

Date:

Convection & Radiation

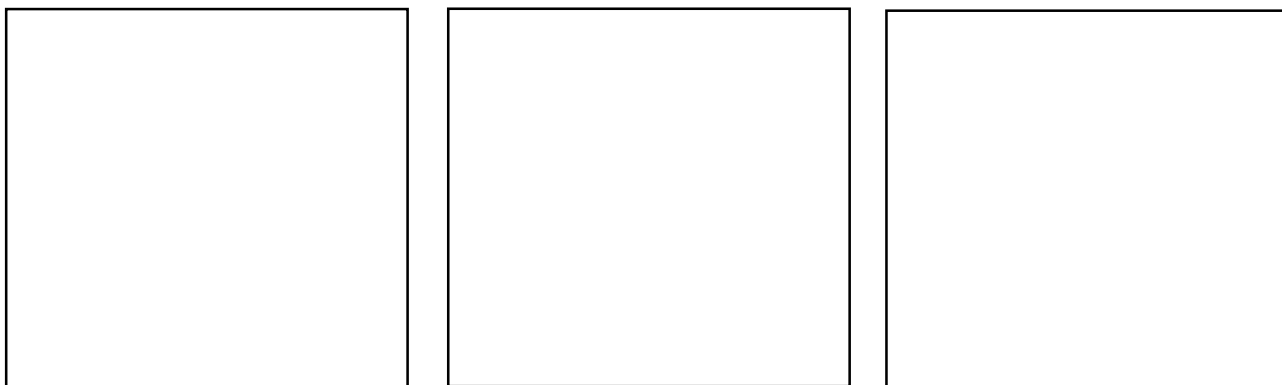
LO: To understand what convection is

Recall the particle diagrams for solids, liquids and gases	
Describe that convection takes place in liquids and gases	
Explain how convection heats up a pan of water.	

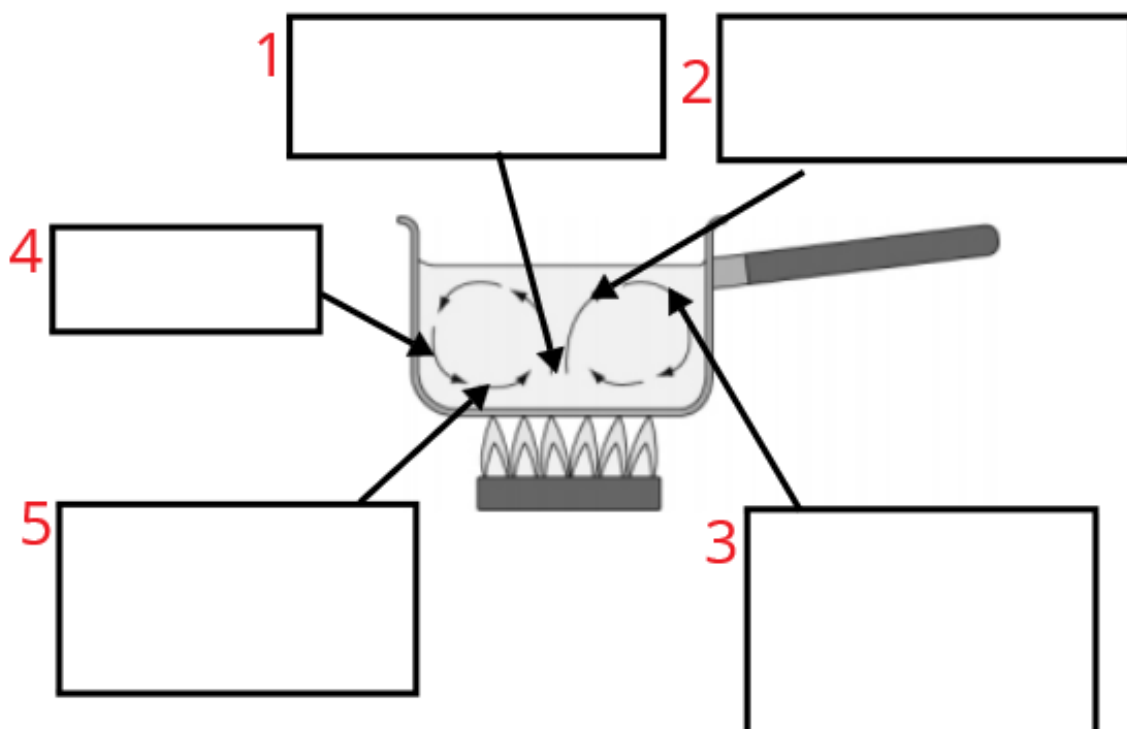
Key Word

	The transfer of heat in liquids and gases
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Task 1: In the boxes draw a diagram of the particles in solids, liquids and gases. Label each box with whether it is a solid, liquid or gas.



Task 2: Put the labels in the correct place on the diagram to show how convection heats a pan of water.



Water is pushed out of the way by the warmer water rising

Cool water moves in to take the place of rising warm water

The cooler water sinks

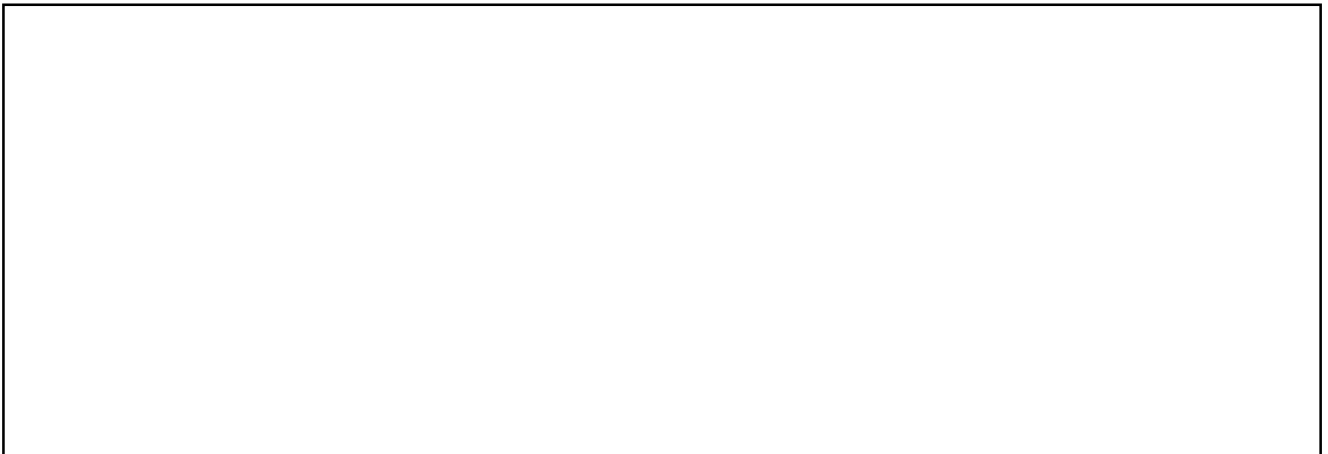
Water cools and becomes more dense and it falls

The heated water becomes less dense and rises

Extension:

How does heat from a radiator heat up a room? Use the idea of particles to help you. Draw a diagram to support your explanation.

Diagram



Explanation



Convection & Radiation

LO: To understand what radiation is.

Identify how heat energy travels through space	
Investigate how the colour and texture of a surface affects its absorption of heat	
Explain what an emitter and absorber does.	

Key Word

	Heat energy waves that can travel through space.
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Fill in the missing words

All hot objects emit heat to the surroundings through _____ waves: unlike _____ and _____, infra-red radiation does not require a solid, liquid or a gas to travel through - it can travel through a _____.

Radiation can be reflected by surfaces. A substance which is a _____ reflector of heat is a _____ absorber of heat.

convection	vacuum	radiation	conduction	poor	good
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Watch the animation on the PowerPoint. Which surface was the best emitter of heat? Rank them in order from the best to worst.

Matt Shiny Light Dark

1. _____
2. _____
3. _____
4. _____

Extension

Sally carried out an investigation to find out if using more layers of fleece provides better insulation. She put layers of fleece around four beakers, and poured hot water into all of them. She measured the temperature of the water in each beaker at the beginning, and again after 5 minutes. The table shows her results

Number of layers	Start Temperature °C	End Temperature °C	Changes in temperature °C
0	90	70	
1	90	79	
2	90	80	
3	90	81	
4	90	82	

- 5.
6. Calculate the change in temperature for each beaker.
7. What did Sally find out about layers and heat?
- 8.
