

Diffusion

KS3 Chemistry · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Someone peels an orange in the kitchen. Soon you can smell it in the hall. Explain.

Step 1 · Particles escape

Scent particles evaporate from the orange peel into the air.

Step 2 · Random movement

They move randomly and collide with air particles.

Step 3 · Net movement

Overall they spread from where there are many (the kitchen) to where there are few (the hall).

Answer: Scent particles diffuse from high to low concentration

Check: Diffusion needs no stirring or wind.

2. Now try one with the steps

A purple crystal of potassium manganate(VII) is dropped into a beaker of still water. Describe what you see over an hour.

Step 1 · First

Step 2 · Later

Step 3 · Finally

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What is diffusion? [1]

2. Does diffusion need stirring? [1]

3. In which state of matter is diffusion fastest? [1]

4. Why can't diffusion happen in a solid? [1]
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5. Give an everyday example of diffusion in air. [1]
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6. Give an everyday example of diffusion in a liquid. [1]
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7. Food colouring spreads faster in hot water than in cold. Explain. [2]
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8. Why does the colour from a crystal get paler spreads? [1]
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9. Once a gas has spread evenly through a room, have the particles stopped moving? Explain. [2]
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10. Which diffuses faster at the same temperature: a light gas or a heavy gas? [1]
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11. Colouring spread 6 cm in 3 minutes. What was its average speed in cm per minute? [1]
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12. In an investigation of temperature and diffusion, name TWO control variables. [2]
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13. Why is the ammonia and hydrochloric acid tube demonstration done in a fume cupboard? [1]
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14. Explain why a balloon filled with helium goes down faster than one filled with air, in terms of diffusion. [2]
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4. Before you hand it in

"Diffusion happens because particles want to spread out."

Particles move randomly; more happen to move from crowded areas into less crowded ones.

"Diffusion stops when the particles are spread out."

There is no NET movement any more, but the particles still move.

Confusing diffusion with dissolving.

Dissolving is a solid breaking up into a solvent. Diffusion is particles spreading out — it can happen in gases with no dissolving at all.

"The smell travels because of wind."

Say particles move randomly and spread from high to low concentration.