



# Roman Central Heating

Did you know the Romans invented central heating? It was called Hypocaust. It was an underfloor heating system that also warmed the walls.

In this activity you will create a model of a Roman building with a hypocaust heating system. The Romans did this by raising the floor surface on pillars of bricks. There was a fire outside the building, and the hot air from the fire was passed under the floor and up through the walls

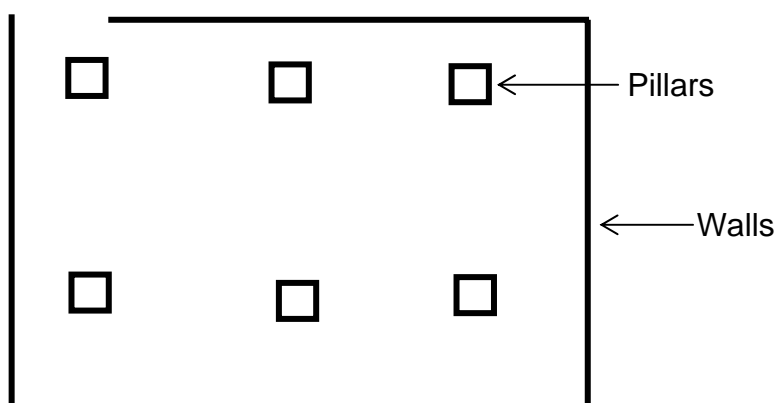
## You have

Lego/duplo or wooden bricks  
Hairdryer or nightlight  
Bathroom tiles  
A thermometer

## Activity

The Romans used fires to create the heat for their hypocausts but for safety we are going to use a hairdryer/ nightlight.

- Use the bricks to create the outside walls of your villa and the pillars that will support the floor. Leave a small gap in the wall at one corner. The villa should look something like the diagram. The pillars should be at least 5cm high.
- Place the tiles across the top of the villa to create a floor. They should rest on the pillars and the tops of the walls.
- Turn the hairdryer on and aim the hot air in through the gap under the floor or light a nightlight under one of the tiles (the flame should not touch the tile).
- Place your hand onto the tiles. Can you feel a difference in temperature?
- Keep heating the space under the floor. Are there any areas of the tiled floor that are cooler than others?



## Useful Questions

- How could you measure the temperature changes in the floor more accurately? Try out your theories.
- If this method was used to heat a whole house how effective would it be?
- Can you find out why warm air rises and cool air sinks?
- Some materials conduct heat better than others. What are the best materials for conducting heat? Is tile a good conductor?
- What kind of covering did Romans use on the floor of their villas?
- Do you need an outlet to let the hot air out? Why might this be necessary?

## Research Opportunities

- Find out how we know so much about hypocausts. Where are the best preserved ones?
- How were hypocausts used in Roman Baths and Spas?
- Investigate Roman flooring and mosaics
  - Find a image of a mosaic to put over the floor you have created in the experiment
  - Design your own mosaic floor to put over the floor you created in the experiment
  - Make your own mosaic
- What can you find out about Roman housing? What kind of people had hypocaust in their homes?

## Website

[http://romans-in-britain.org.uk/inv\\_central\\_heating.htm](http://romans-in-britain.org.uk/inv_central_heating.htm)  
[http://www.historylearningsite.co.uk/roman\\_houses.htm](http://www.historylearningsite.co.uk/roman_houses.htm)  
<http://www.aboutbritain.com/articles/roman-houses.asp>  
<http://www.bbc.co.uk/schools/romans/>

	National Curriculum	QCA Unit
KS 1	Science: Sc1 D&T: 2a-e History: 2b; 4a, b	D&T: 1D History: 2
KS 2	Science: Sc1, Sc3 D&T: 2a-e History: 2a, b; 4a; 9	Science: 4c History: 6A

**creativeminds**

The Creative Minds project works with museums libraries and archives across the Yorkshire region, to provide young people with learning opportunities in Science, Technology, Engineering & Maths (S.T.E.M.). This ground-breaking project is the first of its kind in the country and is managed by MLA Yorkshire. This pack was developed by Creative Minds with funding from Yorkshire Forward.

