

Gas Pressure

KS3 Chemistry · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

What causes the pressure inside a blown-up balloon?

Step 1 · What are the particles doing?

Air particles inside move quickly in all directions.

Step 2 · What happens at the rubber?

They collide with the inside of the balloon and push on it.

Step 3 · Link to pressure

Billions of collisions every second push outwards on every part of the rubber. This push on each area is gas pressure.

Answer: Gas particles colliding with the walls

Check: Pressure = force on each unit of area.

2. Now try one with the steps

Why does a football feel harder after you pump more air in?

Step 1 · Number of particles

Step 2 · Collisions

Step 3 · Conclusion

Answer:

3. Practice

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

1. What causes gas pressure? [1]

2. In which direction does a gas push on the walls of its container? [1]

3. What happens to gas particles when the gas is heated? [1]

4. If more gas particles are pumped into the same container, does the pressure go up or down? [1]
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5. A gas is squashed into half the volume at the same temperature. What happens to the pressure? [1]
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6. Why does a gas spread out and fill the whole of a container? [2]
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7. Explain why heating a sealed gas raises its pressure. [2]
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8. Explain why car tyre pressures should be checked when the tyres are cold. [2]
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9. Atmospheric pressure is caused by what? [1]
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10. Why is atmospheric pressure lower at the top of a mountain? [2]
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11. A gas has a pressure of 100 kPa. It is squashed to half its volume at the same temperature. What is the new pressure in kPa? [1]
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12. A plastic bottle of air is sealed at the top of a hill and carried down. It is crushed slightly at the bottom. Explain. [3]
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13. Name the independent variable and dependent variable when testing how temperature affects the pressure of a sealed gas. [2]
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14. Give ONE control variable for the investigation in question 13.

[1]

4. Before you hand it in

"Gas pressure pushes downwards."

Gas pressure acts in all directions on every surface.

"Heating makes the particles bigger, so pressure rises."

Heating makes particles move faster, so collisions are more frequent and harder.

Only saying 'more collisions' when a gas is heated.

Say collisions are MORE FREQUENT and HARDER (with more force).

"Squashing a gas squashes the particles."

The gaps between particles get smaller, so particles hit the walls more often.