

ACTIVITY 01 | PRIMARY



# Head to toe

## *Bodies in proportion*

**KS1 or KS2**

Art and Design, Science

**First or Second level**

Expressive Arts, Sciences, Technologies

# Head to toe

## *Bodies in proportion*

There are lots of anatomical drawings by Leonardo within the Royal Library at Windsor Castle. Leonardo used these drawings to better understand how bodies worked, and in turn, he used this knowledge to help him create more lifelike paintings and sculptures.

How has thinking about the human body changed since the fifteenth century? Today we have X-rays, keyhole cameras and the benefit of remarkable technology that was not available during Leonardo's time. He had to work with the resources available to him, and sometimes this impacted on his accuracy, for example:

- Leonardo drew livers much smaller than they should be, probably because he had dissected diseased livers of older men
- When he drew a uterus it was too large and had 7 niches, as this was based on a belief dating back to the ancient Greeks
- We also know Leonardo's anatomical drawings could be too symmetrical. On the [Leonardo da Vinci: Anatomy](#) app, Vishy Mahadevan, Professor of Surgical Anatomy, Royal College of Surgeons in England, explains that bodies are 'innately asymmetrical'.



### IN THIS ACTIVITY PUPILS WILL:

**EXPERIMENT** with old art 'rules' and advice from Leonardo.

**FIND OUT** that Leonardo experimented to test Vitruvius's ideas.

**USE MATHS** to test concepts and measurements.

**MAKE POSITIVE LINKS** between their own interests and skills and Leonardo's.



### EXTRA OPTION

Older children could watch the 'Everything in Proportion' option on the *Anatomy* app to explore Leonardo's 'Vitruvian Man'. The 'Habeas Corpus' option (especially the subsection called 'The Making of the Female Situs') illustrates the differences between what Leonardo knew about anatomy and what we know about bodies today.

## STEP 01

### Work it out

Leonardo's knowledge of the human body would have helped him structure figures in his impressive final paintings. He combined his knowledge of human bodies with what he could see. Royal Collection Trust cares for several drawings that appear to relate to final paintings. For example, *The head of St Anne, c.1510–15 (RCIN 912533)* and drapery studies that were in preparation for *The Madonna and Child with St Anne and a lamb, c.1508–19*, a painting in the Louvre, Paris.

We all know our bodies are different from one another but many artists, including Leonardo were searching for 'rules' to apply to the proportions of all bodies. You can see Leonardo trying to do this in *The proportions of the head, and a standing nude, c.1490 (RCIN 912601)* but he soon abandoned his proportional studies as it simply didn't work.

Using Leonardo's drawing as an example, ask pupils to spot that the eye is at the mid-point of the head, and the face is divided into three sections.

Older pupils can discuss 'ideal' bodies and how to accept differences in each other.

## STEP 02

### Learning to draw

Set up a Leonardo style standing pose for a drawing activity in sketchbooks. Drawing from life was really important for Leonardo's learning. He didn't guess how the human body was structured or worked; he found out for himself. He worked hard at his knowledge and skills and had a great teacher. Copying from his master was an important way for Leonardo to learn and test himself.

Use Leonardo's advice on learning to draw:

*'First draw from drawings by good masters done from works of art and from nature, and not from memory'*

#### ASK PUPILS TO FOLLOW THESE STEPS:

First, try applying a rule used during the Renaissance to your drawing:

Sketch your model from head to toe eight heads high (we know this is closer to seven).

Does it work?

After 5–10 minutes stop them and declare, 'As we are living in the 21st century we can break this rule so now correct your drawing! Draw what you actually see'.

Second, try memorising your model for 1 minute and then turn away to draw what you remember for 2 minutes. No peeking!

Is it difficult?

Ask pupils to explain what they gain by looking at the model (their drawing will be more accurate, they can compare proportions to objects around the model, they don't have to rely on their visual memory).

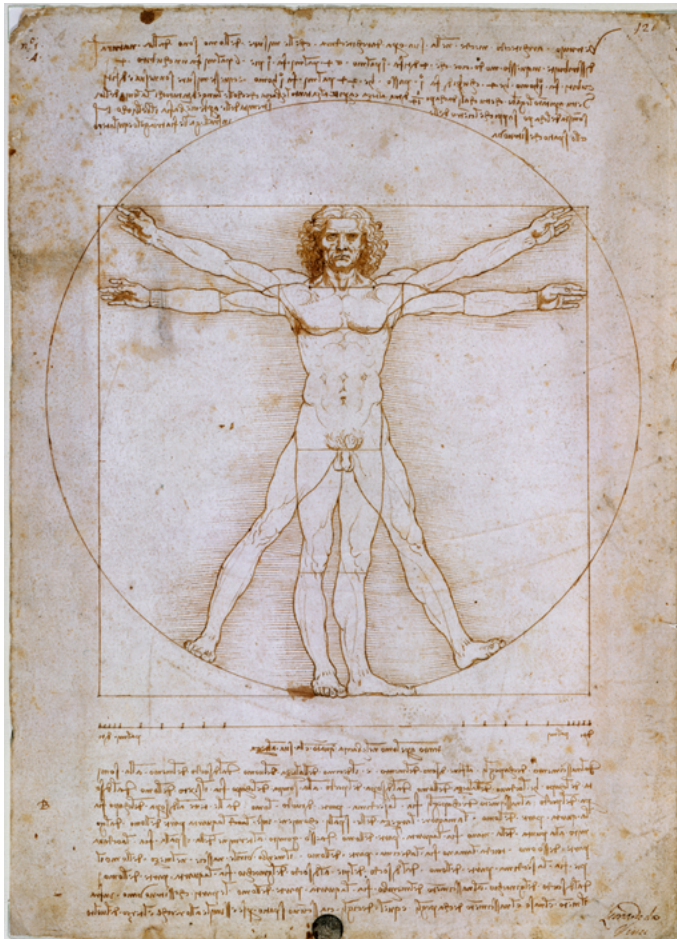
## STEP 03

### Measuring

In the maths-based activity on the next page, a teacher or other adult may need to be the measured subject, together with human measurements found in a book or online, just to be doubly sure of accurate results.

It is important for pupils to consider that no matter how expert Leonardo was, he didn't always get things right. The 'Vitruvian Man' is Leonardo's most famous drawing and is in the collection of the Gallerie dell'Accademia, Venice. It was inspired by someone else's idea: the Roman author, architect and engineer Vitruvius (first century BC).

# Leonardo and the Vitruvian Man



The 'Vitruvian Man' was inspired by someone else's idea: the Roman author, architect and engineer Vitruvius (first century BC). Vitruvius tried, through an ideal body, to show a link between perfect proportion in architecture and the human body. Of course, Leonardo had to test these ideas!

Now it is your turn.

Step 1:

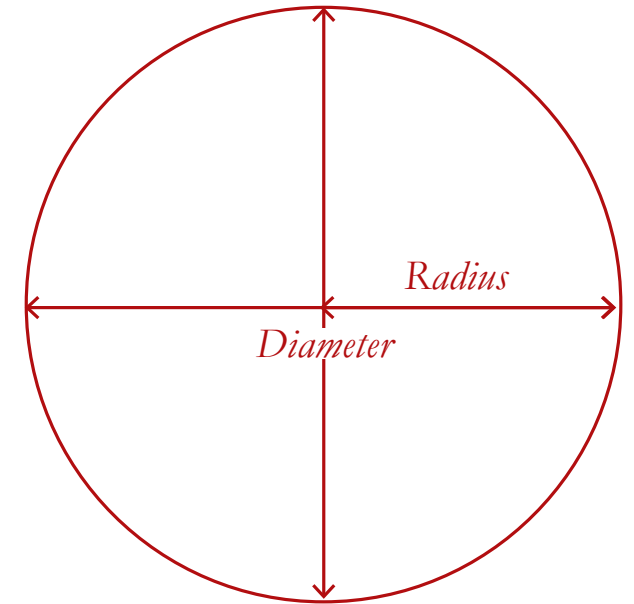
Identify both a radius and a diameter in the 'Vitruvian Man' drawing.

Step 2:

Investigate these two test questions:

Is an adult as tall as their outstretched arms?

Is a foot  $\frac{1}{6}$  of a human's height?



# Resources



## EQUIPMENT

- 'Leonardo and the Vitruvian Man' activity sheet
- Measuring tapes, pencils
- Human measurements references
- *Leonardo da Vinci: Anatomy* app (optional)
- FANTASTIC FINISH: 'Being Leonardo' activity sheet

## FANTASTIC FINISH



Introduce the self-reflective activity sheet 'Being Leonardo' and share with pupils how we know that Leonardo was interested in and good at lots of things (a 'polymath').

Encourage pupils to share with the class what they are good at and the feedback their friends have given them.

## RESOURCE IMAGES



*The proportions of the head, and a standing nude c.1490*  
([RCIN 912601](#))



*The bones and muscles of the arm, c.1510-11*  
([RCIN 919000v](#))

## MORE ACTIVITY IDEAS



For another of Leonardo's formal Renaissance-style drawings, see his diagram drawing *The fall of light on a face, c.1488* ([RCIN 912604](#)), where his notes explain shadows and that, in his opinion, scenes should be lit from the side.

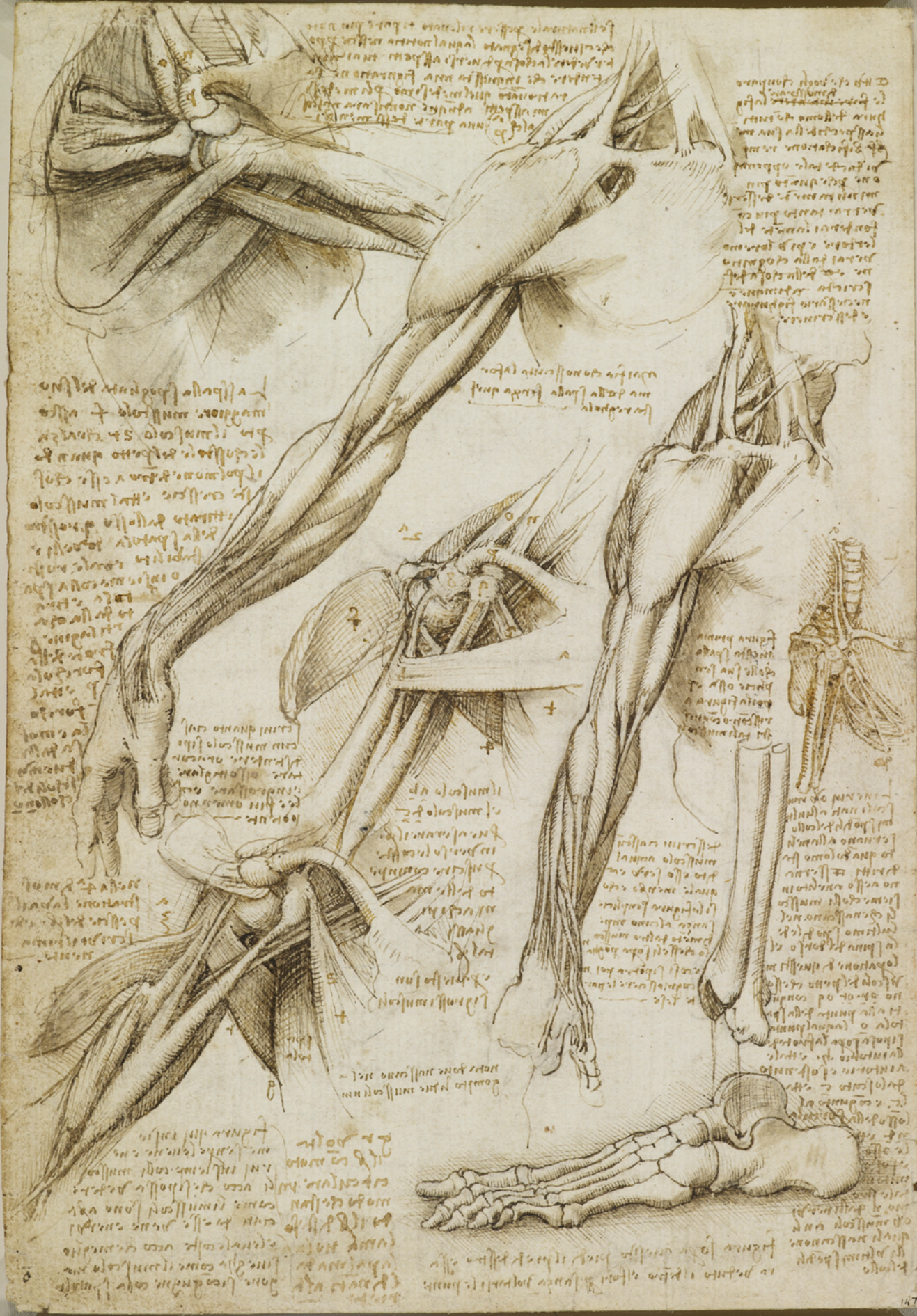
Find examples of Leonardo's finished paintings online. Can you see the influence of his anatomical studies on his work?

Compare one of his earliest paintings with the last.

**Answers to questions on the 'Leonardo and the Vitruvian Man' activity sheet:**

1. Yes, within around 5 cm

2. No, Leonardo's drawings showed it as closer to  $\frac{1}{7}$



The muscles of the shoulder and arm, and the bones of the foot, c.1510-11 (RCIN 919013v)



ACTIVITY 02 | PRIMARY



# Exploring plants

**KS1 or KS2**

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