

C1.1.1 Introducing Particles

Previous knowledge (KS3)

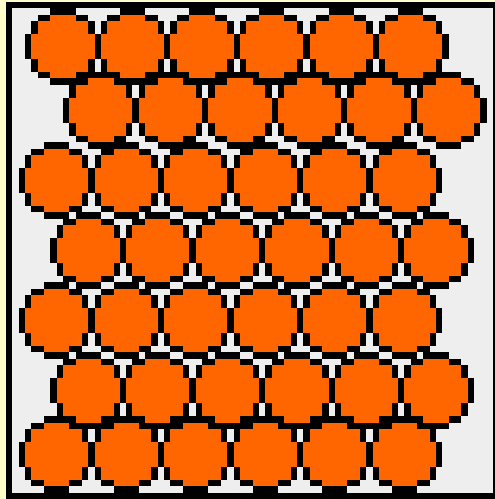
- All matter is made from particles
- There are 3 states of matter – solid, liquid and gas
- Different states of matter have different arrangements of particles

Learning Objectives

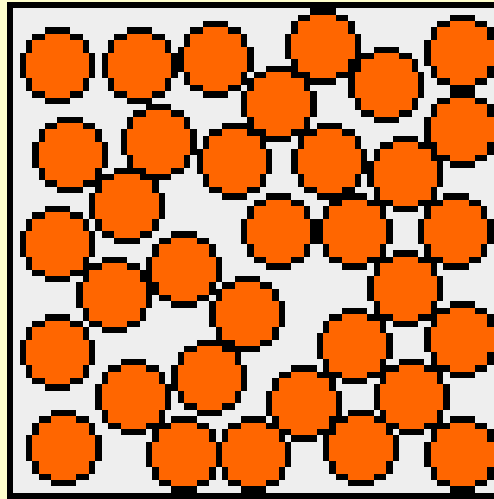
- Draw diagrams to show the arrangement of particles in solids, liquids and gases
- Describe the forces acting between particles in solids, liquids and gases and their motion
- Use the particle model to explain the properties of solids, liquids and gases

How are the particles arranged in solids, liquids and gases?

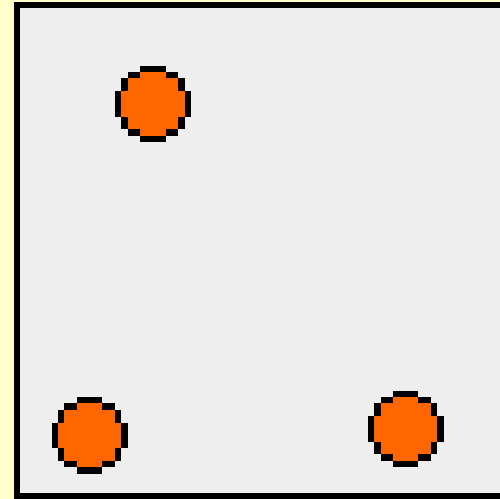
How are the particles arranged in solids, liquids and gases?



solid

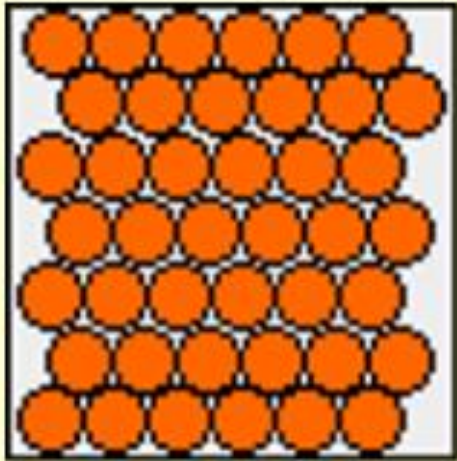


liquid



gas

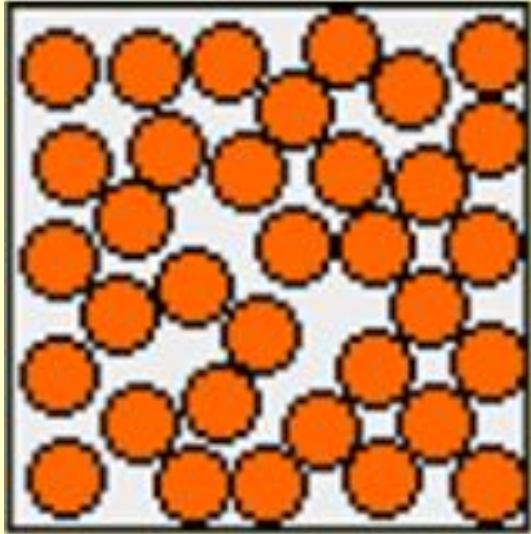
How are the particles arranged in a solid?



Property	Solid	Reason
Arrangement	Neat, ordered rows	
Space between particles	None	
Movement	Vibrate about fixed position	
Forces of attraction between particles	Strong	
Can it be easily compressed?	No	No spaces between particles
Does it flow?	No	Strong forces of attraction mean the particles cannot move past each other
Fixed volume?	Yes	No spaces between particles
Fixed shape?	Yes	Strong forces of attraction mean the particles cannot move past each other

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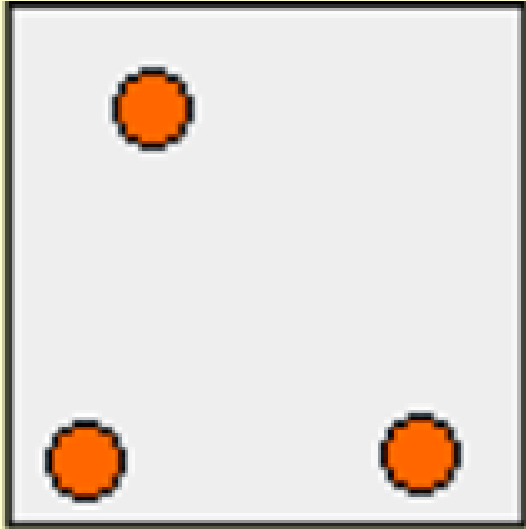
How are the particles arranged in a liquid?



Property	Liquid	Reason
Arrangement	Random	
Space between particles	Very little, some slight gaps	
Movement	Flow past each other	
Forces of attraction between particles	Medium	
Can it be easily compressed?	No	Very little space between particles
Does it flow?	Yes	The particles can move past each other
Fixed volume?	Yes	Very little space between particles
Fixed shape?	No	The particles can move past each other so it will take the shape of its container

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How are the particles arranged in a gas?



Property	Liquid	Reason
Arrangement	Random	
Space between particles	Lots	
Movement	Very fast, in all directions	
Forces of attraction between particles	Weak	
Can it be easily compressed?	Yes	
Does it flow?	Yes	The particles can move past each other
Fixed volume?	No	Lots of space between particles
Fixed shape?	No	The particles can move past each other so it will take the shape of its container

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Everyone Task: Tick the relevant boxes to show the properties of solids, liquids and gases.

Extension Task: Use the arrangement of particles to explain these properties



Property	Solid	Liquid	Gas
Fixed shape			
Cannot be compressed			
Can flow			
Takes the shape of the container			
No fixed shape or volume			
Fairly easy to compress			

Answers

	<i>Solid</i>	<i>Liquid</i>	<i>Gas</i>
<i>Fixed shape</i>			
<i>Cannot be compressed</i>			
<i>Can flow</i>			
<i>Takes the shape of the container</i>			
<i>No fixed shape or volume</i>			
<i>Fairly easy to compress</i>			

Task 2: Is custard a solid or liquid? Explain your answer



Watch Jon Tickle walk on custard! (Brainiac)
<https://www.youtube.com/watch?v=Iz9KnPZWOGs>

Answer the quiz questions