

Fountains Abbey

Mill activity sheet



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This activity brings together history and science. You can answer these questions using information on the display boards in the mill and by applying what you know about **forces** and **energy**.

Standing outside the mill – This is one of the earliest mills on any site where Cistercian monks lived

- When the mill was built, it stood in an area known as the outer court. What else was located here?
- How many floors has the mill building?

Go through the side door on the left into the audio-visual room

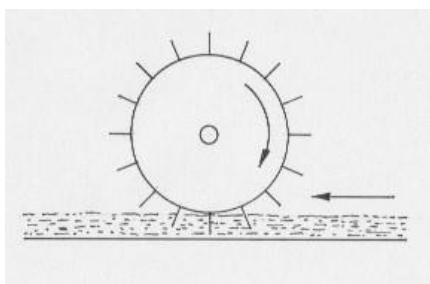
- How long ago did the monks build the mill?
- What gave power to the mill?
- Name one food and one drink made from grinding grains in the mill.

Move through the doors – go to see the iron waterwheel which was added to drive a timber saw

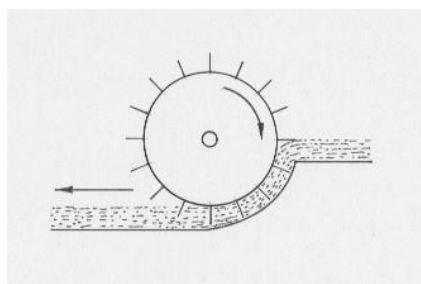
- Oil is used to lubricate the cogs so that they move easily. What force is reduced?
- Why did the River Skell have to be controlled?
- How many waterwheels powered the medieval abbey mill?

Types of waterwheel

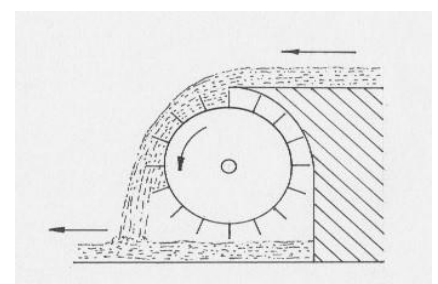
Undershot



Breastshot



Overshot



Drawings courtesy of Mike Sims

- The wheels from medieval times were undershot. Which type of waterwheel is the one in place now?

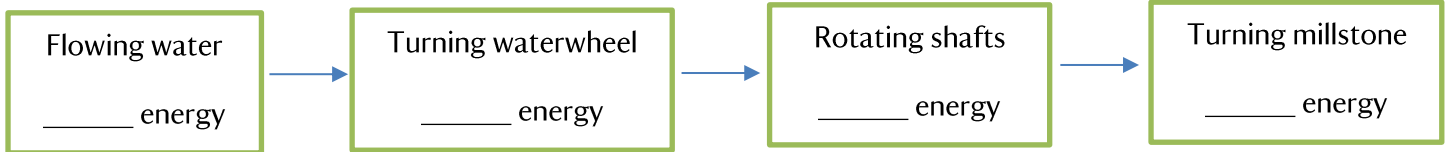
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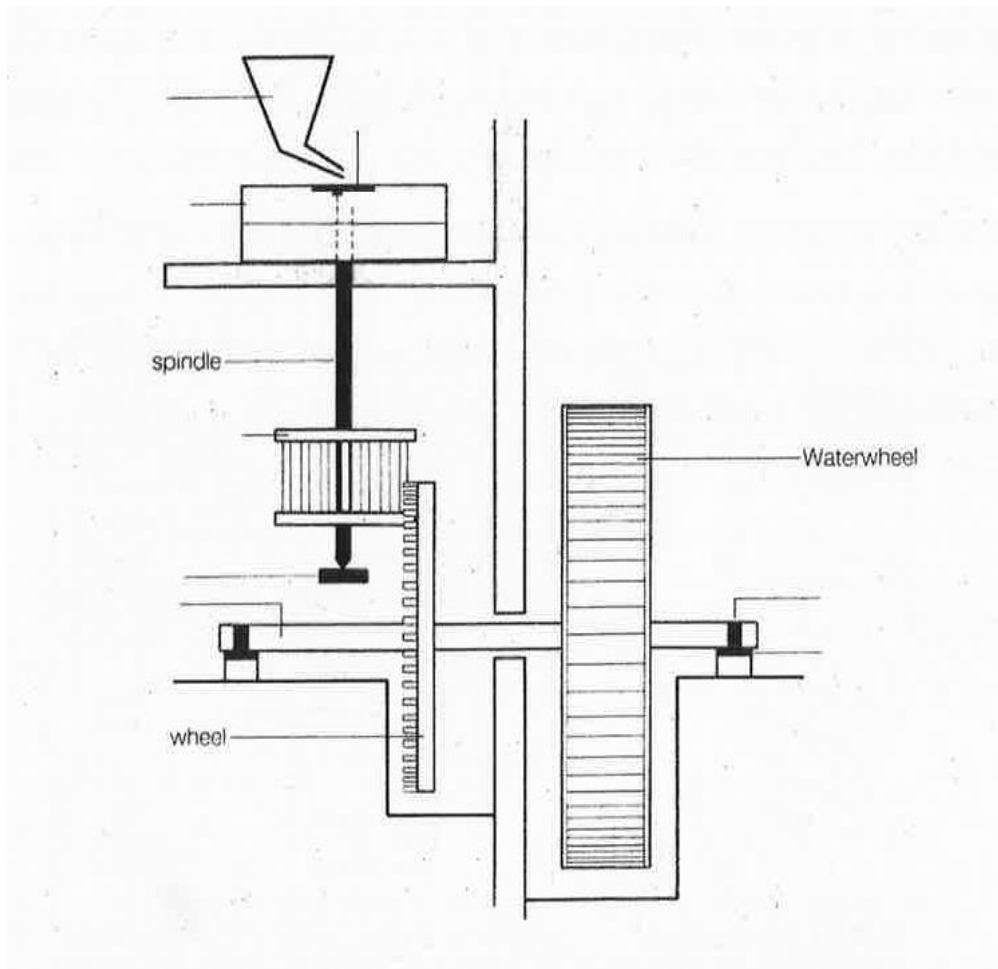
- Kinetic energy is movement energy. Complete the boxes to show the types of energy at each stage:



- The grains are ground by being rubbed in between the millstones. What force is generated?
- What is the kinetic energy transferred/changed into?

Back to the room with the double doors entrance and down the steps

Look at the shaft, gears and mill stone then label this diagram using the words from the list:



- shaft
- moving millstone
- grain in to the hopper
- shaft
- bottom of spindle
- pinion gear
- shaft support

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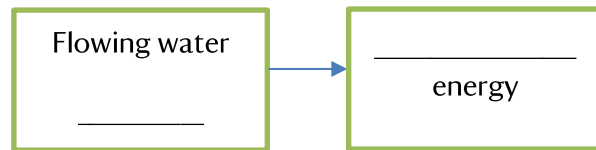


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- Name the force which brings the grain down from the top funnel.
- Complete this sentence: Simple m_____, like gears, allow a smaller f_____ to have a g_____ effect.
- If one gear is twice the diameter of another (gear ratio 2:1), how fast will the small gear spin?
- Why are teeth helpful on the gears?

Move through to see the water passing under the mill and then into the next room to see the generator

- What is the energy transfer in the generator?



- How long ago did William Leadley carve his name in the door?

Go through the door and into the next room

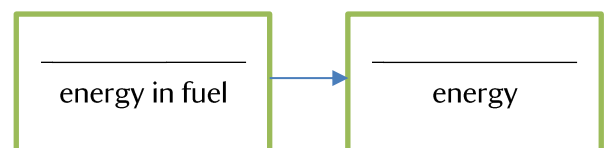
- What area of wheat field do modern farmers need to make flour for a 550g loaf of bread?
- The monks were self-sufficient. What does this mean?
- Why do we think that global wheat production will fall?
- How much is it forecast to fall by?

Go outside and follow the path upstairs (lift available for access)

- How was the mill destroyed in 1200?
- Name two places the turbine provided electricity for in 1900.
- In 1956, mains electricity arrived. What does this mean?
- Before mains electricity, why did the lights in Fountains Hall flicker or dim?

Go up the stairs and work through the rooms

- Local farms relied on the mill. What were the farms called which supported the monastery?
- As well as powering the mill, what else was the river water used for at the abbey?
- What would have been the energy transfer in the stove?



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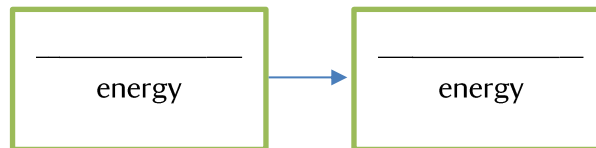


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- How many residents (people living) in the monastery needed feeding?
- How much bread was each monk allowed according to the Rule of St. Benedict?

Go down the steps outside to see the mill leat, pond and sluice gate. Ring the bell as you leave.

- What is the energy transfer in the bell?



Thank you for visiting today. What did you enjoy most about the mill? Draw a picture or write about it here:

