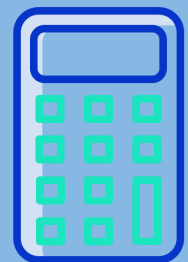
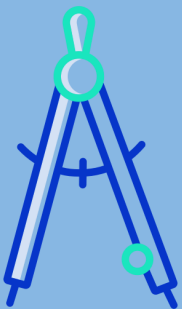




THE INVISIBLE MUSEUM

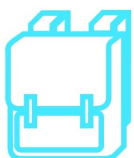
STEAM ACTIVITY PACK

Science, Technology, Engineering, Arts & Maths
activities aimed at 7–11 year olds



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ENGLAND**

Welcome to the Invisible Museum! I am Hura, the Curator, and I have lots of interesting artefacts (historical objects) to show you and lots of exciting stories to tell.

Who is this pack for?

I have designed this pack for young people between 7 and 11 years old. It links with various aspects of STEAM (science, technology, engineering, arts and maths) learning and can be used at home or at school. It should be used in conjunction with the videos on my website www.knapsackproductions.com/tim

Before you start

You need to start by watching the introduction video. It can be found on the website www.knapsackproductions.co.uk/tim

How to use this pack

Each activity sheet focuses on an intriguing artefact that I am taking back to the Invisible Museum. You will find a link to a video all about it, a photograph of the artefact, a mini fact-file about its owner, and a STEAM task for you to do.

Watch the relevant video first. Then complete the task.

Have fun!

STEAM learning can take you on adventures through science and history! I hope you enjoy finding out about some of the people who have contributed so much to history, but whose stories are not always told.

I'll see you soon!

A handwritten signature in black ink that reads 'Hura' in a cursive, flowing style.

Hura

The Curator of the Invisible Museum

The people these stories are about



Lilian Bader



Rosalind Franklin



Garrett Morgan



Mary Anning



Hypatia of Alexandria



Rosalind Franklin's notebook

Rosalind Franklin video
<https://youtu.be/2gJhHWS3cYE>

INFORMATION

Name: Rosalind Franklin

Born: 25 July 1920 **Died:** 16 April 1958

Achievements:

Chemist and X-ray crystallographer who worked on the molecular structure of coal, graphite, viruses, DNA and RNA.

Task: Complete an experiment and keep an observation diary

Rosalind Franklin kept detailed notes of her observations about all of her experiments. She also drew diagrams and sketches, and she took photographs. You are going to do a simple experiment and keep notes, drawings and, if you can, photographs about what you see.

You will need:

2 slices of bread

2 zip-lock plastic bags

your hands

Without washing your hands, put your hand directly onto one of your slices of bread and press down. Now carefully place that slice of bread into the plastic bag and seal it.

Now wash and dry your hands. Take the second slice of bread and put it into the other bag and seal it. This is your control slice.

Watch what happens to the bread in each bag over the course of a week. Make notes, draw sketches and diagrams of what you see and take photos if you can.





Hypatia's astrolabe

Hypatia video

https://youtu.be/htVyAa2O_J8

INFORMATION

Name: Hypatia

Born: 350AD (approx.) **Died:** 415 AD

Achievements:

First female astronomer, mathematician and philosopher for whom there are written records.

Task: Make up a constellation and write a mythical story to go with it

One of the most well known constellations is Ursa Major, the Great Bear. The part you probably recognise is the lower section (the bear's bottom!), which is often called the Plough or the Big Dipper. Hypatia would have known the constellation as Arktos Megale.

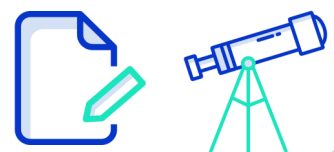
All these constellations have stories attached to them. For Ursa Major, there are many stories. Sometimes it is considered to be an elk, which was pursued into the sky by a human hunter and then turned into a constellation.

Another story is that it is Callisto, a nymph. The Roman God Jupiter was in love with Callisto. Jupiter's wife, Juno was angry, and believed that Callisto's son Arcas was probably also Jupiter's son. Juno transformed Callisto into a bear so that Jupiter would no longer be in love with her. Arcas met Callisto and did not recognise her as his mother. He nearly shot her! To avoid this tragedy, Jupiter turned Arcas into a bear as well and transformed both bears into constellations – Ursa Major (the Great Bear) and Ursa Minor (the Lesser Bear).

Your turn:

Draw your own constellation. You could go out and look at the night sky, use a computer program or find a picture of the night sky to choose your stars.

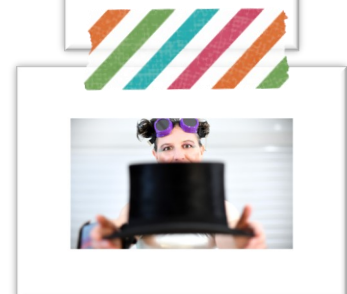
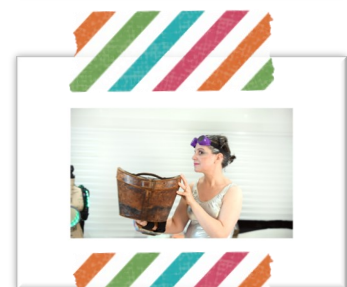
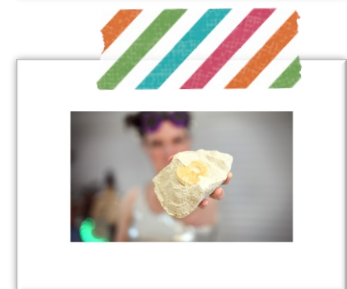
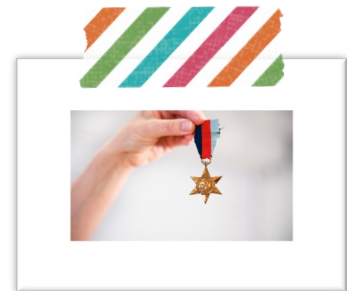
Once you have chosen your stars, decide what they look like and give them a name. Finally, write your own mythical story about how those stars came to be in that shape in the sky.



Task: Draw an artefact

Draw one of the artefacts I am taking back to the Invisible Museum. There are some photos down the side to inspire you or you could watch the films at:

www.knapsackproductions.co.uk/tim



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INFORMATION

Name: Lilian Bader

Born: 18 February 1918 **Died:** 13 March 2015

Achievements: One of the first black women to join the Women's Auxiliary Airforce (WAAF). Gained a first class pass as an instrument repairer in the WAAF.



Lilian Bader's medal

Lilian Bader video

<https://youtu.be/ep51logWFNg>

Task: Design, make and fly aeroplanes

Lilian Bader was an instrument engineer in the WAAF. She was posted to RAF Shawbury, and worked on the aircraft based there. You are going to design, make and test fly a paper aeroplane. Then you are going to work out what does and doesn't work in your design, make adaptations and see if you can then get it to fly better or further.

You will need:

A pen and paper for design

Sheets of paper or thin cardboard for making your aeroplane

Coloured pens and pencils for decorating

A ruler, metre stick or tape measure

Draw a design for your aeroplane. You should research both aeroplane and paper aeroplane design – what do you want to take from each?

You could look at the planes of World War II for inspiration.

Now create your design out of paper and/or card.

Next, fly your plane. Make a start line where you will stand. Measure the length of the plane's flight and not whether or not there were any problems in the flight.

Can you improve your plane's flight path or its distance by making modifications?

Have a go and then fly it again to see what changes.



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Garrett Morgan video

<https://youtu.be/VlSFVhCw10s>



Garrett Morgan's Smoke hood

INFORMATION

Name: Garrett Morgan

Born: 4 March 1877

Died: 27 July 1963

Achievements: Designed and developed the smoke hood, a three-position traffic light system and chemical hair straightening products. Also involved in civil rights for African-Americans.

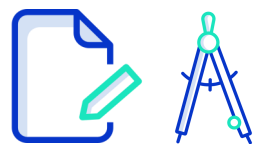
Task: Design your own invention to overcome a problem you encounter

An inventor and businessman, Garrett Morgan designed things which overcame problems he saw in the world. His smoke hood enabled firefighters and emergency rescue teams to breathe clean cool air in dangerous environments. His hair products straightened curly hair chemically. His three-position traffic light enabled traffic to navigate crossroads safely.

Your turn:

Think about a problem you see in your everyday life. Can you think of something which could solve it? What about a holder to stop ice lollies melting on your hands in the sunshine? Or how about a self-cleaning bedroom with a wardrobe that automatically folds and tidies clothes? Or how about a device that helps you to exercise at home? Whatever problems you see, try to think of solutions to them. Be as ingenious as you can.

Next you need to draw your proposed solution. Make it as clear as you can. Add labels to your diagram explaining what each part does.



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Task: Decide who I should visit next

Once it is safe for me to travel, who do you think that I should go and visit next? Research and write about someone who has influenced society, but not many people know about. Perhaps choose someone local to you, like I chose Maud Cunnington when I visited Chippenham, Wiltshire.

Write a little bit about your chosen person here, and perhaps draw a picture of the artefact I should take back to the museum.





A fossil from Mary Anning

Mary Anning video

https://youtu.be/rZPACR_AXRc

INFORMATION

Name: Mary Anning

Born: 21 May 1799

Died: 9 March 1847

Achievements: Notable fossil collector, dealer and expert. First major find was a full 4 foot ichthyosaur skeleton at only 12 years old.

Task: To draw an ammonite and explore Fibonacci sequences

An ammonite is a natural example of a Fibonacci sequence. A Fibonacci sequence is a list of numbers. Each number is the sum of the previous two. It begins with 1 and grows infinitely: 1, 1, 2, 3, 5, 8, 13, 21, 34 etc.

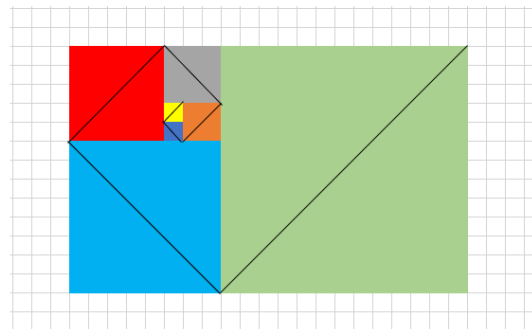
You will need:

Squared paper

Coloured pens and pencils

A ruler

An ammonite or picture of an ammonite



Start in the middle of your paper. Draw and colour a 1 x 1 square. Draw and colour another directly below it. Draw and colour a 2 x 2 square to the right of the 1 x 1 squares. Draw a 3 x 3 square above those, and a 5 x 5 square to the right, colouring each one as you go. Look at the picture above for a guide. Keep going up the Fibonacci sequence and placing the squares in a spiral. Now if you draw a diagonal line across each square, you will see the spiral shape clearly appearing. Compare this to your ammonite or ammonite picture and see how nature uses the Fibonacci sequence.



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Task: Draw a time travel device

I travel using the time-pack that I designed with my friend Tam. On the front is the time vortex, and at the back are items to calibrate, or fine tune, the time machine's measurements. Why not draw my time-pack or design your own?





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Wiltshire Council

**Arts
Pound**



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Company



Sirius Astronomy

With thanks for the icons throughout this pack:

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