



Microwhizz

Try this puzzle after you've played with the 'Microwhizz oven'.
For each question, put a circle round the letter next to the correct answer.

- Q1** Which wave is the 'odd one out'?
- A sound** **B light** **C microwave** **D ultraviolet (UV)**
- Q2** Which wave can't be detected by the body?
- A sound** **B light** **C microwave** **D ultraviolet (UV)**
- Q3** Which won't help food in a microwave oven to cook evenly?
- E cover with foil** **F stirring** **G a turntable** **H cover with cling film**
- Q4** Which isn't a property of all waves?
- I heating** **J interference** **K refraction** **L reflection**
- Q5** Which isn't a method of heat transfer?
- M radiation** **N conduction** **O respiration** **P convection**
- Q6** Which is the main method of heat transfer to the food in a microwave oven?
- M radiation** **N conduction** **O respiration** **P convection**
- Q7** Which shouldn't be cooked in microwave oven?
- Q pizza** **R egg** **S veg** **T meat pies**
- Q8** Which figure is most likely to be the power rating of a microwave oven?
- U 800kW** **V 800W**
- Q9** Which figure is closest to the wavelength of microwaves?
- W 1cm** **X 1m** **Y 10m** **Z 1km**
- Q10** Rearrange the circled letters to make a word connected with the electromagnetic spectrum.

All done? Ask your teacher for the answer sheet to check your answers.
If you're feeling clever, try the 'extension questions' too.



Microwhizz Clues

Here are some clues to help you get some of the answers for the microwhizz puzzle.

Q1 Which wave is the 'odd one out'?

Three of the waves belong in the same 'family' as each other.

Q2 Which wave can't be detected by the body?

One of the four waves can be detected by your skin- it gives you a sun tan (or makes you more at risk of skin cancer if you overdo sunbathing)

Q3 Which won't help food in a microwave oven to cook evenly?

Remember the rule about not putting metal in a microwave oven!

Q4 Which isn't a property of all waves?

Is there something listed that sound and light waves can't do?

Q5 Which isn't a method of heat transfer?

The odd word out is something to do with energy and cells

Q6 Which is the main method of heat transfer to the food in a microwave oven?

Hint: think 'microwave radiation'

Q7 Which shouldn't be cooked in microwave oven?

Especially if you'd get made to clean the mess afterwards!

Q8 Which figure is most likely to be the power rating of a microwave oven?

For comparison, the figure on a light bulb could be 60W or 100W. The kettle could be 1kW.

Q9 Which figure is closest to the wavelength of microwaves?

'Micro' means 'small'.

Q10 Rearrange the circled letters to make a word connected with the electromagnetic spectrum.

The correct answers give you 9 letters including...A... I...and... O



Microwhizz Answers

Here are the answers to the microwhizz puzzle.
Tick them off and give yourself a mark out of 10.

- Q1** Which wave is the 'odd one out'?
- A sound**
- Q2** Which wave can't be detected by the body?
- C microwaves**
- Q3** Which won't help food in a microwave oven to cook evenly?
- E cover with foil**
- Q4** Which isn't a property of all waves?
- I heating**
- Q5** Which isn't a method of heat transfer?
- O respiration**
- Q6** Which is the main method of heat transfer to the food in a microwave oven?
- M radiation**
- Q7** Which shouldn't be cooked in microwave oven?
- R egg**
- Q8** Which figure is most likely to be the power rating of a microwave oven?
- V 800W**
- Q8** Which figure is closest to the wavelength of microwaves?
- W 1cm**
- Q10** Rearrange the circled letters to make a word connected with the electromagnetic spectrum.
- A C E I O M R V W makes M I C R O W A V E (so no surprises there...)**



Microwhizz Extension work

This should get you thinking more about the answers you gave earlier...

- Q1** Why is sound the 'odd one out'?
- Q2** Which parts of the body can detect the other 3 waves?
- Q3** Explain why it's important that food is heated properly.
- Q4** Which property of waves explains why the walls of a microwave oven are metallic?
- Q5** What does the 'odd one out' mean?
- Q6** Of the three methods of heat transfer...
- A** Which occurs mostly in solids?
 - B** Which occurs mostly in fluids (liquids and gases)?
 - C** Which explains how the heat from the sun gets to us through the emptiness (vacuum) of space?
- Q7** Why not?
- Q8** What do the W and kW stand for?
- Q9** Look at the mesh in the door of a microwave oven. Explain how the size of the gaps in the mesh link in with the figure of 1cm for the approx. wavelength of microwaves.
- Q10** Find out the names of other waves in the electromagnetic (e.m.) spectrum. Which waves are the 'next door neighbours' of microwaves?



Microwhizz Answers to extension questions

- Q1** The others are electromagnetic waves.
Sound is longitudinal, others are transverse.
Sound needs a medium to travel through, the others don't.
- Q2** Sound is detected by the ear, light by the eyes, UV by the skin.
- Q3** Germs may survive in under-heated areas and give you food poisoning.
- Q4** Reflection. Waves don't 'leak out' of the oven, so cooking this way is very efficient: it's quicker and cheaper than heating food in a normal oven
- Q5** Respiration refers to the reaction in cells that free the energy stored in food.
- Q6** (a) conduction (b) convection (c) radiation
- Q7** Eggs explode!
- Q8** Watts and kilowatts (1kW = 1,000W)
- Q9** The gaps have to be smaller than the wavelength of the microwaves otherwise microwaves would escape from the oven and cook anyone nearby waiting for the 'ping' .
- Q10** The neighbours of microwaves are infra-red and radio waves. Other parts of the e.m. spectrum include light, ultra-violet, X-rays and gamma rays.