

Examples of good practice in the marking of science

What do I know about Forces?	What do I think I know about Forces?
<p>* Forces can be like pushing or pulling. ✓</p> <p>* There are lots of forces. Like e.g. * gravity ✓ * upthrust ✓</p>	<p>* In space there are no gravity but in Earth there is is gravity. ✓</p> <p>There is a smaller amount of gravity on the moon, you're right.</p> <p>There is some gravity on the moon as things do fall back to the moon's surface - astronauts for example.</p>
<p>5 questions I would like to ask about Forces.</p>	
<p>* Can you touch force? ✓</p> <p>* How many forces are there? ✓</p> <p>* Can we see some forces? ✓</p> <p>* What are forces used for? ✓</p> <p>* Can we use forces? ✓</p>	<p>Hopefully we will answer these questions while we study this topic.</p>

Begin units of work assessing and talking about previous units of work which contain some of the same skills/ objectives.

Wednesday 5th December

AT1 Objectives: To be able to predict and conclude giving reasons why.
To be able to plan and carry out a fair test.

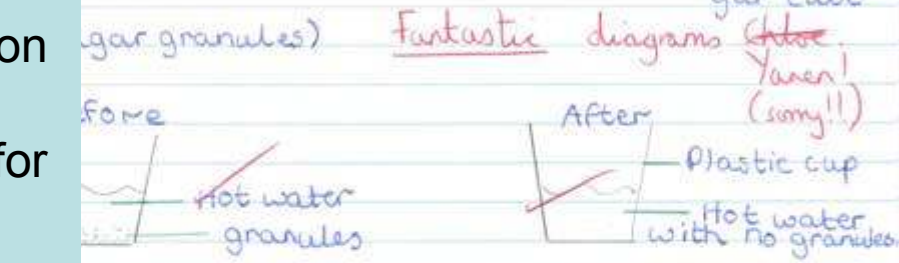
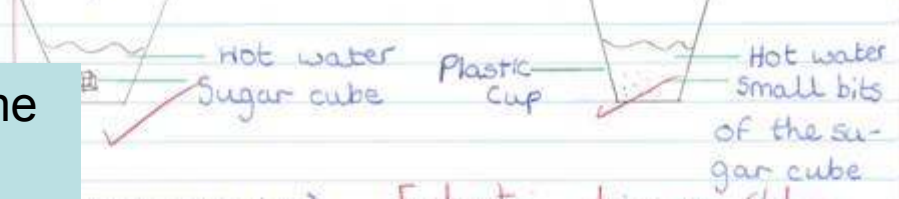
AT3 Objectives: To be able to investigate several factors which affect the rate that a solid dissolves.



It saves time to write objectives on to stickers, especially for younger children.

Objectives are linked the the National Curriculum strand, with AT1 objectives clearly highlighted.

Diagram (cube)
Before



Conclusion
The sugar granules dissolved more quickly because there was ~~less~~ ^{more} surface area in than the cube and it wasn't like the cube. Great conclusion.



Change ~~only~~ ^{one} one thing and ~~keep~~ ^{keep} the rest the same. Excellent.



Now let's look at temperature results more closely.

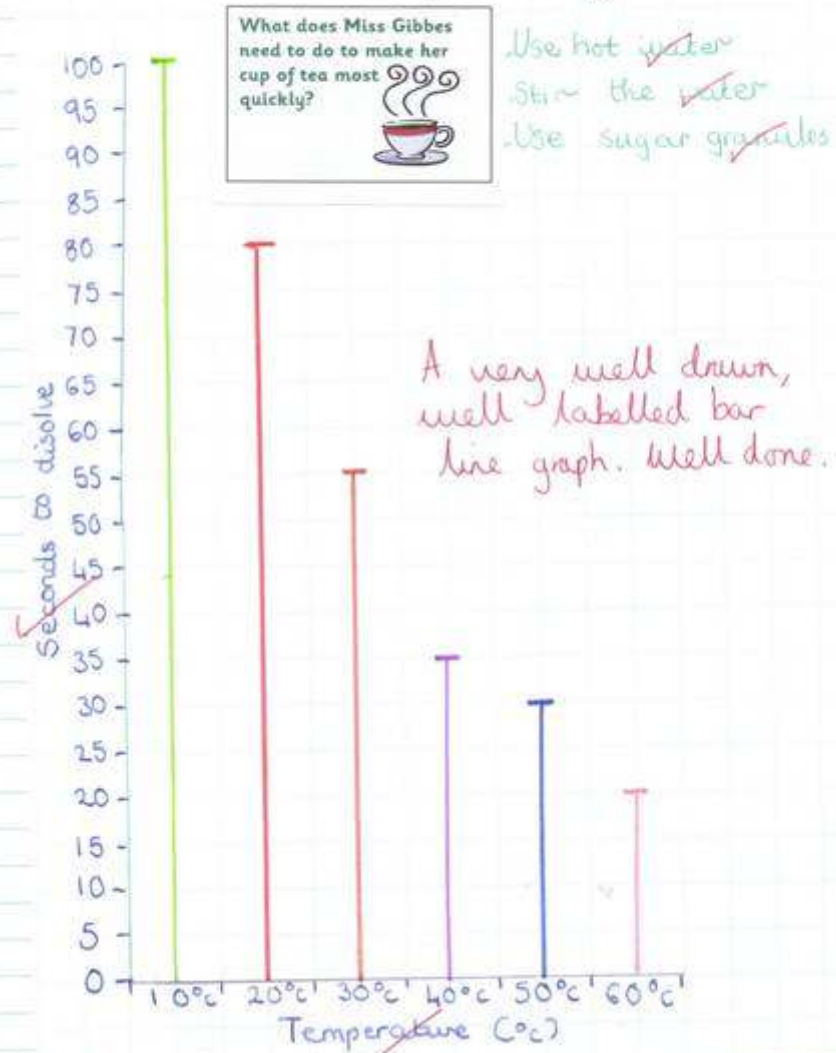
Temperature (°C)	Time to dissolve (seconds)
10	100
20	80
30	55
40	35
50	30
60	20

If you like sugar in your tea (alot) you should make the water boil for a long time so the sugar could dissolve more quickly and it will be more tastier.



A what temperature does water boil? 100°C
 If you never did a fair test you wouldn't be able to get your results.

The bar line graph to show how long it took for the sugar to dissolve in different temperatures.

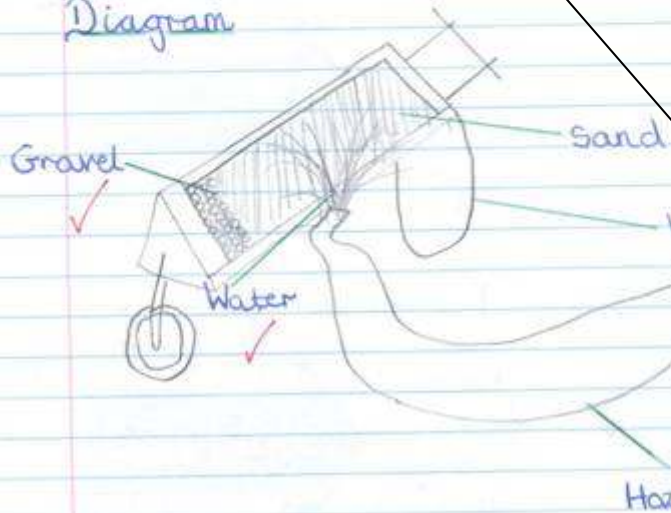


Tuesday 11th December

Obj: to understand that solids that do not dissolve can be separated by sieving or filtering
2: to be able to use vocabulary relating to separation and filtration i.e. mixture, undissolved, separate, filtrate

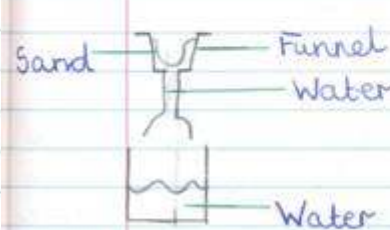
David was in his garden laying down a new drive way. He wanted to gravel the driveway then put a sandpit for his son in the garden. David was very clumsy and as he was loading up the wheel barrow with gravel, a bag of sand fell off the top shelf in his shed and landed in the wheel barrow. To make matters worse a water pipe burst and into the wheel barrow it went. David now has a MIXTURE of gravel, sand and water. He needs to separate them so he can complete his drive way?
What should he do?

Diagram



Give children a context from which to investigate- they are more likely to remember the investigation/ skills learnt if they can refer it to a context.

My proposal



I think David should use sie to separate the Marble from the sand and water. He should use the ^{filter} funnel to separate the sand and water.

What I think David should leave his sand out in the garden for the sun, so (it) could evaporate. My proposal worked because everything worked. The marble separated from the sand and water. I used a sieve. The funnel did separate the sand and water. I was correct. Now I have my marbles, water and sand separated.

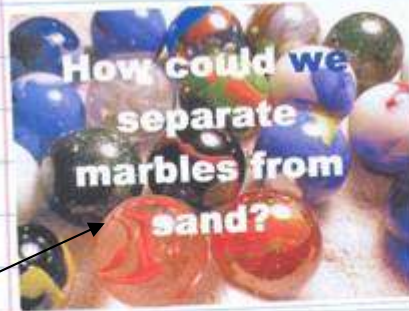


- gravel ✓
 - marbles (glass) ✓
 - sand ✓
 - and other solids, but not all.
- which would dissolve: salt ✓ and sugar ✓

Ensure that key vocabulary from previous lessons is checked at the beginning of the next lesson. Children will then be able to build upon what they have learnt last time.

Filtration

Filtration is when you separate ~~undissolved~~ things e.g. marbles, sand and water.
Fantastic.



We could use a sieve to separate marbles from sand. We did it yesterday.
What would stay in the sieve?
Why would this happen?

The sand will go through and the marble $\text{\textcircled{S}}$ will stay, because sand is small.

The sand is smaller than the holes in the sieve.

Give the children opportunities to think about the theories learnt in previous lessons in different contexts.

Keep going back to the children's green pen work and check their understanding.

Wednesday 30th January
Obj: SC1 - to be able to predict and conclude giving reasons why.

SC1 - to understand the need for repeat measurements

SC4 - to understand air resistance and its effects

Key Question:

Does the surface area of a spinner's wings affect the rate at which it falls?

Very specific objectives in AT1

What factors will I keep the same?
The weight of the paper (how many papers)
The height of you drop it from
The weight of the paperclip
The place you drop it from

What factors will I keep the same?

- The weight of the paper (how many papers)
- The height of you drop it from
- The weight of the paperclip
- The place you drop it from

Ask the children to be involved with your marking!

I think the red spinner to touch the floor.
To measure this the equipment I will use is a stopwatch.

My Prediction

I think the red spinner is going to fall the slowest because it has less surface area.
I think the green spinner is going to fall the quickest because it has less surface area.
A great prediction - why do you think I think your prediction is great? I explained why.

Diagram

Using the same equipment what other question could you investigate?

Does the weight of the paperclip affect the rate/speed at which it falls?

Could you and Chloe swap places? No because it might not be in the same place to have the chair.

Excellent diagram. You have: a ruler for straight lines in pencil. Draw

Well done! You have listed things that you will keep the same in your investigation and only changed one thing.

What are the rules about making a prediction?

Always explain WHY! What word helps you to do this? because

Excellent! You have set written your conclusion saying why things happened. I know you did this as you used the word 'because' in your explanation.

Conclusion

The spinner that fell most slowly was the green spinner because its wings were 19cm^2 . This is because it had more surface area and therefore created the most air resistance.

The spinner that fell most quickly was the red spinner because its wings were 9.6cm^2 . This is because it had less surface area and therefore created the least air resistance.

Really great Yaren. Well done.

How did you calculate the average time of falling for each spinner?



We added the time with a calculator! Then what did you do? found the average time and divide it by 10.



This girl is throwing her spinner into the air. Is her test fair? Explain what she must do in order to improve her investigation.

Her test is not fair because she can throw one high and the other one low.

What should she do? done throw it in the air

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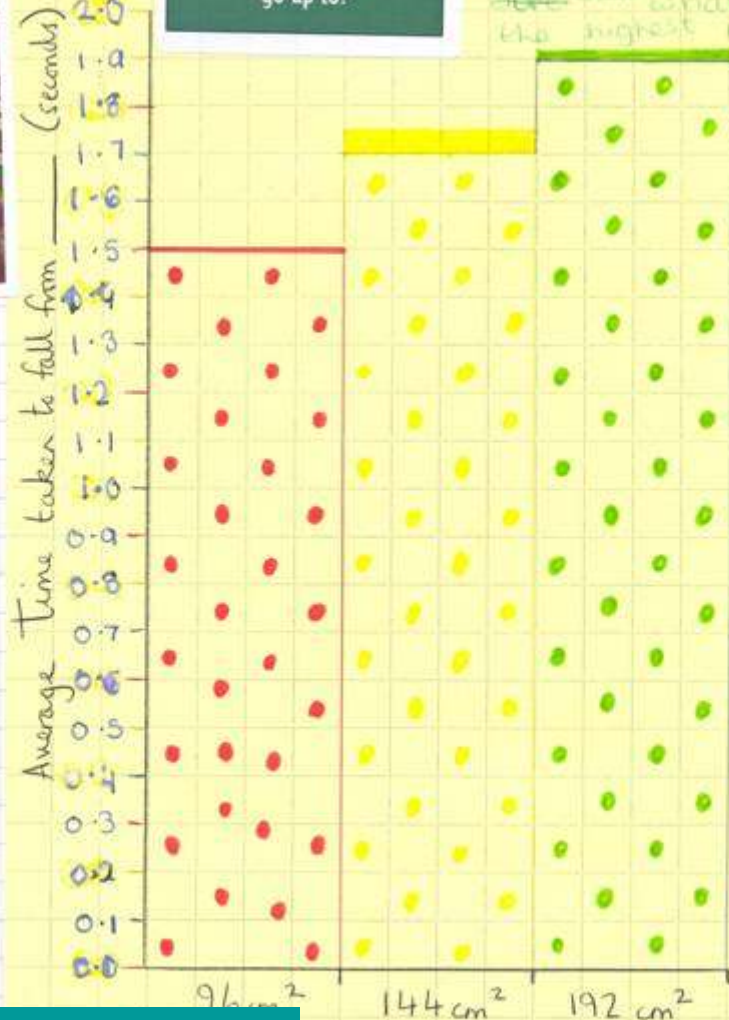
Repeat	Repeat	Repeat	Repeat	Repeat	Repeat	Repeat	Repeat	Repeat	Repeat	Repeat	Repeat	Repeat
1	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
2	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
3	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
4	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
5	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
6	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
7	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
8	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
9	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
10	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec	1sec
												1.50
												1.76
												1.93

You worked hard sensibly with it

ded your results well done



Photographs showing the children taking part in practical work.



Your bar graph is excellent! You have really thought hard about drawing it accurately. How did you decide what your y axis scale would go up to?

Graph to show...
Saw what the highest number was

Cross curricular links with numeracy

Spinner wing area

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Are there any similarities between the results relating to air resistance, and those relating to water resistance? If there is, can you think what may happen with solid on solid resistance (friction)?

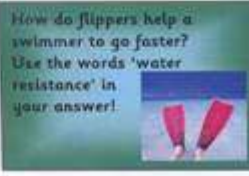
Thursday 21st January
Results based on 1gfl
water resistance test



The shape that sank most slowly was a shallow cylinder. This shape sank most slowly because it had the more surface area and therefore created the most water resistance.

Excellent conclusion Yaren - well done.

The shape that sank most quickest was a cuboid. This shape sank most quickly because it had the less surface area and therefore created the least water resistance.



Because when you flip there is more water resistance and that's what makes you go faster.

There are some excellent online resources which can be utilised to support or extend children where necessary. This activity was done once the children had studied air resistance allowing them to point out any similarities with water resistance.

Friday 1st February

- Obj: to be able to list at least 3 things I will keep the same in an investigation (SC1)
: to be able to describe the effect friction has on an object when on different surfaces (SC4)

Key question:

Does the surface an object is on alter the distance it travels when pushed?

What variable will I change?

- The variable I will change is the surface the object is on.

What factors will I keep the same?

- The variable I will keep the same are the place.
- The force
- The gradient

What does the word "gradient" mean? The steepness of the hill. Fantastic!

What will I measure?

- I will measure the how far the object will travel
- To measure this the equipment I will use measuring tape.

Prediction

I think the ^{object} weight on the glass will travel the ^{furthest} because it's ^{shortest distance on} slidy. I think the object will travel ^{shortest distance on} slowest because there is more friction. Well done for using the word friction in the second part of your prediction.

How much friction do you expect there to be on the glass surface? a little bit.

The structure of the investigation always remains the same and the structure of this is derived from a permanent classroom display.

New vocabulary is introduced but checked once the lesson is over to make sure the understanding of the vocabulary has been retained, not just used with no understanding.

02.10.07
To recognise difference between humans and organise data in a chart.

Objective stickers stuck in to save time.

Eye Colour in Orange Class



Cross curricular links with numeracy and ICT.

Excellent! You know that there are differences between humans.



Which eye colour is most common in Orange class? Light brown



Children are interpreting the data in their graphs in the next lesson.

Find out which material would make the best boat.

To make simple observations and say if what happened matched their prediction.

Use these words to help you in your work today.

float	sink
water	tray
Material words	
wood /	plastic
metal	paper



Black history Month Cross-Curricular Work 10/07

Question

Which material will make the best boat?

Prediction

I think the wood will make the best boat.

why? "because it wouldn't sink" ✓

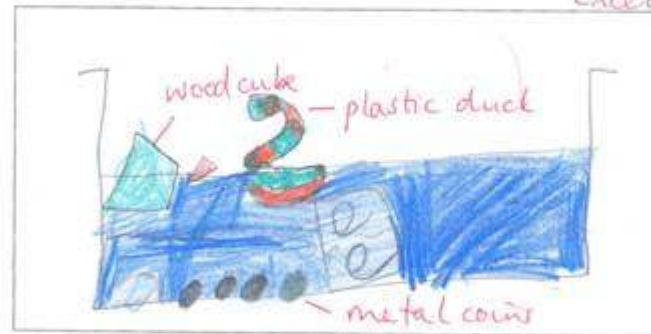
How will you find out?

I will test them in the water ✓

I know that some materials **float** and some objects **sink**.

Draw a picture of what you did here.

Excellent drawing



Results. What did you find out?

Scribing what the children have said to adults in the classroom is very important, especially in the earlier years. This values children's verbal input as well as their written. This ensures that science skills and knowledge is being improved, not their writing skills.

made the best



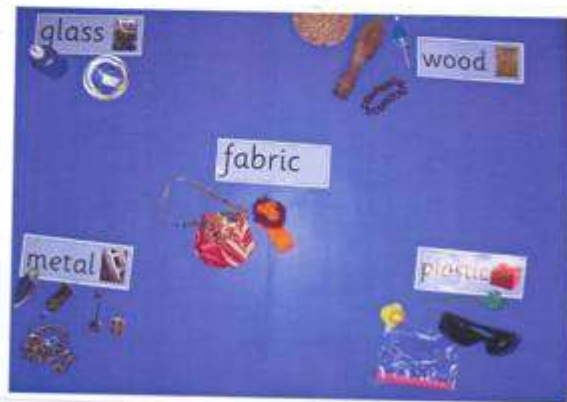
tips small!

Paper would rip - you're correct!

Materials

Science Targets

- To describe materials by their properties
- To name materials according to their properties
- To know that some materials are magnetic and some are not
- To be able to say why a material is suitable for a particular purpose
- To suggest how to test whether a material is waterproof



8.01.08
To name materials
by their
properties.

Photographs in the children's books of displays in the classroom. This reminds the children of what was discussed in class in relation to the display even after it has been changed ready for the next topic. AT1 vocabulary and resources are on permanent display.

To think of ways to find out if a material is waterproof.
To make simple observations and compare them to your prediction.
Tuesday 12th February 2007



AT1 and topic objectives are being studied side by side.

Question

Which material is the best to use to fix an umbrella?

Prediction

plastic - will be the best material.

How will you find out?

putting the water on the material

~~it rips out~~

to see if the water comes through & rips ✓

A great idea to test if it is waterproof or not.

Draw a picture of what you did here.

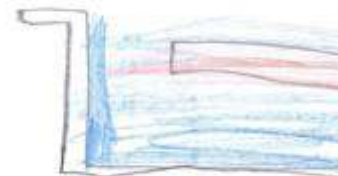
Good. You have found a material which is waterproof!



Would paper be a good material to fix an umbrella with?



no - why?
soy ✓



Results

What did you find out?

that the plastic was good.
paper was not good.

How can you tell?

because, it did not rip.

paper ripped ✓ it was ruined.
and soy ✓ - Very good reasons Atlanta

Green pen work has been marked and the children has been asked to extend their original answer. The work has been gone back to at least twice by this point and could be gone back to even more.