

Science-Dissolving-



1 gram
caster
sugar



Tap
water



250 mls



1 gram
Cube
sugar



Hot
water



150 mls



1 gram
Icing/
powder
sugar



Thermometer

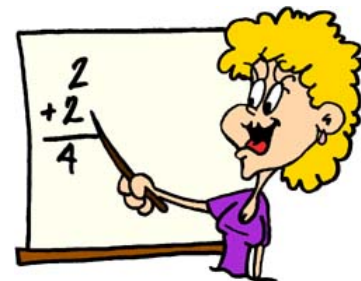


100 mls

What do we know?

Look at the picture chart. It shows all the elements of Miss Ahmed's problem.

Organize what you know into questions that will decide the variables for your experiment.



We know that	We need to know
There are three different types of----- -----	1. The difference the-----of----- ----- makes to the time it takes the sugar to dissolve.
The temperature of the water in Miss Ahmed's tea is at room ----- about ----- degrees.Miss Ahmed would like it to be-----	2.What difference will different ----- make to the time----- -----
The volume/amount of ----- in the tea is	3.What difference will the different -----of water in the tea make ----- ----- -----
Getting water from the tap is (Immediate/very slow/takes a long time)----- Getting hot water from the kettle (will take longer/will be quicker/may take too long) -----	4 How long does it take 250 mls of water at room ----- to boil in the kettle?

A Fair Test

How to use the materials for a fair test

Decide which will change and which will stay the same.

Investigation:		
<u>Brainstorm</u> Things I could change or vary 1 2 3 4 5 Things I could measure	I will change I will measure I will keep this the same to keep it fair	My Question is what will happen if I change the----- -----

Prediction

















I think the cube / caster / powder / sugar will dissolve / at the same rate / faster / slower / than the other sugars because-----

If I decrease the volume of water from 250 mls / 150 mls/100 mls I think the sugar will dissolve faster/ slower / stay the same /because

If I increase /decrease the temperature of the water from room temperature the sugar will dissolve faster/ slower/at the same rate /because -----

The sugar will dissolve fastest / slowest / at the same rate / at 40/60/70/degees because-----

Materials; choose the best materials for the variable you will test in your experiment

 cup/measuring beaker Stirring rod	 butter	 1 lb of sugar	 stopwatch
 Empty water container	 1 gram of cubed sugar	 Cup of tea and a biscuit	 1 gram of icing/ powder sugar
 Kettle/hot water	 Thermometer	 1 gram of granular sugar	 Measuring jug of 750 mls water
 pitta bread	 Olive oil	 Feta cheese	 12 oz of icing (powdered sugar)
What do we need for our experiment?		Why? Why is this necessary? / Why is it better?	
1			
2			
3			
4			
5			
6			
7			

What will we do with our materials? Fill in the Flow chart sequence to show the method for our experiment. First /next/then/after that/finally /we will

1- Type of sugar Time Chart for Dissolving Sugar

Sugar (Variable/what we changed).	We are measuring the time taken to dissolve 1 gram of sugar in seconds	Sign your name.
(a) 1 gram Cube sugar		
(b) 1 gram Granulated sugar		
(c) 1 gram Powder sugar		

2-Temperature Time Chart for Dissolving Sugar

Temperature degrees in celsius (Variable/what we changed)	Time taken to dissolve 1 gram of caster sugar in seconds	Sign your name.
Room temperature (20?)(The result for this experiment will overlap with the experiment for the type of sugar variable. Find this result when you exchange information.)		
40		
60		
70		
	Time taken to boil 250mls of water in----- -minutes-----seconds	

3-Volume/Amount Time Chart for Dissolving Sugar

Volume/Amount of water (variable/what we changed)	Time taken to dissolve 1 gram of caster sugar in seconds	Sign your name.
100 mls		
150 mls		
250 mls		

1. Collect the information from other groups with the same variable.
2. Collect any overlapping information from groups using a different variable
3. Look at the sheet with the heading 'Obtaining evidence'
Take your averaged results and write them up in the best format e.g. a bar chart or a line graph.

Science-Dissolving-

4. Look at the sheets with the heading – ‘Considering evidence and evaluating’. As a group, answer the questions on the variable your experiment is testing.
5. Prepare a report on the results of your test for a group with a different variable
6. Share the information needed to fill in the Shared Results Tables

Shared Results Table-Temperature				
Time taken for one gram of sugar to dissolve in the same volume but different temperatures of water				
Water Temperature in degrees Celsius (Variable)	Time taken by 1 gram of caster sugar to dissolve			
	First Trial (in seconds)	Second Trial (in seconds)	Third Trial (in seconds)	Average (in seconds)
Room temperature? ()				
40				
60				
70				

Shared Results Table-Type of Sugar				
Time taken for different types of sugar to dissolve in the same volume and temperature of water				
Type of Sugar (Variable)	Time taken by 1 gram of caster sugar to dissolve			
	First Trial (in seconds)	Second Trial (in seconds)	Third Trial (in seconds)	Average (in seconds)
cube				
caster				
powder				

Shared Results Table-Volume				
Time taken for one gram of sugar to dissolve in the same temperature but different volume of water.				
Volume of water (Variable)	Time taken by 1 gram of caster sugar to dissolve			
	First Trial (in seconds)	Second Trial (in seconds)	Third Trial (in seconds)	Average (in seconds)
100 mls				
150 mls				
250 mls				

DATA

Collect together all your data sheets

1. Planning sheet
2. Obtaining evidence sheet

Science-Dissolving-

3. Considering evidence and evaluating sheet
4. Filled in Shared Results Tables
5. A copy of the bar charts /line graphs from the groups with different variables
6. Look at your earlier prediction was it correct /incorrect/partly correct

Using all the information from the data sheets, answer these questions

1. In the variables we have tested do we have all the information we need to answer Miss Ahmed's request for help to make the best cup of tea in the shortest time.

Yes/No/We need to know-----

2. Check the amount of time it will take, using the fastest variables, to make the best cup of tea.

If we use

It will take minutes seconds for

It will take minutes seconds for

It will take minutes seconds for

It will take minutes seconds for

6. Does the best cup of tea fit within the time limits of Miss Ahmed's problem? Yes/No

7. If not what are Miss Ahmed's options? Make up your own table to show Miss Ahmed's options.

Using your data write a letter to Miss Ahmed

Dear Miss Ahmed

In answer to your request for help with-----

-----.

We have tested all the----- of your problem which are-----

-----We predicted that-----

----- would happen Our prediction was correct/incorrect/partly correct because what we discovered was-----

-----and after careful consideration we can now give you our expert advice.

We advise that your problem can be solved by/partially solved by the following sequence of actions and changes.

Science-Dissolving-

First consider changing the _____ to _____ This will be _____ seconds/minutes faster than _____
Secondly/Next we advise the most effective variable for decreasing the time taken for your sugar to dissolve is----- This will save you _____ minutes _____ seconds more than----- -----
Next /finally by changing from-----to----- you will gain-----minutes----- seconds
These actions all together will add up to _____ minutes _____ seconds
The time saved will allow you to have a cup of tea at _____ degrees Celsius in _____ minutes _____ seconds this will/will not be enough to solve your problem therefore-----

Extension activity; refer to the classification statement for sugar. Think of other substances that this definition fits. Will the result and explanation be the same if you repeated the experiment with these substances? Give an example.)