earth: Biodiversity and interdependence

I can distinguish between living and non living things. I can sort living things into groups and explain my decisions. **SCN 1-01a**

I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food.

SCN 1-02a

Welsh curriculum links (Foundation Phase)

Knowledge and understanding of the world

Myself and other living things

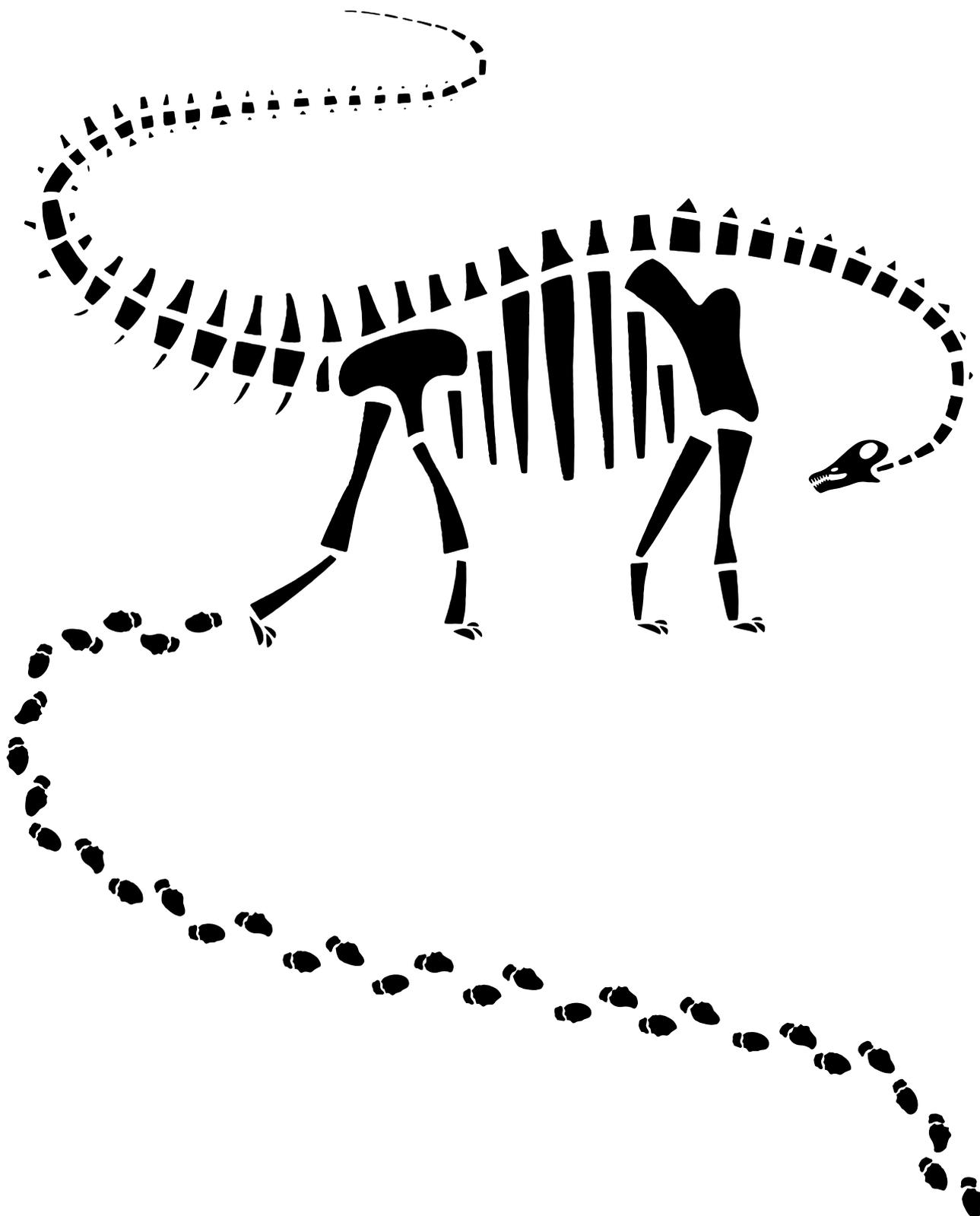
Children should be given opportunities to:

- observe differences between animals and plants, different animals, and different plants in order to group them
- learn about the senses that humans and other animals have and use to enable them to be aware of the world around them
- identify some animals and plants that live in the outdoor environment



Walk like a dinosaur

Scientists can find evidence about how dinosaurs moved from fossilised footprints and trackways. To help them to interpret the dinosaur tracks, they look at footprints and tracks left by animals and birds that are alive today, and watch how they move while leaving these tracks.



Activity 11: Walk like a dinosaur – calculating my stride

Maths and data presentation: make measurements and record stride length.

Learning outcomes

Children will:

- carry out a scientific investigation to answer a question
- make predictions about possible outcomes for an experiment
- work together to make consistent measurements and to record and present simple data
- understand that other animals have a different stride length to people and that individuals have a different stride length that is linked to height and speed

Resources required

Provided in the Natural History Museum package:

- film clips of dinosaurs walking: nhm.ac.uk/dippy-videos
- images of dinosaur and animal trackways (to view on whiteboard or as printed images)

Activity 11: Walk like a dinosaur – calculating my stride

Elephant footprints.



Activity 11: Walk like a dinosaur – calculating my stride

Emu tracks on a salt lake.



Activity 11: Walk like a dinosaur – calculating my stride

Dinosaur footprints on display at Dorset County Museum.



Dinosaur footprints. Owned by and on display at Dorset County Museum.



Activity 11: Teacher notes

Watch film clips of dinosaurs or living birds or animals (including people) walking and running. Some clips are provided but you could also use recent footage from athletics events or local walks or runs. You could include para-athletes.

Ask the children whether they all take the same length of stride. How could we find out?

Look at a photo of a dinosaur trackway. Tell the children that dinosaur scientists use fossilised dinosaur footprints to work out their stride, which can give important clues about both their speed and size. Look at a second photo and tell the children this trackway is left by a different sort of dinosaur. Can they tell whether it has a longer or shorter stride?

Introduce this activity as an experiment to find out whether all the children in the class have the same length of stride, as we are all the same type of animal.

What is the biggest step you can take? The distance between your toes on each foot when you walk or run is called your stride.

Work together to measure and record the stride length for each child. You could use pencil on a paper roll or chalk on a playground to either draw a marker line or draw around both feet. You could also make paint footprints on a paper roll outdoors if you want a record of footprints for an associated art project or for display. As well as making measurements you could encourage the children to make estimates of stride length.

Who in the class has the longest stride? To keep the data consistent make sure everybody measures from the same point on their footprint.

Place in order the stride length data and make a class chart of stride length.

- You could link this to Activity 12 and mathematically compare the children's stride lengths with those of some dinosaurs and other living animals.
- You could investigate whether stride length relates to height. Compare the stride length of each child to their height. Do the tallest children also have the longest stride?
- You could investigate whether stride length varies when you move at different speeds (eg running or skipping).
- You could link this activity to work about identity and individuality.

English curriculum links (Key Stage 1)

Year 2: Mathematics

Statistics

Pupils should be taught to:

- interpret and construct simple pictograms, tally charts, block diagrams and simple tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask and answer questions about totalling and comparing categorical data

Measurement

Pupils should be taught to:

- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) mass (kg/g) temperature (°C) capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$





Northern Irish curriculum links (Foundation Phase and Key Stage 1)

Mathematics and numeracy

Foundation: Measures

Pupils should be enabled to:

- compare two objects of different length/weight/capacity/ area understand and use the language of comparison
- order three objects of different length, weight, capacity, area talk about the ordering using appropriate language
- find an object of similar length, weight, capacity, area talk about their findings in terms of 'just about the same' length, weight, capacity, area
- begin to explore the notion of conservation of length, weight, capacity in practical situations engage in discussion about their observations
- choose and use, with guidance, non-standard units to measure length/capacity/weight talk about their work

Key Stage 1: Measures

Pupils should be enabled to:

- understand and use the language associated with length, 'weight', capacity, area and time
- use non-standard units to measure and recognise the need for standard units
- know and use the most commonly used units to measure in purposeful contexts
- make estimates using arbitrary and standard units
- choose and use simple measuring instruments, reading and interpreting them with reasonable accuracy

Key Stage 1: Handling data

Collecting, representing and interpreting data

Pupils should be enabled to:

- sort and classify objects for one or two criteria and represent results using Venn, Carroll and Tree diagrams
- collect data, record and present it using real objects, drawings, tables, mapping diagrams, simple graphs and ICT software
- discuss and interpret the data
- extract information from a range of charts, diagrams and tables
- enter and access information using a database

Scottish curriculum links (Early and First)

Numeracy and mathematics: Experiences and outcomes

Number, money and measure: Estimation and rounding

I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me1. **MNU 0-01a**

I can share ideas with others to develop ways of estimating the answer to a calculation or problem, work out the actual answer, then check my solution by comparing it with the estimate.

MNU 1-01a

Number, money and measure: Number and number process

I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed. **MNU 1-03a**

Number, money and measure: Measurement

I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others. **MNU 0-11a**

Welsh curriculum links (Foundation Phase)

Mathematical development

Using measuring skills

- length, weight/mass, capacity

Using data skills

- collect and record data
- present and analyse data
- interpret results



Activity 12: Walk like a dinosaur – dinosaur trackways

Investigate the stride length of different types of dinosaur using life-size footprint cutouts.

Learning outcomes

Children will:

- observe and understand that animals with two legs and four legs move differently and have differently shaped feet
- understand that animals of different sizes have different stride lengths

Resources required

Provided in the Natural History Museum package:

- dinosaur footprints with scale
- photographs of dinosaur trackways, printed or to view on whiteboard (see Activity 11)
- photographs of emu and elephant trackways, printed or to view on whiteboard (see Activity 11)
- animations of dinosaurs walking: nhm.ac.uk/dippy-videos
- data chart of stride length

Provided by school:

- facilities to show films/images/print images

Activity 12: Walk like a dinosaur – dinosaur trackways

Dinosaur/animal	Stride length (centimetres)
<i>Albertosaurus</i>	300
Asian elephant	110
<i>Diplodocus</i>	238
Emu	100
<i>Hypsilophodon</i>	90
<i>Iguanodon</i>	130

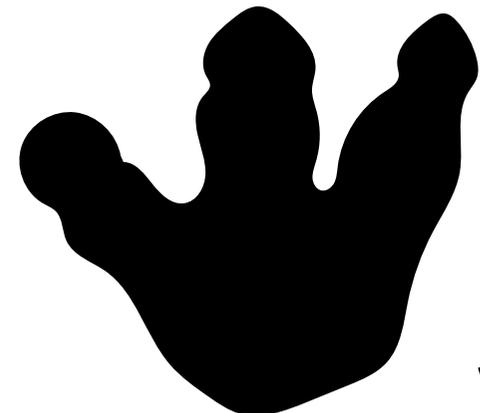


Diplodocus

20 centimetres



Albertosaurus



Iguanodon



Hypsilophodon



Activity 12: Teacher notes

Print, cut out and construct the dinosaur and bird footprints using different coloured paper for each animal. This can take some time so this needs to be done in advance. You will need at least four of each animal footprint. It is worth laminating the footprints if you wish to use them again.

Ask the children to work in groups to use the chart of stride length data to measure out the distance between each footprint and place them on the ground to accurately represent the walking stride length of each animal. The four-legged animal footprints can look quite strange in shape because the back feet step into the front footprints distorting them slightly.

Ask them to count how many steps they take to reach the end of the trackway. Is it more or less than each animal? They could count in twos.

Watch film clips of different animals walking. Notice that four-legged animals walk differently to two-legged ones. Identify animals that walk on two legs and animals that walk on four. Do all four-legged animals always stand on four legs?

- You could discuss that *Iguanodon* and *Albertosaurus* have footprints like that of the emu, and that Dippy's footprints are most similar to the elephant footprints.
- You could link this activity to Activity 5.

English curriculum links (Key Stage 1)

Mathematics

Number and place value

Pupils should be taught to:

- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- recognise the place value of each digit in a two-digit number (tens, ones)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up to 100 use $<$, $>$ and $=$ signs

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

Mathematics and numeracy

Foundation: Measures

Pupils should be enabled to:

- compare two objects of different length/weight/capacity/area understand and use the language of comparison
- order three objects of different length, weight, capacity, area talk about the ordering using appropriate language
- find an object of similar length, weight, capacity, area talk about their findings in terms of 'just about the same' length, weight, capacity, area
- begin to explore the notion of conservation of length, weight, capacity in practical situations engage in discussion about their observations
- choose and use, with guidance, non-standard units to measure length/capacity/weight talk about their work

Key Stage 1: Measures

Pupils should be enabled to:

- understand and use the language associated with length, 'weight', capacity, area and time
- use non-standard units to measure and recognise the need for standard units
- know and use the most commonly used units to measure in purposeful contexts
- make estimates using arbitrary and standard units
- choose and use simple measuring instruments, reading and interpreting them with reasonable accuracy





Scottish curriculum links (Early and First)

Number, money and measure: Number and number process

I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order. **MNU 0-02a**

Number, money and measure: Expressions and equations

I can compare, describe and show number relationships, using appropriate vocabulary and the symbols for equals, not equal to, less than and greater than. **MTH 1-15a**

Welsh curriculum links (Foundation Phase)

Mathematical development

Using number skills

- use number facts and relationships
- calculate using mental and written methods



Activity 13: Walk like a dinosaur – make your own dinosaur feet

Make and decorate tie-on dinosaur feet to wear.

Learning outcomes

Children will:

- use their fine motor skills (colouring and cutting)
- use tools and materials to create a piece of wearable costume
- read and follow written instructions
- enjoy being creative and learning new craft skills
- learn to remember their left and right
- be creative and have ideas about the colour and texture of dinosaur feet and justifying these ideas

Resources required

Provided in the Natural History Museum package:

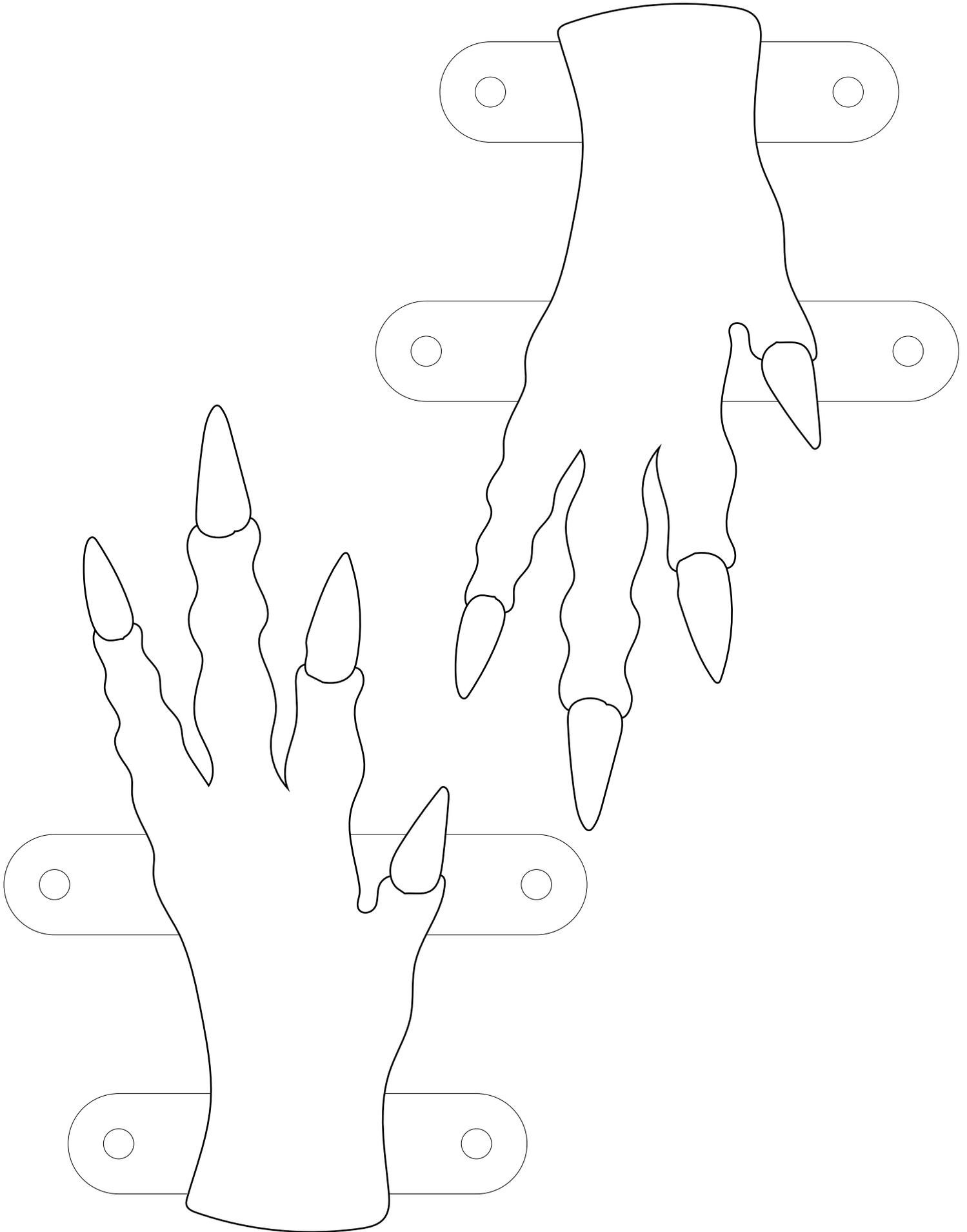
- dinosaur foot outlines

Provided by school:

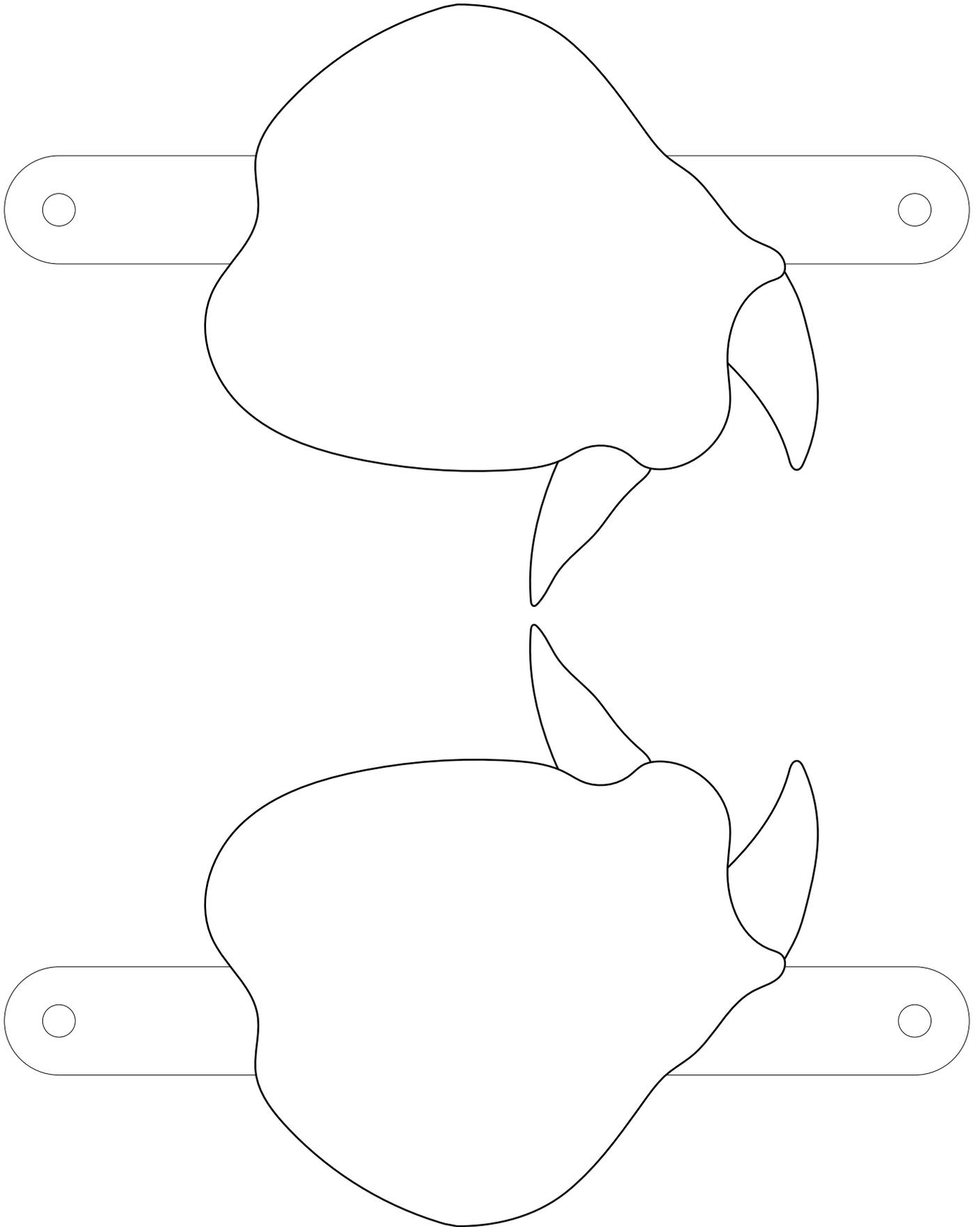
- thin card
- tracing paper and pencils to transfer pattern if required (see note below)
- scissors
- hole punch
- ribbon or string
- sticky tape
- coloured pencils, pens, paints, animal-print paper, feathers and other decorative items to personalise

Note: You can either use the trace and make from scratch version for a longer and more skills-based activity, or make this a quicker activity by pre-printing all of the dinosaur feet outlines so they can just be cut out and decorated.

Activity 13: *Hypsilophodon* feet



Activity 13: Baby Dippy feet





Activity 13: Teacher notes

Instructions:

Trace the dinosaur foot outline onto tracing paper with a soft pencil.

Turn this over onto a piece of thin card and carefully draw over the line you have made. This should transfer the line onto the card.

Then flip the tracing paper over again onto a fresh piece of card and carefully draw over the line. This should transfer the line onto the card and give you a mirror image of your first foot outline. Doing this will give you a left and a right foot.

If you are making Dippy feet you will need to repeat the first two steps, as he walked on four legs!

Identify which foot is which by comparing them to the picture below. You could write L and R on them in pencil to remind you.

Carefully cut out each of your dinosaur feet.

Wrap sticky tape around the tabs, then punch a hole in the centre. This is where string will be threaded.

Now decorate your dinosaur feet.

Add string through the ankle and instep tabs and carefully tie the dinosaur feet over shoes or bare feet.

Now walk like a dinosaur!

- You could provide materials so that decorations could try to accurately recreate dinosaur feet (eg using reptile skin texture paper or fabric), or create fantastical and imaginative feet.
- You could add feathers to for a feathered dinosaur.
- You could ask the children to draw the whole dinosaur the feet they have made belong to and explain how it fits into its habitat.
- You could make this a quicker activity by pre-printing all of the dinosaur feet outlines so they can just be cut out and decorated.
- You could ask children to incorporate reminders about left and right into their foot designs if they struggle with remembering directions.
- You could wear the feet for Activity 11, 12 and 14.

English curriculum links (Key Stage 1)

Art and design

Pupils should be taught:

- to use a range of materials creatively to design and make products
- to use drawing, painting and sculpture to develop and share their ideas, experiences and imagination
- to develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form and space

Design and technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The Arts

Foundation: Art and design

Pupils should be enabled to:

- observe and respond to things seen, handled, remembered and imagined
- investigate and talk about colours, lines, shapes, textures and patterns
- explore and use a wide range of materials and processes
- create and develop ideas using colours, lines, shapes, textures and patterns

Key Stage 1: Art and design

Pupils should be enabled to:

- investigate and respond to direct sensory experience including visual, verbal, spatial and tactile dimensions, memory and imagination
- look at and talk about resource material to stimulate their own ideas





Scottish curriculum links (Early and First)

Expressive arts: Experiences and outcomes

Art and design

I have the freedom to discover and choose ways to create images and objects using a variety of materials. **EXA 0-02a**

I can create and present work using the visual elements of line, shape, form, colour, tone, pattern and texture. **EXA 1-03a**

Welsh curriculum links (Foundation Phase)

Creative development: Skills

Art, craft and design

Children's art, craft and design skills should be fostered and promoted through using their senses, imagination and experience. Creative art, craft and design activities in the Foundation Phase should enable children to express themselves freely and make progress in their ability to:

- explore and experiment with a variety of techniques and materials
- make choices when choosing materials and resources
- mix, shape, arrange and combine materials to create their own images and objects that communicate and express their ideas, feelings and memories creatively
- develop and use their understanding of colour, line, tone, texture, pattern, shape and form

Physical development

Personal

Children should be given opportunities to:

- develop coordination
- develop gross motor skills
- develop fine manipulative skills
- use and handle a range of tools



Activity 14: Walk like a dinosaur – herding dinosaurs

Follow instructions movement and dance activity working as a group.

Learning outcomes

Children will:

- learn that *Diplodocus* walked on four legs
- work sensibly as part of a group being aware of personal space and body movement
- listen carefully to cues and followed instructions while having fun
- enjoy being imaginative and playing a game

Resources required

Provided in the Natural History Museum package:

- film clip of a *Diplodocus* moving

Provided by school:

- suitable space



Activity 14: Teacher notes

After watching the clip of a *Diplodocus* walking, discuss how it walks and how we walk. What are the similarities and differences?

Ask the children to stand like Dippy on four legs. Imagine having a long tail and a long neck, big heavy feet and a huge heavy body.

Encourage them to add movement, remembering the animation shows the dinosaur moving very slowly, and acting out how a four-legged animal would walk.

Play *Herding Dinosaurs*, a follow-the-leader game, in a hall or suitable outdoor space. Set an imaginary habitat scene then give a series of movement and directional instructions as the herd of *Diplodocus* make a journey to a pool on a hot day. Issue warnings about low branches, hills to climb, rivers to cross, predators to avoid or defend young from and tall trees to nibble.

- You could make *Diplodocus* feet from Activity 13 to inspire movement and to help the children get into character.
- You could change the dynamic of this activity by being two-legged dinosaurs hunting in a group – they would make more darting movements and stop and start. This could be adapted into a playground game like *Grandmother's Footsteps*.
- You could add music as a cue for quicker and slower movements or different activities.
- You could add in a dinosaur doze – a short quiet time when all the dinosaurs lie down and go to sleep.

English curriculum links (Key Stage 1)

Mathematics

Year 1: Geometry: Position and direction

Pupils should be taught to:

- describe position, direction and movement, including whole, half, quarter and three-quarter turns.
- pupils use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside.
- pupils make whole, half, quarter and three-quarter turns in both directions

Year 2: Geometry: Position and direction

Pupils should be taught to:

- use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)

Physical education

Pupils should develop fundamental movement skills, become increasingly competent and confident and access a broad range of opportunities to extend their agility, balance and co-ordination, individually and with others. They should be able to engage in competitive (both against self and against others) and co-operative physical activities, in a range of increasingly challenging situations.

Pupils should be taught to:

- master basic movements including running, jumping, throwing and catching, as well as developing balance, agility and co-ordination, and begin to apply these in a range of activities
- perform dances using simple movement patterns





Northern Irish curriculum links (Foundation Phase and Key Stage 1)

Foundation: Physical development and movement

Pupils should be enabled to:

- listen to and follow simple instructions/rules
- take part in warm-up and cool-down activities
- experiment with different ways of moving and exploring personal and general space
- develop confidence, imagination and some understanding of safety through participating in a range of movement activities
- develop body awareness through varying body movements in relation to shape, levels, pathways (straight/curved), directions, speed
- play/create/modify simple games
- listen and respond to a range of stimuli
- explore, refine and improve simple movements
- create, practise, improve and perform simple movement sequences which have a clear beginning, middle and end
- use a range of movement vocabulary to discuss actions
- observe, describe and copy what others have done

Key Stage 1: Physical education

Scottish curriculum links (Early and First)

Expressive arts: Experiences and outcomes: Dance

I have the opportunity and freedom to choose and explore ways that I can move rhythmically, expressively and playfully.

EXA 0-08a

Health and wellbeing across learning: Responsibilities of all: Experiences and outcomes

Physical activity and sport

I am enjoying daily opportunities to participate in different kinds of energetic play, both outdoors and indoors. **HWB 0-25a**

Within and beyond my place of learning I am enjoying daily opportunities to participate in physical activities and sport, making use of available indoor and outdoor space. **HWB 1-25a**

Numeracy and mathematics: Experiences and outcomes

Shape, position and movement: Angle, symmetry and transformation

In movement, games, and using technology I can use simple directions and describe positions. **MTH 0-17a**

I can describe, follow and record routes and journeys using signs, words and angles associated with direction and turning.

MTH 1-17a

Welsh curriculum links (Foundation Phase)

Knowledge and understanding of the world: Range

Myself and other living things

Children should be given opportunities to:

- learn about the senses that humans and other animals have and use to enable them to be aware of the world around them

Mathematical development

Using measuring skills

- area and volume, angle and position



Activity 15: Which dinosaur are you?

An exercise in self-reflection, movement and dance, working individually.

Learning outcomes

Children will:

- work sensibly as part of a group being aware of personal space and body movement
- role-play and express feelings through movement, gesture and body language
- understand that different dinosaurs had different characteristics
- express themselves through language and movement, accepting that other children are different from you in the way they think, look, behave and move

Resources required

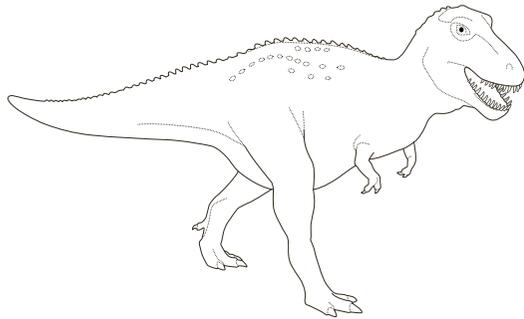
Provided in the Natural History Museum package:

- dinosaur ID cards

Provided by school:

- suitable space
- printing

Activity 15: Which dinosaur are you?



Tyrannosaurus

tie-RAN-oh-sore-us, meaning tyrant lizard

Length **12 metres**

Weight **7,000 kilogrammes**

Favourite food **Other dinosaurs**

They hunted smaller dinosaurs and other animals, using their 60 saw-edged, pointed teeth to crush bones.

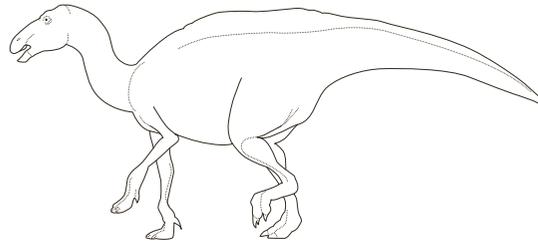
How it moved

Fairly quickly on two legs. They could probably reach speeds of up to 19 kilometres per hour.

Socialite or loner **Loner**

They generally hunted and scavenged alone in Cretaceous forests.

Style **Scary and vicious**



Iguanodon

ig-WHA-noh-don, meaning iguana tooth

Length **10 metres**

Weight **4,000–5,000 kilogrammes**

Favourite food **Ferns**

These herbivores had cheek teeth and horny beaks.

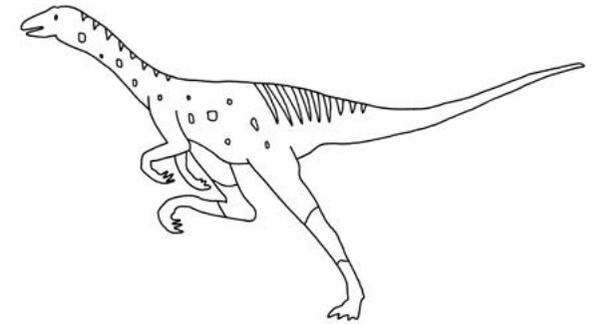
How it moved

On two or four legs, possibly up to 25 kilometres per hour.

Socialite or loner **Socialite**

It seems likely that they roamed in herds at least some of the time.

Style **Placid and sturdy**



Ornithomimus

orn-ITH-oh-MEE-mus, meaning bird mimic

Length **4 metres**

Weight **150 kilogrammes**

Favourite food **Almost everything!**

Probably fruit, leaves, branches, small lizards and mammals.

How it moved

On two legs, possibly up to 65 kilometres per hour – that's twice as fast as Usain Bolt.

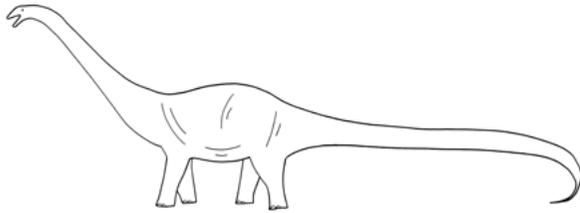
Socialite or loner **Not clear**

Some evidence hints that they might have lived together, but no groups have been found yet.

Style **Decorated and feathered**

Very slender with wings that were too small for flight, but were used for display purposes.

Activity 15: Which dinosaur are you?



Diplodocus

DIP-low DOCK-us, meaning double beam

Length Very long at **26 metres**

Weight **20,000–25,000 kilogrammes**

Favourite food **Salad**

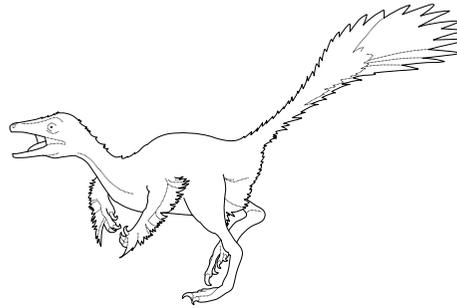
These herbivores ate leaves from trees and soft plants.

How it moved **Slowly on four legs**

Socialite or loner **Socialite**

They had lots of family and friends and grazed together in herds.

Style **Slow and steady**



Microraptor

MIKE-row-rap-tor, meaning tiny thief

Length Very small, up to **1.2 metres**

Weight **1–2 kilogrammes**

Favourite food **Fish**

Plus small mammals, birds and insects.

How it moved

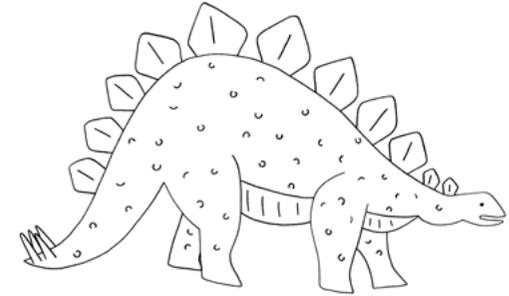
On two legs, also gliding or possibly flying.

Socialite or loner **Loner**

No *Microraptor* fossils have been found in groups, so they were probably lone hunters.

Style **Feathered and glossy**

They had four wings and feathers that might have been used for display.



Stegosaurus

STEG-oh-SORE-us, meaning roof lizard

Length **9 metres**

Weight **6,000–7,000 kilogrammes**

Favourite food **Salad**

These herbivores had no teeth at the front of their mouths.

How it moved

Very slowly, on four legs, using its tail to defend itself.

Socialite or loner **Loner**

They seem to have lived alone most of the time, though they may have come together at certain times of the year to feed or breed.

Style **Slow and strong**



Activity 15: Teacher notes

Distribute the dinosaur ID cards and read through them together. Ask the children to choose the dinosaur that they think is most like them. You might want to spend some time talking in small groups about why are you like this dinosaur.

Tell the children they are going to be their dinosaur selves through movement and silent drama.

Give the children information about where they are (eg forest or beach), and ask them to move in different ways responding in character to the situation (eg scared and hungry, tired, hunting/protecting your eggs/in sticky mud or over hot sand).

If you are a feathered dinosaur, try out your wings before your first flight. Preen to keep your feathers clean and in good condition. Bathe like a bird.

- You could sort the class and make a chart to show how many or which children chose each card.
- You could make dinosaur feet to wear for this activity to inspire movement and help the children get into character.
- You could add music and turn this into a dance activity.
- You could create a group performance based on this work for an assembly.

English curriculum links (Key Stage 1)

Physical education

Pupils should develop fundamental movement skills, become increasingly competent and confident and access a broad range of opportunities to extend their agility, balance and coordination, individually and with others. They should be able to engage in competitive (both against self and against others) and co-operative physical activities, in a range of increasingly challenging situations.

Pupils should be taught to:

- master basic movements including running, jumping, throwing and catching, as well as developing balance, agility and co-ordination, and begin to apply these in a range of activities
- participate in team games, developing simple tactics for attacking and defending
- perform dances using simple movement patterns

Northern Irish curriculum links (Foundation Phase and Key Stage 1)

Foundation: Physical development and movement

Key Stage 1: Physical education

Dance

Pupils should be enabled to:

- use different parts of the body to explore personal and general space and to move using simple actions
- listen to, and move in response to, different stimuli and accompaniments
- move in a controlled manner, at different speeds and in different directions, using different levels in space, (high, low), and different strengths (heavy, light)
- perform simple steps and movements to given rhythms and musical phrases
- create, practise, remember and perform simple movement sequences
- develop their movements progressively individually and in pairs

Scottish curriculum links (Early and First)

Expressive arts: Experiences and outcomes

Participation in performances and presentation

Inspired by a range of stimuli, I can express my ideas, thoughts and feelings through creative work in dance.

EXA 0-09a / EXA 1-09a / EXA 2-09a

Dance

I have the opportunity and freedom to choose and explore ways that I can move rhythmically, expressively and playfully.

EXA 0-08a

I have experienced the energy and excitement of presenting/performing for audiences and being part of an audience for other people's presentations/performances.

EXA 0-01a / EXA 1-01a / EXA 2-01a





Welsh curriculum links (Foundation Phase)

Physical development: Skills

Adventurous and physical play

Children should be given opportunities to:

- develop an understanding of how their bodies move
- be able to move safely with increasing control and coordination
- become proficient at the basic actions of travelling, including stepping, jumping and landing, transferring weight from feet to hands, balancing, rolling, turning, climbing and swinging, both on the floor and when using a range of equipment and apparatus
- link the basic actions in sequence and gradually improve their control and use of different shapes, levels and direction of travel
- understand, appreciate and enjoy the differences between running, walking, skipping, jumping, climbing and hopping
- become knowledgeable about spatial awareness and relationships such as behind, underneath, below, over, under and on top of
- understand rules and elements of games and be able to play simple cooperative and competitive games
- be able to apply knowledge, eg dodging to avoid others and how to attack and defend a target
- work out and practise a variety of ways of sending, receiving and travelling with small equipment
- solve simple problems with a partner, such as how to use, find, retrieve or carry objects, score points, etc



Activity 16: Listen to the world

Listen to the sounds around you, use vocabulary to describe them and recreate them musically. Imagine how the Jurassic world might have sounded.

Learning outcomes

Children will:

- develop listening skills and concentration
- develop and build language and vocabulary to describe sounds and experiences
- enjoy musical creativity using voices and instruments
- exploring the local environment using a variety of senses

Resources required

Provided by school:

- paper (writing frame) and pencils for collecting sound descriptions and numbers of sounds
- musical instruments
- device to record musical performance



Activity 16: Teacher notes

Can you imagine what the world sounded like when Dippy was alive? How do you think it compares to what you hear around you? The sounds you hear around you are your soundscape, just like what you see around you is your landscape.

Lie down on the floor in the classroom or hall, close your eyes and listen carefully for two minutes.

Remember the different sounds you hear. Work silently for a minute afterwards to make a tally of the number of different sounds and try to write down a description of what you heard. This could be followed up with a discussion about the language they have used.

Collect together a list of sounds for the whole class. If anybody heard anything they could not recognise can they describe it in words?

Go outside and repeat this activity, in the playground or a park. Were there any different sounds? Have any of the sounds they could also hear inside changed? How?

Can they separate sounds that are human-made from natural sounds?

Back in the classroom, use voices and musical instruments to recreate the outdoor soundscape and record this.

- You could create a visual score for your soundscape using different shapes or marks to denote different sounds. Can another group recreate the soundscape by following the score?
- You could repeat the exercise in different places around the school and create a sound map for the whole area.
- You could record sound clips from outside and add these to the soundscape.
- You could take photos or film clips outside and use the images and sound together to create an immersive film. You could add further multi-sensory elements to this with plants, dead leaves, twigs etc.
- You could use this idea alongside Activity 10. Try to imagine what sounds a time traveller who went back to the Late Jurassic to see the *Diplodocus* Dippy was cast from would hear and recreate this soundscape in a similar way. What did dinosaurs sound like? What other animals (eg frogs) living in the habitat would have contributed to the soundscape? Would there have been any human-made noise? Listen to recreations of some Jurassic forest noises: nhm.ac.uk/dippy-sounds.

- You could watch films of natural environments in other parts of the world with no sound and try to create the soundscape to match the images.
- You could try this activity as part of a Forest School or other outdoor learning activity.
- You could use this as an introduction to learning about sound and hearing.

English curriculum links (Key Stage 1)

Music

Pupils should be taught to:

- use their voices expressively and creatively by singing songs and speaking chants and rhymes
- play tuned and untuned instruments musically
- listen with concentration and understanding to a range of high-quality live and recorded music
- experiment with, create, select and combine sounds using the inter-related dimensions of music

Science

Pupils might work scientifically by:

- using their senses to compare different textures, sounds and smells

English, Mathematics/Numeracy, Statistics

Pupils should be taught to:

- interpret and construct simple pictograms, tally charts, block diagrams and simple tables





Northern Irish curriculum links (Foundation Phase and Key Stage 1)

The Arts

Foundation: Music

Pupils should be enabled to:

- work creatively with sound
- sing and perform with simple instruments
- listen and respond to own and others' music-making

Progression

As pupils progress through the Foundation Stage they should be enabled to:

- be aware of and perform a steady beat
- distinguish between loud/quiet sounds, high/low sounds, long/short sounds, fast/slow music
- listen to and repeat simple rhythms
- make music

Key Stage 1: Music

Pupils should be enabled to:

- work creatively with sound by investigating, experimenting, selecting and combining sounds to express feelings, ideas, mood and atmosphere
- sing and perform with simple instruments to develop vocal and manipulative control
- listen and respond to their own and others' music-making, thinking and talking about sounds, effects and musical features in music that they create, perform or listen to

Scottish curriculum links (Early and First)

Expressive arts: Experiences and outcomes

Music

I have the freedom to use my voice, musical instruments and music technology to discover and enjoy playing with sound and rhythm. **EXA 0-17a**

I can use my voice, musical instruments and music technology to discover and enjoy playing with sound, rhythm, pitch and dynamics. **EXA 1-17a**

Inspired by a range of stimuli, and working on my own and/or with others, I can express and communicate my ideas, thoughts and feelings through musical activities.

EXA 0-18a / EXA 1-18a / EXA 2-18a

Numeracy and mathematics: Experiences and outcomes

Information handling: Data analysis

I have explored a variety of ways in which data is presented and can ask and answer questions about the information it contains.

MNU 1-20a

I have used a range of ways to collect information and can sort it in a logical, organised and imaginative way using my own and others' criteria. **MNU 1-20b**

Using technology and other methods, I can display data simply, clearly and accurately by creating tables, charts and diagrams, using simple labelling and scale. **MTH 1-21a**

Welsh curriculum links (Foundation Phase)

Knowledge and understanding of the world

Throughout the Foundation Phase children should be given opportunities to:

- explore a wide range of stimuli
- engage with resources from a variety of contexts including interactive forms
- investigate indoor and outdoor learning environments, as well as including natural conditions as they arise
- participate in different types of play and a range of planned activities, including those that are child initiated and those that build on previous experiences
- work on their own and in pairs and small groups

Creative development: Skills

Music

Children's musical skills should be fostered and promoted through using their senses, imagination and experience. Creative music activities in the Foundation Phase should enable children to make progress in their ability to:

- explore a range of sound sources and experiment with different ways of making and organising sounds
- create their own musical ideas and contribute to simple compositions
- recognise and describe sounds, and listen and respond to music
- reflect on their own and others' music

