

# How much solute can dissolve in water

Grade 7 science (Year 8 · Class 7) · Test

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Class: \_\_\_\_\_ Mark: \_\_\_\_ / 20

This test has 8 questions and is worth 20 marks. Show your working in every calculation and give units. In the explanation questions use the particle model and the words solute, solvent and saturated correctly.

**Level:** Grade 7 science (Year 8 · Class 7) · **Curriculum:** MS-PS1-2

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

## Question 1 Key words (2 marks)

Copper sulfate crystals are stirred into water to make a blue liquid.

- Name the solute. (1 mark)
- Name the solvent. (1 mark)

## Question 2 Concentration (3 marks)

Wanjiru dissolves 18 g of sugar in water to make 0.45 L of solution.

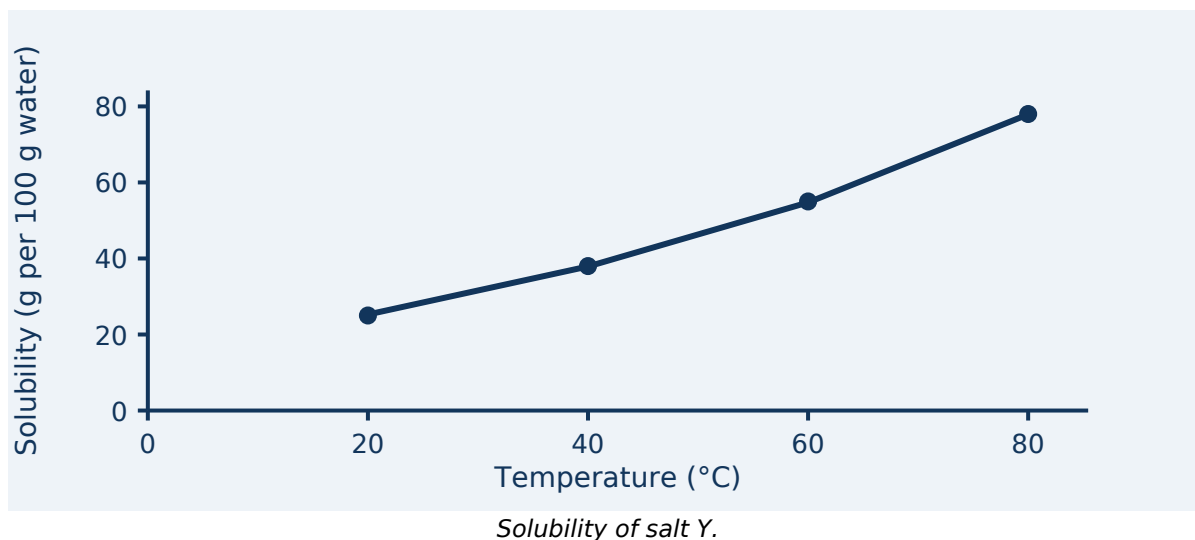
- Write the equation used. (1 mark)
- Calculate the concentration in g/L. (2 marks)

## Question 3 Mass needed (2 marks)

A cook wants 0.60 L of salt water at 25 g/L. Calculate the mass of salt to use.

## Question 4 Solubility graph (3 marks)

The graph shows the solubility of salt Y.



- Read the solubility at 60 °C. (1 mark)
- Calculate the mass of salt Y that dissolves in 200 g of water at 40 °C. (2 marks)

**Question 5 Saturated solution** (3 marks)

A student adds 40 g of salt Y to 100 g of water at 20 °C and stirs well.

- Calculate the mass left undissolved. (2 marks)
- State what this tells you about the solution. (1 mark)

**Question 6 Speeding up** (2 marks)

Explain why powdered salt dissolves faster than large lumps of the same salt.

**Question 7 Crystals** (3 marks)

A saturated solution of salt Y is made with 100 g of water at 80 °C and then cooled to 40 °C.

- Calculate the mass of crystals that forms. (2 marks)
- Explain why crystals form. (1 mark)

**Question 8 Spot the mistake** (2 marks)

A student says: 'A saturated solution cannot have a low concentration.' Evaluate this statement using a solid that is not very soluble.