

The Sweet Science Show

INTRODUCTION

SLIDE 1: THE SWEET SCIENCE SHOW

Hello and welcome to The Sweet Science Show, the show that takes a closer look at your favourite sweetie treats.

My name is Professor Chocolate Chips and I am Life's very own Sweetie Chef. You can just call me (name). I love making sweets and have come to see you today to show you how this is done. We're going to take a look through my recipe book here (*hold up book*) and discover the delights of different treats.

Does anyone here like sweets?

Let's see what is the first sweetie inside my book (*open book and point at page*).

Candy floss!

Here I have a bowl of it. In my sweetie kitchen we are always trying to come up with new recipes. Today I'm going to try to make some candy floss soup. I need a volunteer to help me.

A CANDY FLOSS DISSOLVING

Thank you very much. What's your name?

What I'd like you to do is pour this jug of water onto my bowl of candy floss.

Look at what's happened. Thank you very much.

Can we have a round of applause for (name). If you take your seat again, I'll explain why that happened.

The candy floss has dissolved (*show bowl to camera*)

Candy floss is made just from sugar. Can you believe that this (*point to some candy floss*) comes from just this (*show sugar*).

When the water is added to it, the candy floss shrinks and we are left only with the sugar that it is made from.

My sweetie kitchen has lots of exciting toys that make sweets. Here I have a special machine that makes candy floss. (*Switch on machine, turn up to 9*)

B CANDY FLOSS MAKING

SLIDE 2 CANDY FLOSS

I need to add some sugar to it (*add sugar into cup then pretend to pour it in*). There is a heater in the middle of this machine that gets very hot. When the sugar gets hot it turns from a solid into a liquid. The liquid sugar then leaves the middle part of the machine through tiny little holes. This forces the sugar into very thin threads that spin around the dome part of the machine. These threads can be collected together on a stick, like this (*make stick of candy floss, then switch machine off*). And this is what gives us candy floss (*keep candy floss in hand*).

Scientists can measure how hot or cold things are in degrees Celsius. Ice is cold isn't it? Well water turns to ice at zero degrees Celsius. When water boils, like in a kettle, it gets hot. Water boils at 100 degrees Celsius. So can anybody guess what temperature the sugar melts at to make candy floss?

(Whoever guesses closest wins the stick of candy floss).

Well done! You can have this candy floss as a reward. (*Ask parent if it is ok for child to eat it*)

SLIDE 3 SUGAR

The sugar melts at 186 degrees Celsius. That's very hot.

Sugar is an ingredient in every kind of sweet you can think of from bubble gum to licquorice and from chocolate to cola bottles.

Let's have a look and see the next sweetie in my recipe book (*turn page in book*).

Honeycomb! Has anybody here ever had cinder toffee or a crunchie?

Well, the middle part of the crunchie is honeycomb. It has lots of little bubbles in it. I can show you how bubbles like these can be made.

C POLYURETHANE FOAM

I have two cups here with different liquids in them. When I mix them together something strange happens.

Add part A to part B in plastic pint cup and stir with whisk.

Can anybody guess what might happen? (*show cup to camera*)

Add jokes to fill!

Wow! What's happening here?

Can you see it rising in the cup? (*show cup to camera*)

The two liquids have made a foam and the foam is getting bigger.

Here's one that I made earlier (*show hard stuff*). It goes hard and we can see that there are lots of little bubbles inside (*show to camera*).

SLIDE 4 BUBBLES

So by mixing two ingredients together we have made bubbles.

Do you know what's inside these bubbles?

The bubbles are filled with carbon dioxide gas.

Gases take up more space than liquids or solids and this is why the foam expanded.

This foam looks a bit like the honeycomb in crunchies and it is made in a similar way.

To make honeycomb the two major ingredients are sugar and sodium bicarbonate. Sodium bicarbonate is kept in kitchen cupboards and is used when making cakes or sweets. The sugar is heated up until it is very hot. The sodium bicarbonate is added and this makes bubbles that cause the honeycomb to rise like our foam did.

Adding bubbles is one way that sweetie makers can give us different kinds of sweets.

As a Sweetie chef, I look at lots of different desserts.

What's a ghost's favourite dessert?

I scream!

My favourite desserts are all in my book. I wonder what is on the next page (*turn page of book*).

Sherbet!

Has anybody here ever eaten sherbet?

Here I have a recipe to make sherbet from things you might find in your own kitchen.

SLIDE 5 SHERBET RECIPE

It contains sodium bicarbonate and sugar, like honeycomb does, but it also contains citric acid, which is found naturally in oranges and lemons. So all these things can be found at home, but ask your mum before making anything.

D EATING SHERBET

I had one of my Sweetie helpers make some sherbet from this recipe earlier. I need a volunteer who likes sherbet!

Thank you very much. What's your name?

Please take this lollipop and unwrap it. OK, now you're ready to be my sherbet taster. Dip the lolly into the sherbet and then put it on your tongue.

Can you tell everybody what it feels like? *(have them answer this when their mouth is full of sherbet, make them up so everyone can hear fizzing)*

It feels fizzy doesn't it. You can hear it on your tongue and I can hear it. Thank you very much. Can we have a round of applause for (name).

But you guys couldn't hear it. Because that wasn't very loud, I've got something here that will let you all see what I mean.

E VOLCANO

(bring out volcano demo)

So we know that sherbet contains citric acid and sodium bicarbonate.

I am going to add some sodium bicarbonate to my volcano.

I like things to be bright and colourful, like sweets are. So I'm going to add some food colouring too *(add a couple of drops of food colouring)*.

Do you remember what happened when we put the sherbet on (volunteer's name) tongue?

That's right, it fizzed!

This is because of the reaction between the sodium bicarbonate and the citric acid.

(look at table of ingredients). Oh no! I ran out of citric acid when I was cooking earlier. But here I have some vinegar, like you might put on your fish and chips. It is an acid too so acts a bit like citric acid.

So when I add it to the sodium bicarbonate, let's see what happens. *(Add water and wait for foam to come out)*

Wow, the volcano has erupted!

So this is like what happens when you eat sherbet. It is like a mini explosion on the tip of your tongue!

SLIDE 6 SHERBET EXPLOSION

When sherbet gets wet from the saliva in your mouth the citric acid and sodium bicarbonate make carbon dioxide gas (*point to slide*).

This is the same gas that was in our foam bubbles earlier. Like with the foam, the gas takes up more room than liquids or solids. So when the sherbet makes gas, it expands and explodes.

So I have let you in on some of the tricks of the sweetie trade. What we're going to look at next is how much energy eating sweets gives you.

When you eat sweets, or any other food, it gives you energy. We all need lots of energy to do things like running and skipping.

F SKIPPING

I would like a final three volunteers please.

Thank you. What are your names?

I'm going to give you all a skipping rope and ask you to skip for one minute. We are going to see on the screen how much energy they are using.

SLIDE 6 ENERGY USED SKIPPING

Give out the three skipping ropes

Ready, set, go!

Click to start charts moving.

So my helpers here are using energy to skip.

Can anybody think of anything else that we need energy for?

We need energy to breathe, move around and pump blood.

So we are all using energy all the time, even when we are sleeping.

One way of measuring the energy in food is in calories. You might have seen the information on food packets that tell you how many calories are in that food. Here we are measuring the calories that they are using when skipping.

I will then reward them with sweets containing the number of calories they have used.

Their time is nearly up now. I need you all to count down from ten with me now.

Ten, nine, eight, seven, six, five, four, three, two, one. Time up!!

Thank you very much. We can see that they each used up 8 calories. Well done!

So now we can see how many sweets contain 8 calories. Ta-da!! (*hold up plate with one smartie on it*). Only joking, I'm not that mean!

Now, what would you like most, smarties, sherbet or candy floss?

Volunteers choose. Hand out tiny piece of smarties, sherbet and candy floss.

Thank you, you can go back to your seats now and can we have a round of applause for them please.

Do you think 8 calories is a lot of food?

Well it is actually only equal to one smartie, a small cup of sherbet or a handful of candy floss. This is because all foods have different numbers of calories in them. For instance, one tiny box of smarties (*hold up box of smarties*) has the same amount of energy as 3 huge lettuces (*hold up lettuces*). So if I had rewarded my volunteers with salad, they would have got a lot more food. Although sweets are tasty, they are very high in energy and the sugar in them is bad for our teeth. This is why we shouldn't eat too many of them.

SLIDE 7 SUMMARY

Well we have seen today that sugar is an ingredient in all sorts of sweets and that the people in sweet factories use different methods to give us all the different tasty sweets that we enjoy. We have also found out that sweets and other foods contain energy.

I'm afraid that we have come to the end of my recipe book (*close book*). I hope you enjoyed visiting my kitchen and discovering some sweet science.

SLIDE 8 THE SWEET SCIENCE SHOW

Thank you very much. Remember that we have a chocolate lab you can sign up for where you will learn all about the science behind chocolate. Please enjoy the rest of your day.

