Learning

KS2

Schools' resources

# Shrewsbury Flaxmill Maltings

These learning resources are designed to support teachers during a self-led visit to Shrewsbury Flaxmill Maltings. They include a self-led trail (pages 5–11), Engineering challenge (pages 12–14), and a suggested post-visit activity for follow-up learning (pages 15–18). It is recommended that you watch the pre-visit video on the Shrewsbury Flaxmill Maltings School Visits page of the English Heritage website before your visit.


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Self-led activity

KS2

# Exhibition explorers

## Recommended for

History, Maths, Design and Technology

## Learning objectives

- Understand why Shrewsbury Flaxmill Maltings is known as the 'grandfather of skyscrapers'
- Understand how the building and its uses have changed over time
- Know what flax and barley were processed into

## Time to complete

45 minutes


## Summary

Shrewsbury Flaxmill Maltings is known as the 'grandfather of skyscrapers' because it was the first multistorey building in the world to have an iron frame: a technique later used to construct skyscrapers. The iron frame can still be seen throughout the exhibition space.

This trail mainly focuses on the period from 1797 to 1887, when men, women and children worked here to process flax into linen thread. For more about the maltings and military history please see the teachers' notes on page 3.


Students explore the exhibition using the trail.

## Two trails

The version of the trail on page 4 involves less reading than the booklet on pages 6–11. Depending on your group, you may wish to give students the short version and use the booklet to support and guide them round the exhibition. It may suit other students to lead their own learning. It is recommended that you read the introduction text on page 5 to all students before they set off round the exhibition.

## Printing instructions

The longer version of the activity trail will appear to have a random page order. However, this is to help you create an A5 booklet that can be easily followed by your students.

To do this you'll need to adjust your Print settings:

1. Select size A4.
2. Select a custom page range of 6–11 (to avoid printing unnecessary pages). This has to match the PDF toolbar.
3. Select 'Print on both sides of the paper' and 'Flip on short edge'. This will print double-sided pages of PDF that can be folded in half and arranged in page number order.

# Exhibition explorers

An aerial view of Shrewsbury Flaxmill Maltings when it first reopened.

## Visiting the exhibition

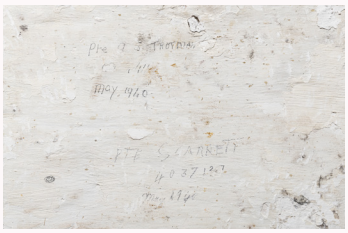
Please note, no more than 20 students at a time can be in the exhibition. At the end of the exhibition is a door. Through the door is a dark and enclosed space where a timeline video is shown. If your group has sensory needs you may prefer to exit through the shop instead. While some do this trail, the others can use our free bookable resource: Engineering challenge (see page 12–14 for more information). We also offer a Discovery Visit for up to 30 students at a time (there is a charge). In the Discovery Visit students learn more about the children who worked in the flax mill, handle objects and go on an expert-led tour.

## More learning ideas

Extend students' learning by looking at the next stage in fabric production: weaving. Use magnifying glasses to spot how threads are woven to make fabric. Replicate this by weaving thin strips of paper. Each student could create a square which could be joined together to make your own 'patchwork quilt' for display.

# Exhibition explorers

## Maltings and military history

| Exhibition display case | Context | Activities |
|---|---|---|
|  The smell boxes in the exhibition.<br><br>  The display of tools used by maltsters. | A maltings is a factory where barley is made into malt. Malt can be used in food but it's most commonly used for making beer. The mill was empty for ten years before being converted into a maltings by William Jones (Maltsters) Ltd in 1897. Only men worked in the maltings. They carried out repetitive tasks and lots of heavy lifting. They were known as maltsters. Over time, more machines were introduced to do some of the harder tasks. | • Smell boxes – can students spot the difference?<br>• Turn the red dial to find out about the process of malting.<br>• List adjectives to describe the kind of work people did in the maltings.<br>• What questions might students like to ask the maltsters?<br>• What were each of the wooden tools used for? Answers: The wooden rake was used to turn the grain. The shovel was used to move the grain or spread it out over the floor during the drying process. The sack spear was used to cut a sack of barley to inspect its quality. |
| **Military**<br>  The 'Maltings Gazette' display.<br><br>  A photograph of the graffiti left behind by soldiers. | The production of malt was paused during the Second World War when the building became a barracks for an infantry training centre. Soldiers slept on the maltings floors and complained about the conditions they lived in. | • Use the display titled 'The Maltings Gazette' (3 on the map on page 7) to find out about the basic facilities (such as no toilets), why it was known as 'the rat hotel' and Henry 'Roy' Brown, a black footballer who taught physical training to the soldiers.<br>• Return to the screens at the start of the exhibition to find images of the recruits, the graffiti they left behind on the walls and the celebrations at the end of the war. |

# Explore the exhibition

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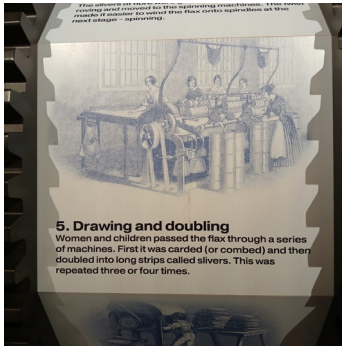
Find each of these things in the exhibition and have a go at the challenges.

**1 Spin** the wheel to find out how thread was made.




**2 True or false?**

Flax was pulled through metal spikes to clean it. ✓ ✗

Men operated the spinning machines. ✓ ✗

A bundle of thread was called a skein (pronounced skayn). ✓ ✗

**3 Examine** the handling objects in the tray near the Flexible flax display.

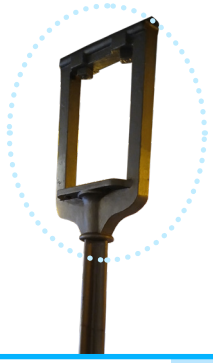
How do they feel?

Can you see how the linen thread and fabric have been made?

**4 Describe** the iron column.

**5 Find out** why the iron column has a rectangular opening at the top.

**Hint:** look for the belt to help you work it out.



**6 Find** the 'great brick' in the display case.

How did it save the builders money?

**7 Work out** how many hours apprentices worked in a week.

| Hours per day | | Days per week | | Hours per week apprentices worked |
|---|---|---|---|---|
| 12 | x | 6 | = | ..... |

**8 Work out** how many hours you spend in school in a week.

| Hours per day | | Days per week | | Hours per week you are in school |
|---|---|---|---|---|
| ..... | x | ..... | = | ..... |

**9 Try on** the costumes to find out what child workers wore.

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## Well done!

Congratulations on completing the trail.
We hope you've learnt a lot about Shrewsbury Flaxmill Maltings.

**What next?** You could:

- Design a skyscraper using the materials on the tables
- Find out how the building was used in the Second World War by exploring the rest of the exhibition
- Create a piece of art or write a poem inspired by your trip
- Make a short documentary about Shrewsbury Flaxmill Maltings and film it

**Hint:** read back through the booklet, including your answers, and look at the exhibition map to jog your memory.

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# Exhibition explorers

## Discover Shrewsbury Flaxmill Maltings

Name:

Class:

School:

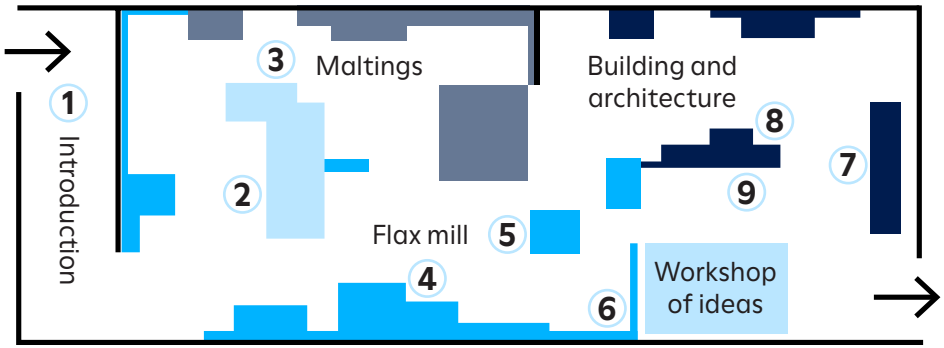
# Welcome

Welcome to Shrewsbury Flaxmill Maltings. It is known as ‘the grandfather of skyscrapers’ because it was the first multi-storey building with a cast iron frame. Previous mills had wooden frames, which meant they were at risk of burning down. From 1797 to 1887 men, women and children worked here turning a plant called flax into linen thread and yarn. In 1897 the mill was turned into a maltings, processing barley ready to be made into beer.

## Today you’ll learn about:

- how the building and its uses have changed over time
- how flax was processed to become linen thread
- why Shrewsbury Flaxmill Maltings is known as the ‘grandfather of skyscrapers’ (very tall buildings)

**Use** this map to help you find your way.






## Activity 6
Costumes

**A** **Try on** the replica costumes in the ‘workshop of ideas’. Children wore clothes like these to work in the mill, operating machines and crawling underneath to tidy up.

**B** In the early years of the mill, some children were apprentices. They lived together in the apprentice house and were clothed and fed by the mill owners.

**Work out** how many hours apprentices worked in a week.

| Hours per day | | Days per week | | Hours per week apprentices worked |
|---|---|---|---|---|
| 12 | x | 6 | = | ..... |

**Work out** how many hours you spend in school in a week.

| Hours per day | | Days per week | | Hours per week you are in school |
|---|---|---|---|---|
| ..... | x | ..... | = | ..... |

## Activity 8 *continued*
Iron column

**D** **Look** up. Why is there a rectangular opening at the top?
**Hint:** find the belts for a clue.

**E** **Draw** a sketch of the column or its decorative base in the box below.



## Activity 1
Models of flax and barley

**A** **Find** the models of flax and barley at the introduction of the exhibition.

**B** **Draw** the flax and barley plants in the boxes below.

Flax

Barley

**C** **Label** their differences. For example, flax has blue flowers. Barley has what are known as‘ears’.

## Activity 2
Shrewsbury Flaxmill Maltings model

In the 1790s Shrewsbury was a wealthy town with a new canal. The building you are in today started out as a mill turning flax into linen thread, but its use changed over time.

**A** **Find** the model at the start of the exhibition.

**B** Below is a list of the different ways this building has been used. **Put** them in the right time order by **writing** numbers in the boxes from 1 - 5.

☐ Military training camp

☐ Modern restoration

☐ Flax mill

☐ Maltings

☐ Maltings restarts



## Activity 8
Iron column

Fire caused many mills to be destroyed because they had wooden frames. Shrewsbury Flaxmill was built with an iron frame rather than wood.

**A** **Find** the iron column with the glass panel at the bottom.

**B** **Examine** it carefully.

**C** **Describe** how it looks and feels (colour, shape, texture, temperature).

**Write** your answer below.

## Activity 6
Iron skeleton

**A** **Find** the model of the mill's iron skeleton.

**B** **Find** the iron columns on the ground floor of the model. How are they different from the iron columns on the floor above? Why might this be?

## Activity 7
Great Bricks

In 1784 a tax on bricks was brought in. To reduce how much tax they paid, the mill owners used a different kind of brick.

**A** **Find** the example in the display case. What is different about the 'great brick'?

**B** **Read** the information to find out how this saved the mill owners money.

**Write** your answer below.



## Activity 3
How has the area changed?

**A** **Find** the interactive screen to the left of the model. **Use** the tabs at the bottom to explore how the area has changed over time.


**B** **Identify** three things that have changed since 1796.

1. .....
2. .....
3. .....

**C** What has stayed the same? **Write** your answer below.

.....

.....

## Activity 4
Flexible flax

Flax was used to make clothes, bowstrings for archery and even to cover wings on early planes. As flax can grow without pesticides, it's more eco-friendly than modern man-made fibres like polyester.

**A** **Explore** the handling objects in the tray under the flexible flax display.

**B** How do unprocessed flax fibres **feel**?

**C** **Examine** the thread closely.

Can you see how the fibres have been twisted to make a strong thread? ☐

**D** **Feel** the linen cloth.

Can you see how the flax fibres have been woven to make the cloth? ☐



## Activity 5
Making thread

**A** **Study** the 'Making thread' wheel.


**B** **Tick** the statements that are true.
**Use** the wheel to help you find the answers.

- ☐ Raw flax was pulled through metal spikes to clean and straighten it.
- ☐ Women and children used machines to comb the flax, remove the short fibres and make long strips called slivers.
- ☐ Slivers were straightened before being wound onto the spinning machine.
- ☐ Men operated the spinning machines.
- ☐ Bundles of yarn or thread were called skeins (pronounced skayn).
- ☐ The thread and yarn were bleached and dyed in a different factory.

Bookable resource

KS2

# Engineering challenge

## Recommended for

History, Maths, Science

## Learning objectives

- Explore how to build strong towers and bridges through experimentation
- Understand some of the elements that make a building strong
- Demonstrate that understanding through their towers, bridges and group discussions

## Time to complete

45 minutes

The columns that form part of the iron frame are visible in this photo of the third floor of Shrewsbury Flaxmill Maltings.


## Summary

Mills in the 18th century were built with wooden beams and floor joists, which put them at risk of burning down. To minimise this risk, Shrewsbury Flaxmill Maltings was built with an iron frame. This was a brand-new way to construct multistorey buildings and enabled later architects and engineers to design much taller buildings known as skyscrapers. In this hands-on activity students become the architects and compete to construct the best engineered towers and bridges.


## Preparation

Book the Engineering challenge through our website. To help you prepare for your visit it is recommended you read through the teachers' notes on pages 13–14. Approximately 16 students (with accompanying adults) can do the engineering challenge at a time. This is because of the size of the room the challenge is completed in. While some complete the challenge, the others can visit the exhibition using our trail on pages 2–11. You may also wish to book our expert-led Discovery Visit (for which there is a charge). In this session students will better understand the process of turning flax into linen thread and handle objects related to the experience of the children working in the flax mill.

## More learning ideas

After your visit you could set students a junk modelling challenge to build a skyscraper. They could try to replicate the iron columns and beams they saw during their visit. To make their structures strong, they should think about what they learnt during the Engineering challenge.

Teachers' notes

# Engineering challenge

It is suggested that students work in groups of four and that you follow the steps below to make the most of their learning. Before they start the activity, explain to the students that Shrewsbury Flaxmill Maltings is known as the grandfather of skyscrapers. This is because it was the first multi storey building to have an iron frame. Previously, mills were built with wooden frames, which meant they were at risk of burning down.

## Challenge 1: Terrific towers

| | |
|---|---|
| **1** | Ask students: what makes a strong building? They might suggest:<br>• a solid base<br>• a strong frame<br>• overlapping brickwork/strong joins<br>• materials that are strong such as iron, stone, bricks<br>If they have already visited the exhibition, you could link back to this to prompt answers. |
| **2** | Explain the rules:<br>1. Use a maximum of 80 blocks (you could use fewer).<br>2. Stop building when the 10 minutes are up (rebuild or adapt your tower as much as you like before the time's up).<br>3. Only members of your group can build – no outside help! |
| **3** | Introduce the challenge: to build the tallest tower that stays standing throughout the judging process (measuring height and testing strength with weights). Then give out the boxes of 80 blocks per group and begin a 10-minute timer. |
| **4** | Judging: Measure the height of each tower. Then test how strong each one is by applying weights. Decide on the winning design! |
| **5** | Ask students:<br>• What made the towers strong?<br>• Were there particular shapes that made them strong?<br>• If any towers collapsed, why might this be?<br>• If you were to build your tower again, how might you change your design to make it taller or stronger? |

Turn over for challenge 2

# Teachers' notes *continued*

## Challenge 2: Brilliant bridges

| | |
|---|---|
| **1** | Next, ask students:<br>1. What is the purpose of a bridge?<br>2. What could make a bridge 'interesting'?<br>3. Think back to the previous challenge: how could you make sure your bridge is strong?<br>Recap the rules. Then start the 10-minute timer. |
| **2** | To judge the most 'interesting' bridge, you could first get students to identify an interesting thing about each bridge (linking back to their answer to question one above).<br>Then test each bridge's strength using the weights and decide on a winner. |
| **3** | Finish the session with some final reflections. You could ask:<br>• Which was easier to make: the tower or the bridge? Why?<br>• Which was stronger? Why?<br>• What did you learn about designing and constructing buildings for strength?<br>• How could you make your buildings even taller, wider or stronger? |

Students complete the tallest tower challenge.

KS2

# A peek behind the scenes

## Recommended for

History, Art, English

## Learning objectives

- Examine the images and make inferences, using their knowledge from their visit to Shrewsbury Flaxmill Maltings
- Use the images as inspiration for a piece of creative writing

## Time to complete

45 minutes

The columns that form part of the iron frame are visible in this photo of the third floor of Shrewsbury Flaxmill Maltings.


## Summary

We have selected some 'behind the scenes' images of things students wouldn't have seen during their visit. They will get to see what the site was like before and during renovation, as well as some parts of the site that aren't open to visitors.


## See, think, wonder

Print off the images to use them as flash cards or project them onto a whiteboard screen to discuss as a class. Use 'See, think, wonder' to structure your class discussion:

**See:** Get students to spot the features in the images. Features could be circled and labelled.

**Think:** Prompt students to think more deeply with questions such as:

- What might have happened here?
- What might you be able to smell/taste/touch/hear if you were in this scene?

**Wonder:** Then get students to suggest questions that could help them find out more.

## More learning ideas

Students could do a piece of creative writing from the point of view of something in one of the images such as the iron frame, the walls, the coronet or the belts. If the walls could speak, what might they say? They could draw on what they learnt about how the building's use changed over time to create their piece.

## Flash card 1

The iron frame is visible in the roof of the main building at Shrewsbury Flaxmill Maltings.

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## Flash card 2

A photograph of abandoned belts left in the building after it was closed.

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## Flash card 3


Inside the building that once housed the apprentices who worked in the flax mill. It was later used as a laboratory.

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## Flash card 4

Laying the underfloor heating system at Shrewsbury Flaxmill Maltings.

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# Flash card 5

Using a crane to put the pieces of the coronet back in place on top of the Jubilee tower after they had been restored.

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