

Combined science - Physics - Key stage 4

Particle Models - worksheets

Mr Charman



Energy transfers - Downloadable worksheet

1. In lesson questions
2. Exam questions



Independent practice

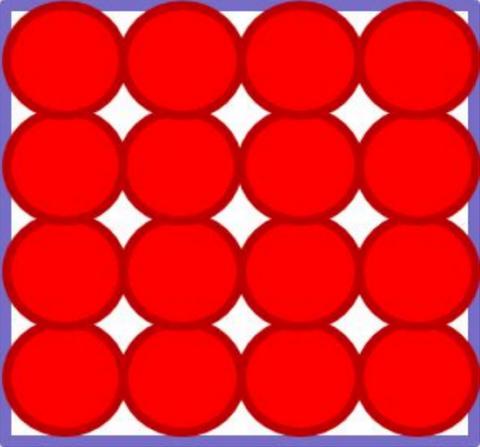
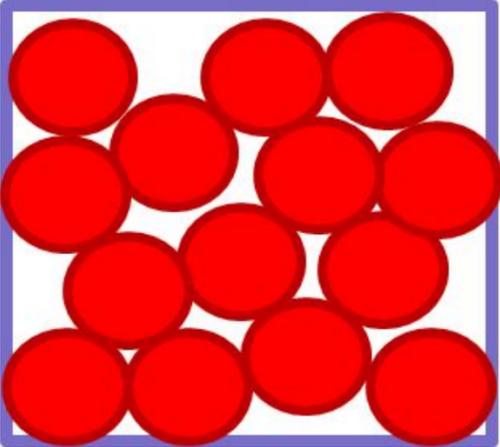
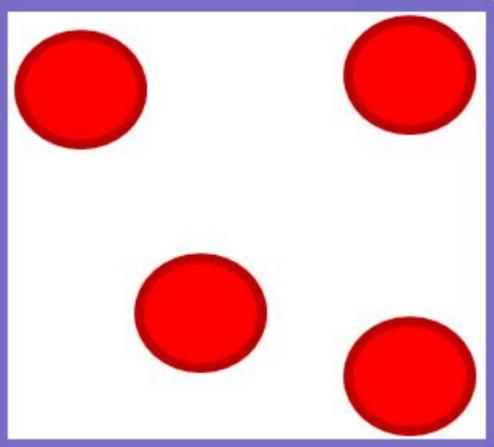
1. Copy and complete the table. Use the words below to help you fill in the gaps.

State	Solid	Liquid	Gas
Diagram			
Arrangement			
Movement			
Attraction between particles			

particles; touching; ordered rows; random; rows; vibrate; strong; weak; attractive forces



Review

State	Solid	Liquid	Gas
Diagram			
Arrangement	Ordered structure in rows, all particles touching	Random structure, all particles touching	Random structure, particles not touching
Movement	Fixed positions, can vibrate	Can move freely over each other	Fast moving, random
Attraction between particles	Very strong forces of attraction	Weaker forces of attraction	weakest forces of attraction



Independent practice

Solids:

- have a fixed shape
- Difficult to compress

Gases

- Will spread and fill the entire container
- Easy to compress

Use your knowledge to explain the above properties. You should consider:

- The spacing between the particles
- The movement of individual particles
- The forces between particles



Review

Solids:

- have a fixed shape
 - Strong forces of attraction mean particles are not free to move around so shape is fixed.
- Difficult to compress
 - Particles have no gaps between one another so there is no room for particles to move closer.



Review

Gases

- Will spread and fill the entire container
 - Very weak intermolecular forces of attraction so particles move randomly and spread out.
- Easy to compress
 - Particles are far apart, so there is space for the particles to move closer



Exam questions

Q1

Solid, liquid and gas are three different states of matter.

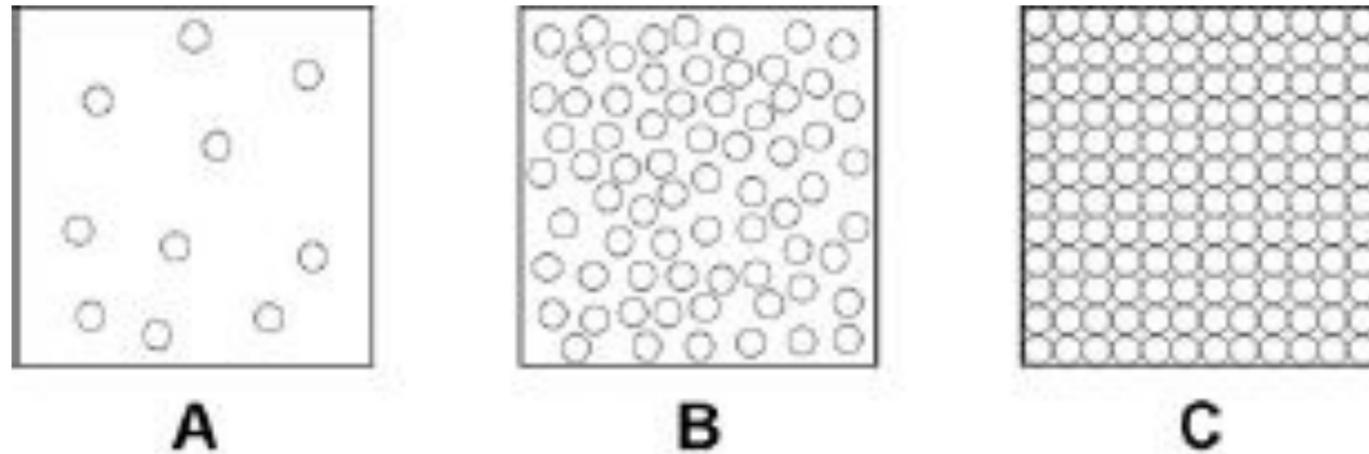
Describe the difference between the solid and gas states, in terms of the arrangement and movement of their particles.



Exam questions

Q2

The figure below shows a simple model of the three states of matter.



A student explains density to his teacher using the particle model in the figure above.

His teacher says there are limitations to the model.

Give **two** limitations of the particle model in the figure above.



Exam questions - Review

Q1

solid

- **particles** vibrate about fixed positions (1)
- closely packed (1)
accept regular

gas

- **particles** move randomly (1)
accept particles move faster
accept freely for randomly
- far apart (1)



Exam questions - Review

Q2

Any **two** from:

- no forces shown between spheres
- atoms / molecules / ions are not solid spheres
- not all the same size.

