

2 Microwave ovens are used to heat food.

Chris looks at information about three microwave ovens.

Microwave oven	Energy input per second in joules	Energy absorbed by food each second in joules	Heating efficiency of the oven
Thermo-wave	1200	600	
Micro-fast	1400	700	
Quick-cook	1000	800	

(a) Calculate the heating efficiency of the Quick-cook oven.

.....

.....

..... [2]

(b) The Thermo-wave and Micro-fast ovens have the **same** heating efficiency. How does the information in the table show this?

.....

..... [1]

(c) Chris wants to compare the three ovens. He wants to know which oven heats food the fastest.

Describe an experiment Chris could do to find this out.

.....

.....

.....

.....

..... [3]

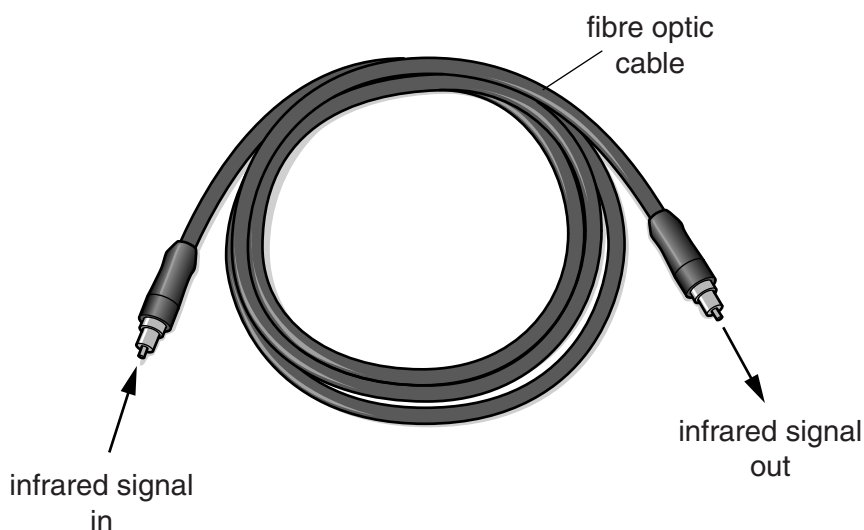
[Total: 6]

Turn over

4 Reeta is learning about different types of waves.

Electromagnetic waves are used for communication.

(a) (i) Infrared waves can transmit signals from one end of a fibre optic cable to the other.



How does the infrared signal pass from one end of the cable to the other end?

.....  
.....  
..... [2]

(ii) Infrared radiation can also be used for cooking.

Write down one **other** use of infrared radiation.

.....  
..... [1]

(b) A cable is not always needed for communications.

Write down **one** advantage of not needing a cable for a device used for communications.

.....  
..... [1]



(b) Microwaves are also used for mobile phone messages.



Damien is worried about his daughter Susie using her mobile phone.

Damien and Susie each make a statement about using mobile phones.

**Damien:** "I think that using mobile phones is harmful. They cause some types of cancer."

**Susie:** "Results of a study that ran for a number of years were published in 2011. It showed no clear link between using mobile phones and increased cancer risk."

One of these statements is based on scientific evidence. The other statement is not.

Explain why.

.....

.....

.....

.....

..... [2]

[Total: 8]

4 Phone masts send and receive microwave signals for mobile phones.



(a) Some people are concerned about having a phone mast near to their house.

Suggest whether or not having a mast near someone's house can be dangerous. Explain your answer.

.....

.....

.....

.....

..... [2]

(b) It is difficult to make conclusions about the danger of microwaves to people using mobile phones.

Suggest reasons why.

.....

.....

..... [2]

[Total: 4]