

Resources for ages 4–7

From early 2018 to late 2020 the Natural History Museum's iconic *Diplodocus* cast, Dippy, is on a Natural History Adventure across the UK. We hope that Dippy will inspire you to go on your own adventure, exploring the incredible natural history collections and amazing biodiversity right on your doorstep!

These resources are a collection of pick-and-mix, cross-curricular activities and some useful facts to enrich Science, Maths, English, DT, Music and PE, covering a combination of dinosaur- and bird-related topics.

# Dippy on Tour

## A Natural History Adventure



In partnership with



Garfield Weston  
FOUNDATION



Supported by



Debbie Powell for NHM

[nhm.ac.uk/dippyontour](http://nhm.ac.uk/dippyontour)

# Activity 4: Longest bone

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

## Learning outcomes

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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

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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

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Provided in the Natural History Museum package:

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

Provided by school:

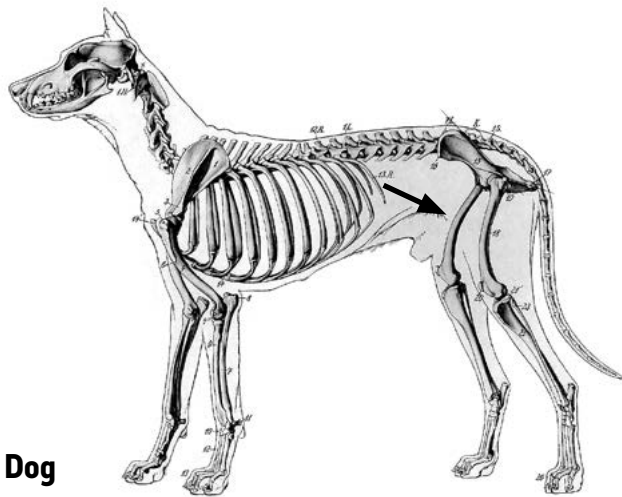
- printing
- metre sticks, rulers or tape measures
- string
- dinosaur factual books or wall chart

# Activity 4: Longest bone

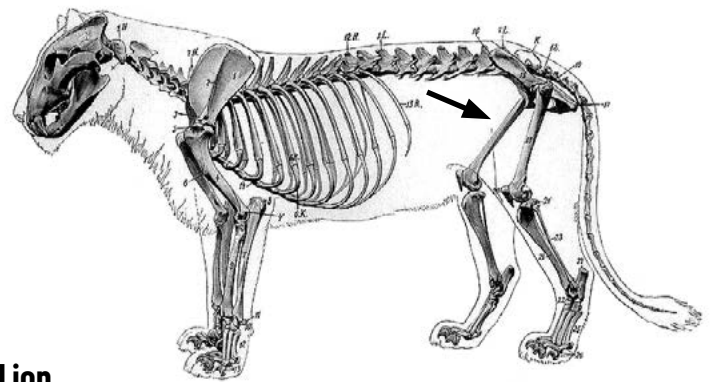
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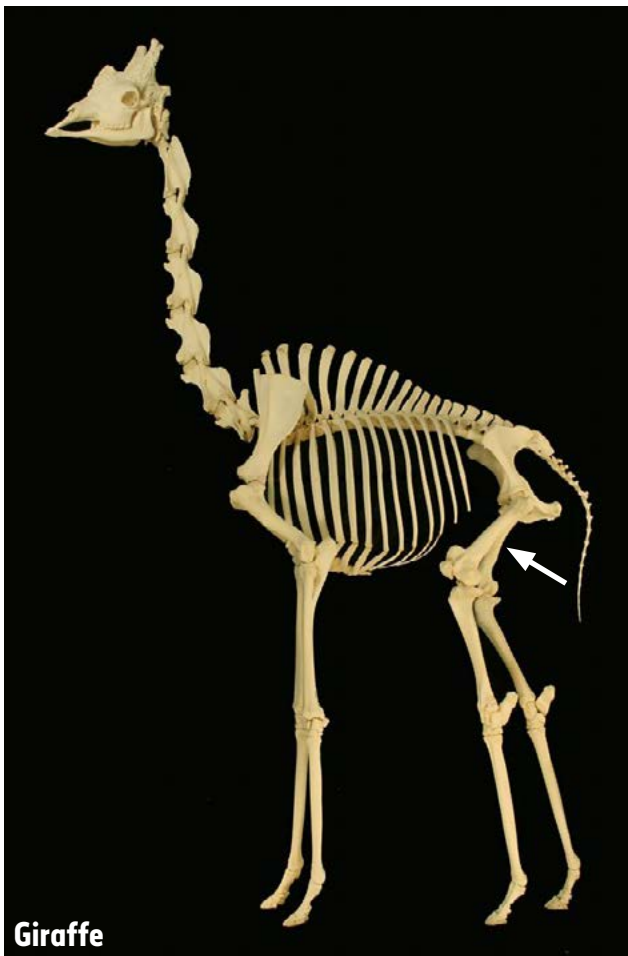
# Activity 4: Longest bone



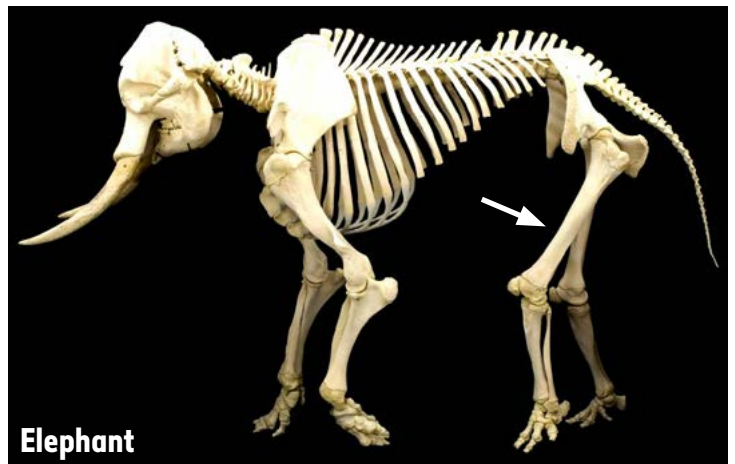
**Dog**



**Lion**



**Giraffe**

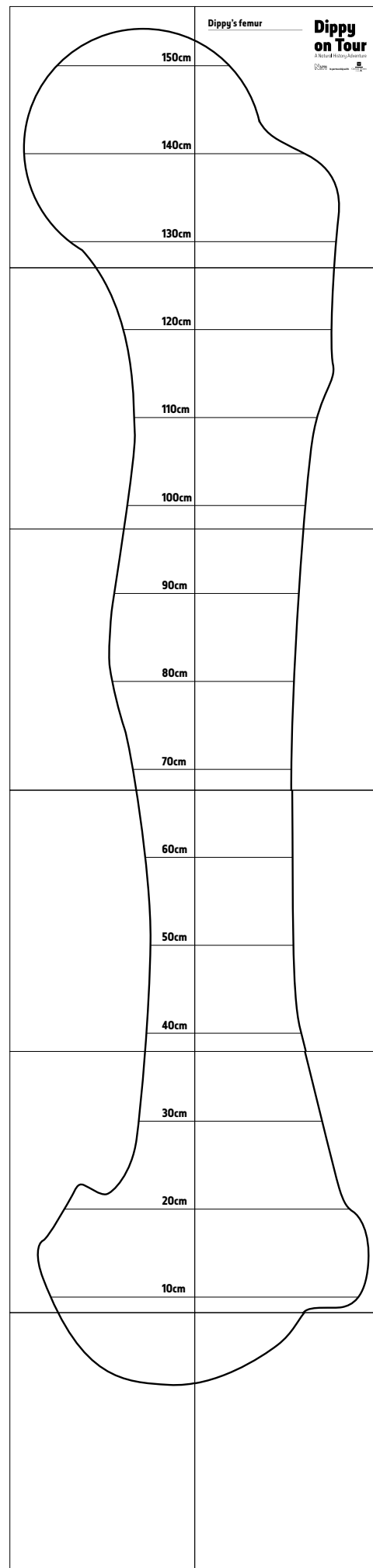


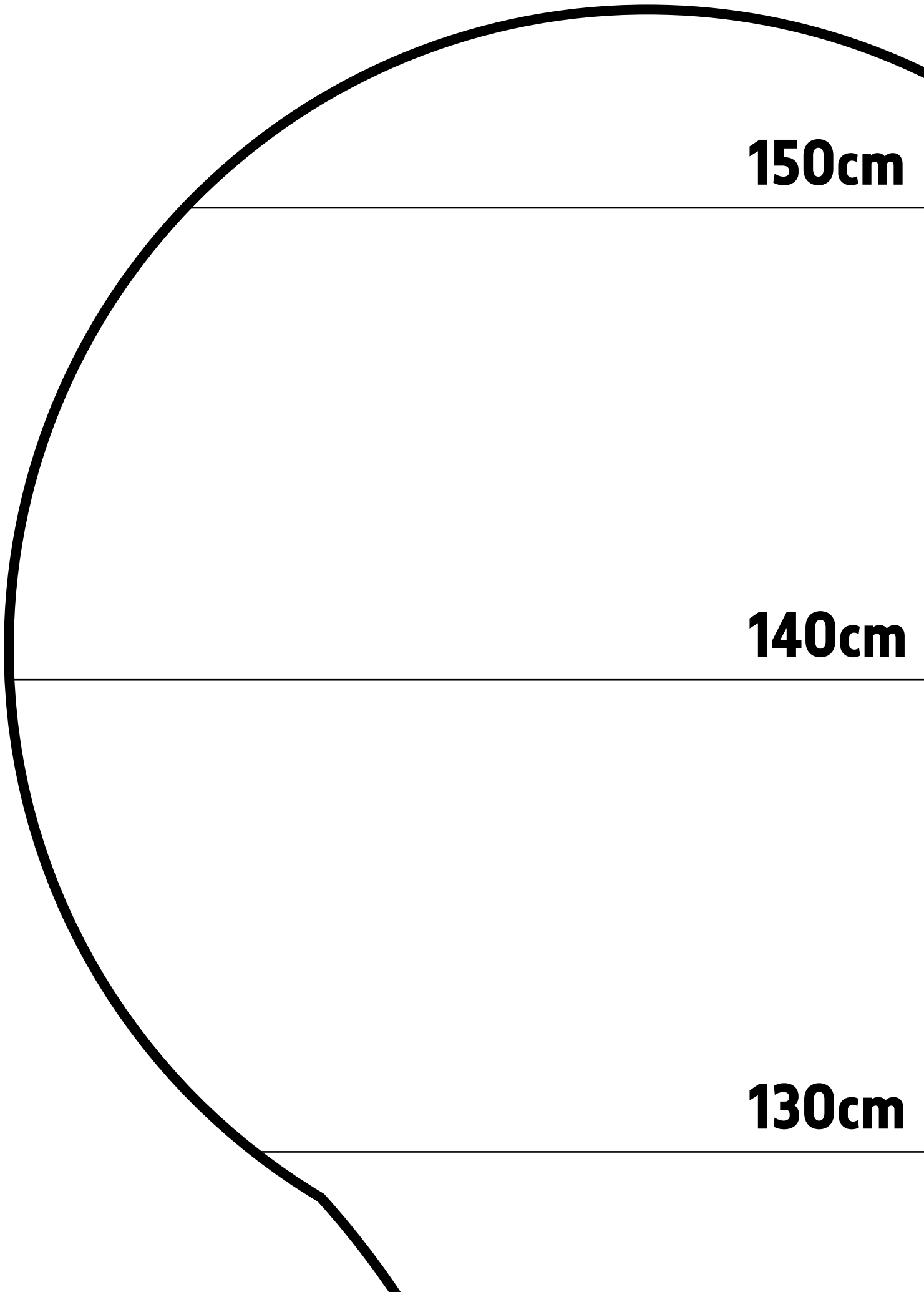
**Elephant**

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

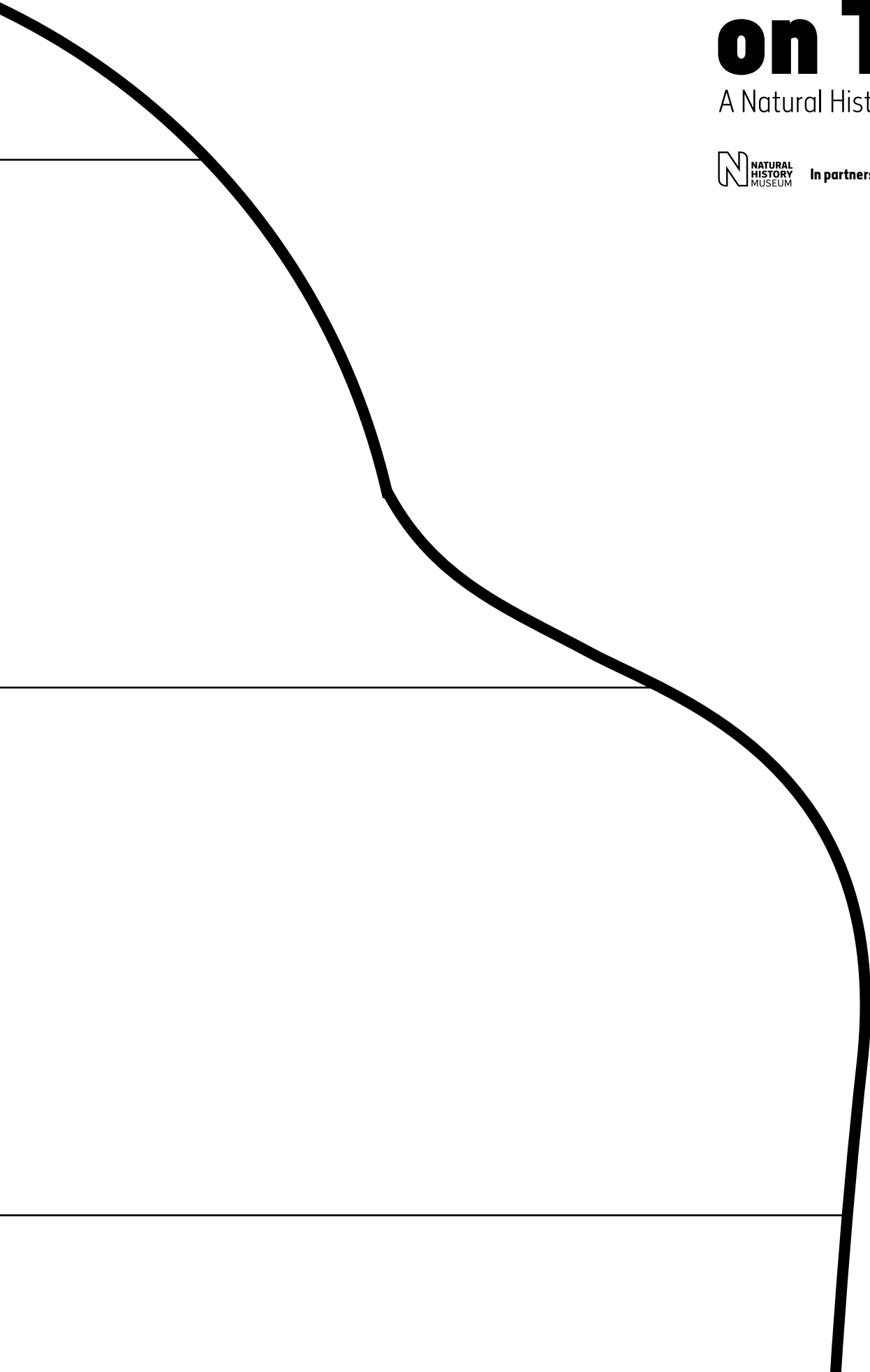
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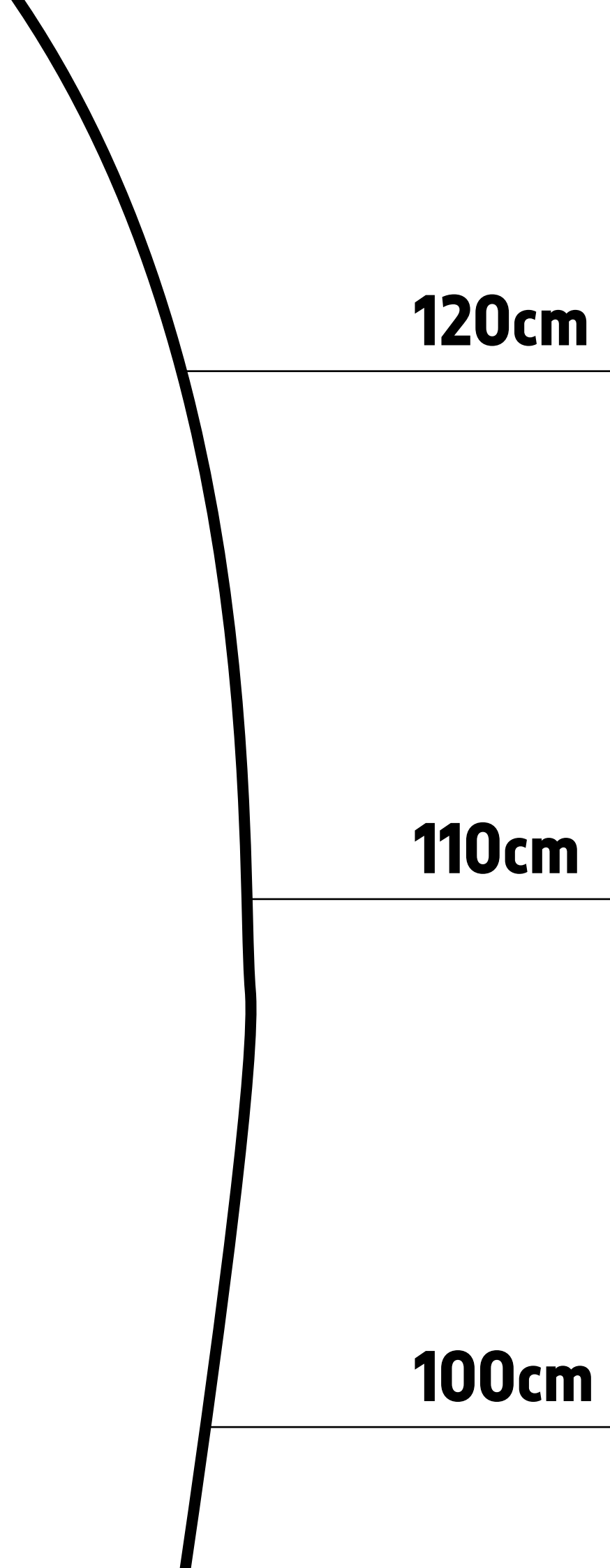
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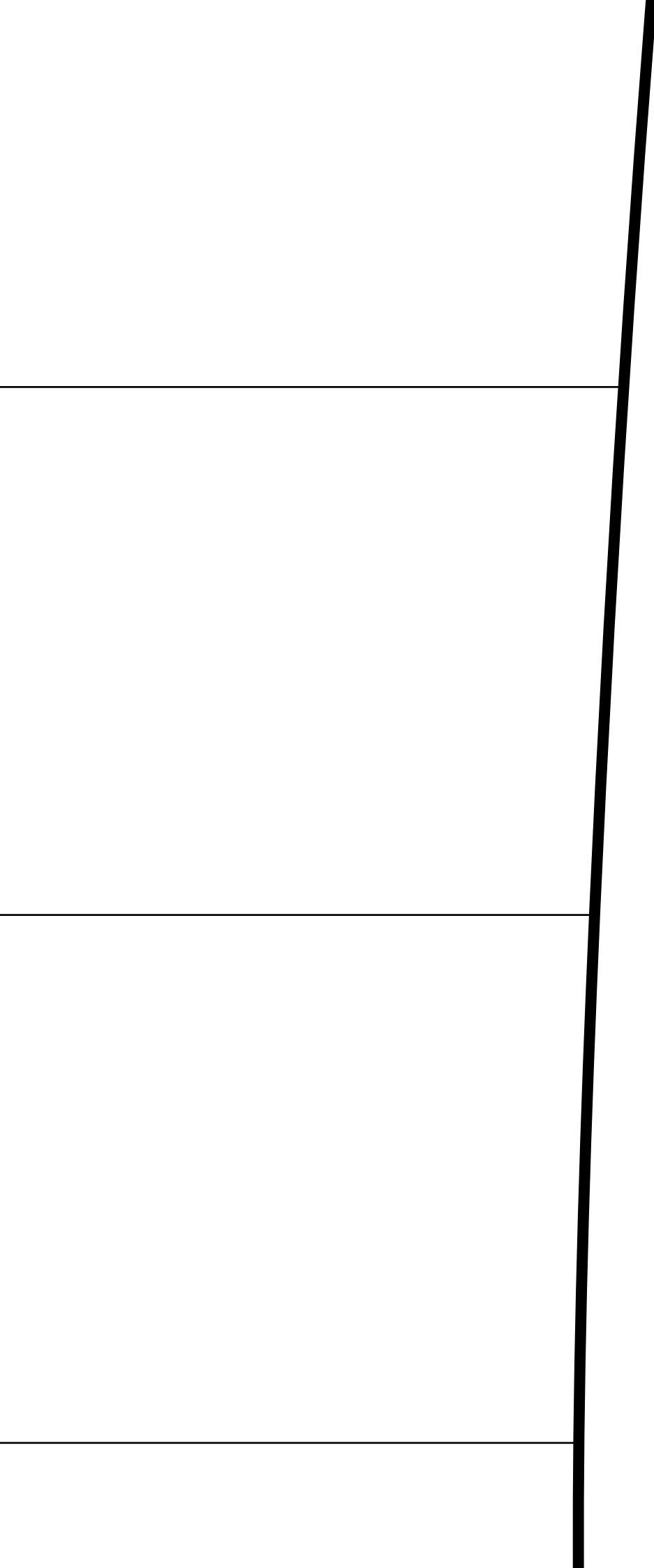




**90cm**

**80cm**

**70cm**



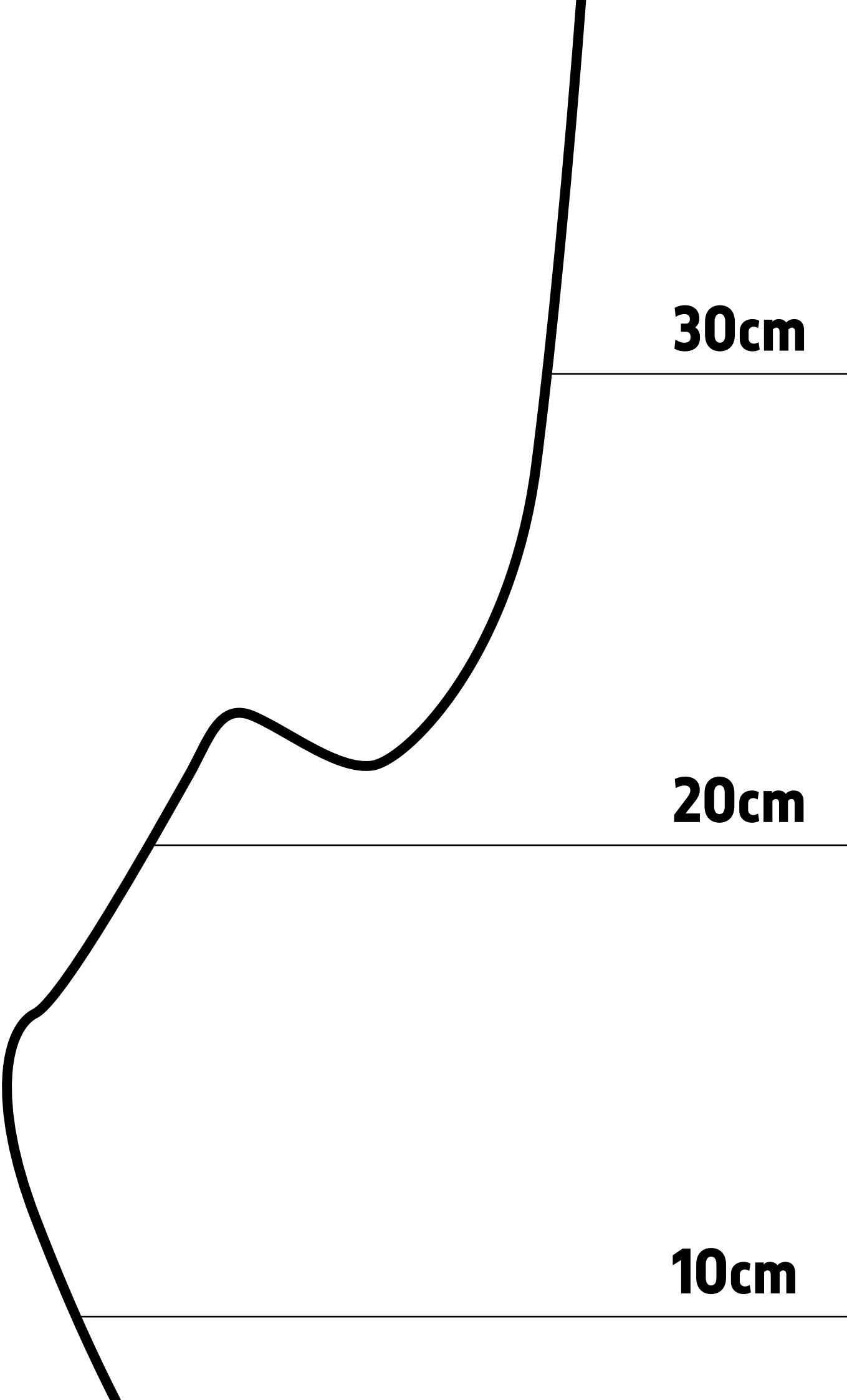


**60cm**

**50cm**

**40cm**

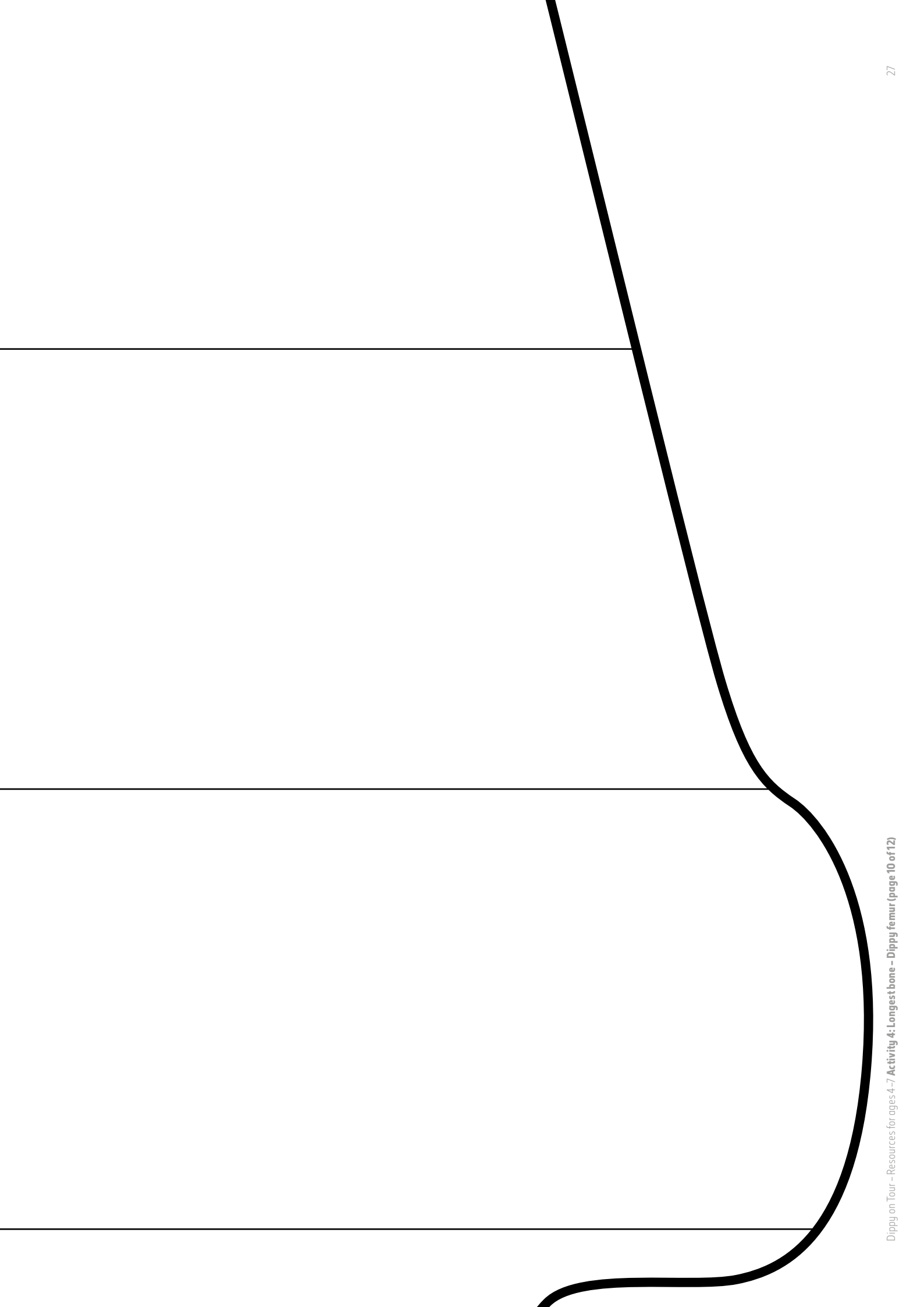


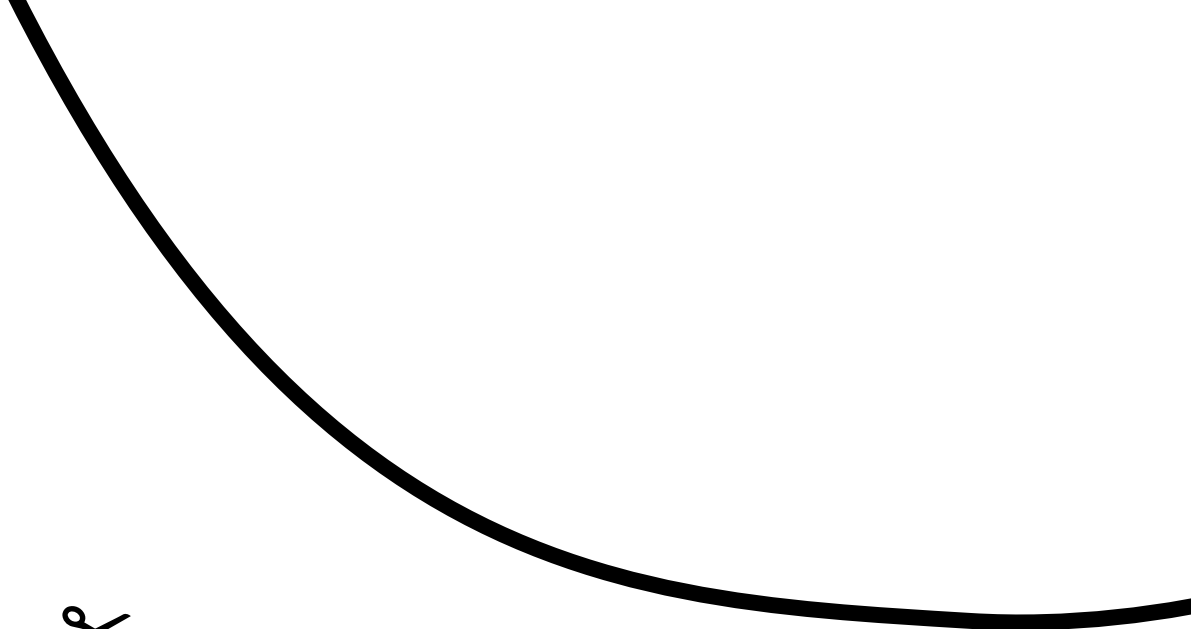
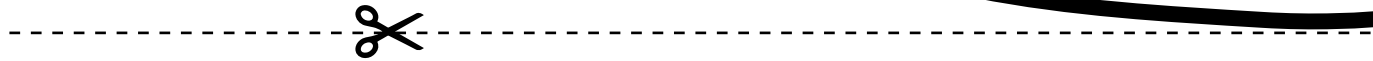


**30cm**

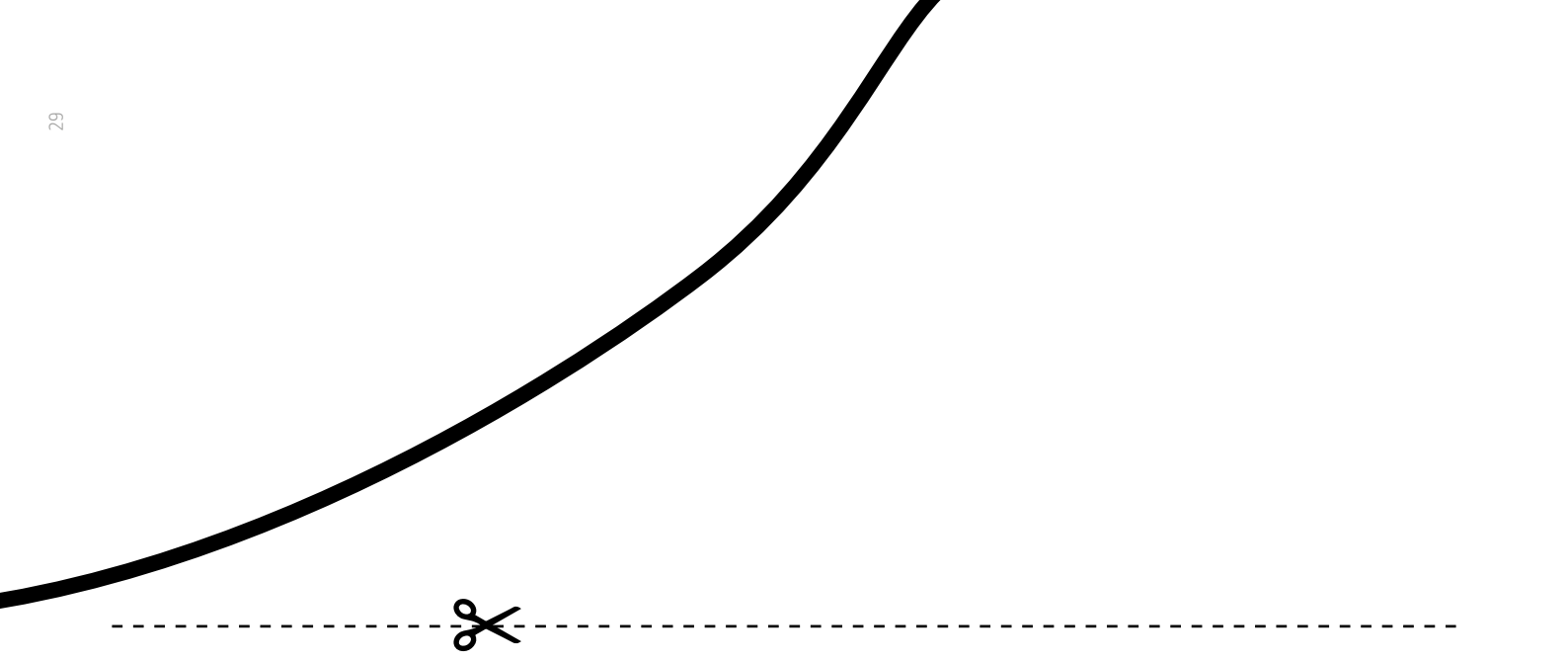
**20cm**

**10cm**

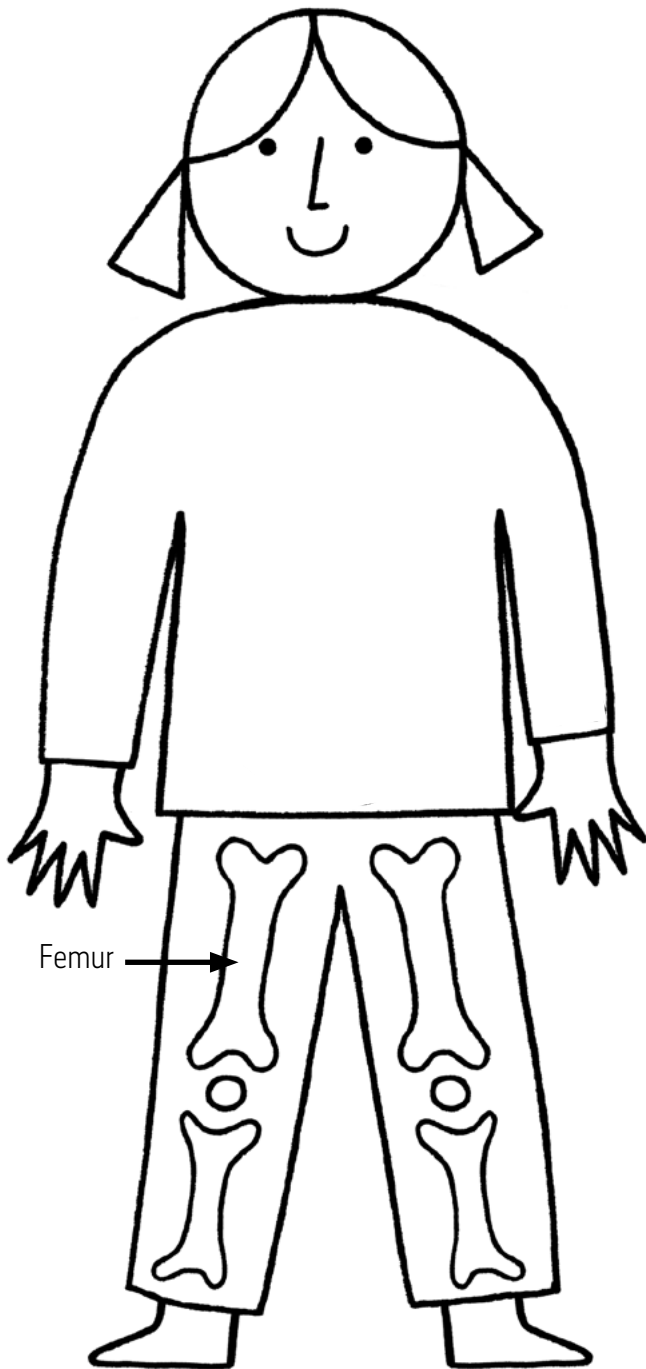








# Activity 4: Longest bone



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)

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### 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)

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### 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)

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### 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

