Title: The Magic of Dissolving

Do you know what one of the most extraordinary things in this world is?

Well, there are plenty of those…

It's when you make a cup of coffee and the coffee and sugar just vanish - and all of a sudden you have a drink. Same with tea. And we take it all for granted.

Do you think it would do the same if I put a spoonful of sugar and a spoonful of coffee in my mouth.

That's a yucky idea. It would be far too strong.

But seriously, what happens to those ingredients, and why? Surely they don't just vanish?

That's a great question! The sugar doesn't disappear; it dissolves. Let's explore what that means.

If I put a spoonful of sugar in a glass of water, what do you think will happen?

Well I suppose they mix. But I thought I would still see the sugar whizzing about. So I'm not sure where the sugar goes.

The sugar is disappearing!

Well, it's not. It's just breaking up into tiny pieces so small you can't see them. And do you know how to show that material does not vanish? Just add a lot of sugar to a glass of water. The level

of the water goes up when you put the sugar in. And it never goes back down again. So that shows the sugar is still there.

Our world is full of things that we can't see but are real.

Yes, the tiny pieces of sugar spread all through the water. That's called dissolving.

But it's still sugar?

Right. Dissolving is breaking down, NOT changing into something else or vanishing.

If I were to boil the water off we would find the sugar left in the pan. If we added a spoon of salt it will dissolve, just like the sugar. It;'s a very useful way of getting salt into food. You can either sprinkle salt ON your food, or you can dissolve it in the cooking water and get it evenly INTO the food.

By the way a liquid with something dissolved in it is called a solution.

So can we go on adding sugar to our drink - I mean solution - forever?

No, there is a fixed amount of sugar, salt or other things that an be dissolved. When it reaches that limit, which we call saturation, no more dissolves and it just builds up on the bottom of the glass.

But here is the tough question. If everything dissolved in water we would just be a pool of liquid on the floor, eh?

Absolutely. Only some things dissolve. Oil, for example, does not dissolve in water, and that it why it floats on the surface.

So our world is made of things that dissolve in water and things that don't.

Is there any way we can get more of something to dissolve=?

There sure is. Just heat it. Hot liquids can usually dissolve more of something than cold things. And faster, too. Although, curiously, some things dissolve better in cold than hot. I will tell you about one of those in a minute.

And what is one of the most common examples of dissolving that I wouldn't even imagine?

It's the land all around. Rain dissolves rocks very, very slowly. And I can prove it. Ever seen lime scum in your kettle? That is rock that was dissolved from some distant hill, carried by rivers and then pumped into your water supply. It was dissolved rock in solution. It has come out as solid only because you heated it. It never changed at all.

But I thought you told me that warm water could hold more than cold?

Well, like I said, life is full of exceptions, and that's what makes it so exciting, don't you think?