Solubility Practical

Chemistry - Key Stage 3

Particles - Lesson 14

Miss Mason

Recap

1. Define 'solubility'.
The m_____ of s_____ that can d_____ in 100cm^3 of w_____.

2. What is meant if a solution is described as being 'saturated'?
There are no s_____ left between the solvent p_____ so no more s_____ can d_____.

3. Write 4 bullet points on the method for chromatography.
- **Draw a b_____ at the bottom of the f_____ p_____ in p_____.**
- **Add s_____ along this line.**
- **Submerge bottom of paper in s_____ at the bottom of a beaker and place a l__ on the beaker.**
- **The s_____ will travel up the paper, taking the s_____ from each sample with it based on their s_____.**

4. Explain why the solubility of a substance increases when there is a temperature increase.
Temperature causes an increase in the k_____ e_____ of the particles. This causes them to v_____ more, the b____ between them weaken and they move f_____ a____. This creates space for more s_____ to fill and d_____.

Method

1. Measure out 100cm³ of water, using a measuring cylinder, into a beaker.

2. Add one level filled spatula of your sodium chloride (salt).

3. Stir until it has all dissolved.

4. Repeat steps 2 & 3 until <u>no more will dissolve</u>.

5. Count how many spatulas you have put in altogether.

Substance (solute)	Number of teaspoons
Salt	

Imagine you are carrying out the experiment I just showed you on a range of different substances in your home.
Write a method describing how you would do this and produce a results table to record your findings.

1. Measure out…
2. Add…
3. Stir until…
4. Repeat until…
5. Count and record…

Results

Substance (solute)	Number of teaspoons
Sugar	4
Gravy granules	6
Coffee	1
Parmesan	0

The substance that was the most soluble was…
I know this because…

The substance that was the least soluble/insoluble was…
I know this because…

Which of the following is a potential source of error in this experiment?

Option 1

Too many spoonfuls

Option 2

Too few spoonfuls

Option 3

Inconsistency in stirring

Option 4

Consistency in stirring

Why would using a magnetic stirrer in our method improve the data we collect?

Option 1

Allows consistent stirring (all solutions would be stirred equally)

Option 2

Allows saturation point to be more accurately identified

Option 3

Allows inconsistent stirring (all solutions would be stirred differently)

Option 4

Gets rid of problems due to differences in spatula size

In our method, why would adding smaller masses of substance each time improve the data we collect?

Option 1

Allows consistent stirring (all solutions would be stirred equally)

Option 2

Allows saturation point to be more accurately identified

Option 3

Allows inconsistent stirring (all solutions would be stirred differently)

Option 4

Gets rid of problems due to differences in spatula size

In our method, why would measuring the mass of the solvent before and after adding the solute improve the data we collect?

Option 1

Allows consistent stirring (all solutions would be stirred equally)

Option 2

Allows saturation point to be more accurately identified

Option 3

Allows inconsistent stirring (all solutions would be stirred differently)

Option 4

Gets rid of problems due to differences in spatula size

From your experiment, identify what the potential sources of error could have been and how improvements could have been made to the method to improve the data collected.

One potential error in the experiment could have been...
(Repeat this for 3 potential errors)

One way we could have improved would have been to...
This should have improved our data because...
(Repeat this for 1 more method improvement)

Investigating solubility (alternative)

Solvent	Number of spatulas of solute until no more will dissolve
Water	8
Ethanol	5

Conclusion

Does the solvent affect the solubility of the solute?
How do you know?

Are the results reproducible? How could this be checked?