Investigations

Year 1 and 2

YEAR 1 INVESTIGATIONS

TOPIC	ATT. TARGET	INVESTIGATION
Ourselves	2	Differences between humans
Ourselves	2	How far away can you smell perfume?
Growing Plants	2	Do plants need light to grow?
Materials	3	Which material makes the best umbrella?
Materials	3	Which material is the strongest?
Materials	3	Which is the bubbliest washing-up liquid?
Light and Dark	4	Which is the best torch?
Sound and Hearing	4	How far away can hear?

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** OURSELVES

INVESTIGATION DIFFERENCES BETWEEN HUMANS

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
'Do we all look the same?' Ask the children to look at each other and suggest differences in their physical appearance.	bar	1&2	

BRAINSTORM

What I could change

Eye colour	Hair colour
Sex	Shoe size

What I could measure

The number of pupils with these physical characteristics	

Notes: Pupils could choose 1 variable to investigate. For example hair OR eye colour. Groups could choose different variables and compare.

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Eye colour Hair colour Shoe size Boy or girl	Number of pupils with those particular features

POSSIBLE RESULTS TABLE

I changed Eye colour	I measured No. of pupils
blue	6
brown	9
green	4

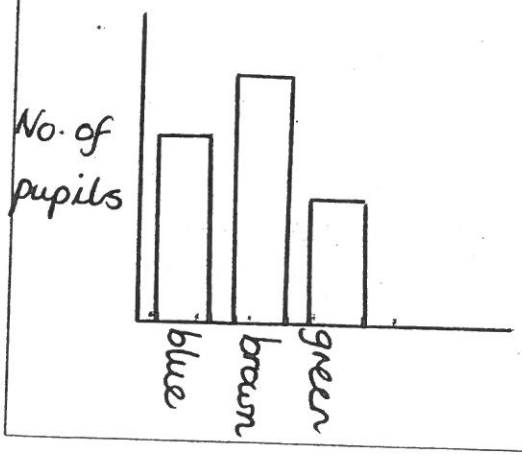
APPARATUS

None

Use nearest match for hair/eye colour

POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'most children in our class have brown eyes'

'there are less children with green eyes than other colours'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** OURSELVES

INVESTIGATION HOW FAR AWAY CAN YOU SMELL PERFUME?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Whose mother/ sister etc wears perfume? Does it smell nice? Do the children like it? Do all perfumes smell the same? Are they all as strong? How much perfume should someone wear?	bar	1&2	Perfume, suitable container for holding perfume, blocks or metre sticks for measuring distance.

BRAINSTORM

What I could change

The distance from the perfume	

What I could measure

How many pupils can smell the perfume	

Notes: Distance from the perfume can be measured in metres, steps, blocks etc. Pupils tend to say they can smell the perfume even when they can't!

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
The distance from the perfume	How many pupils can smell the perfume.

POSSIBLE RESULTS TABLE

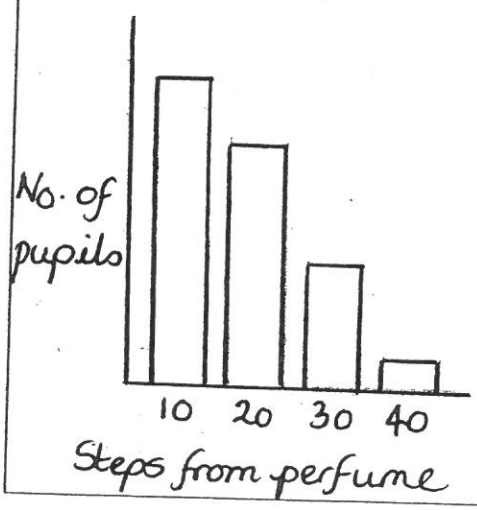
I changed Distance (in steps)	I measured No of pupils
10	25
20	15
30	6
40	1

APPARATUS

None

POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'The smell gets fainter as you move away from it'

'Most pupils only smell the perfume when close to it'

'Some of us have a better sense of smell than others'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** GROWING PLANTS

INVESTIGATION DO PLANTS NEED LIGHT TO GROW?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Do plants grow all the year round? Why do you think that plants grow better in Spring and Summer? Is it because of temperature, less wind, more **light**?	bar	1	Seeds (pea, broad bean, mung bean, sunflower, cress) Grow the seeds in polystyrene egg boxes with a few puncture holes in the bottom.

BRAINSTORM

What I could change

The amount of light that seeds receive.

What I could measure

The height or length of stems/ how the seedlings are growing

Notes: Light can be varied by using a dark box or cupboard, a windowsill or covering with greaseproof/ translucent paper

POSSIBLE VARIABLES

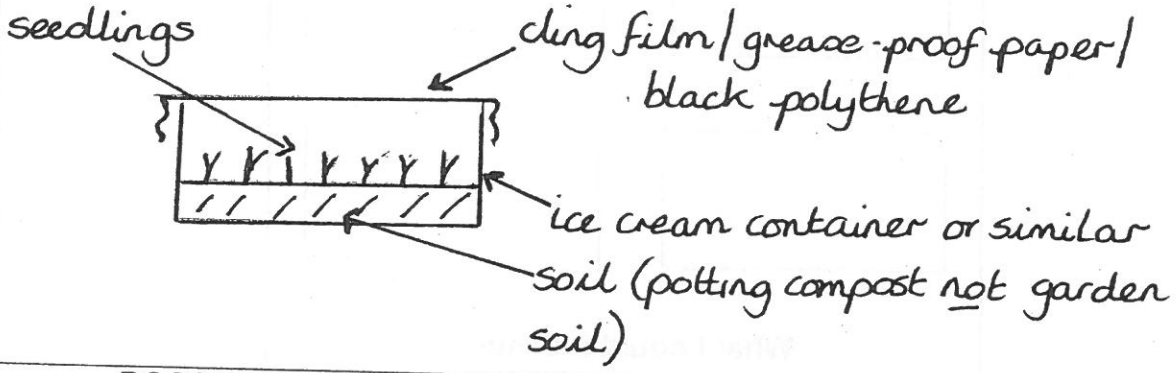
What pupils could change	What pupils could measure
Amount of light that plants receive	The growth/ length of seedling stems.

POSSIBLE RESULTS TABLE

I changed Amount of light	I measured Length of stems
none	very long
some	long
a lot	short

APPARATUS

Pupils could use 'mini glasshouses'



POSSIBLE GRAPHS

TYPE OF GRAPH none

POSSIBLE PUPIL CONCLUSIONS

'the seeds/stems grow more in the dark'

'the plants don't grow so much in the light'

(They might also note differences in colours of seedlings - more light = greener)

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** MATERIALS

INVESTIGATION WHAT MATERIAL WOULD MAKE THE BEST UMBRELLA?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Did you get wet this morning/this week coming to school? What do we use to help us to stay dry? What are umbrellas made of? Are they all the same? Are some made from different materials?	none	1	Assorted materials and fabrics, plastic beakers and cups etc.

BRAINSTORM

What I could change

The material	

What I could measure

How fast/easily the water passes through	

Notes:

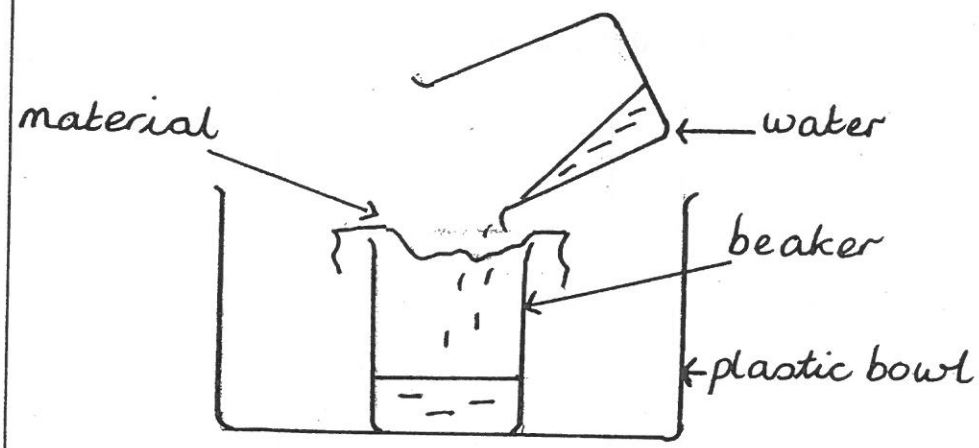
POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Type of material	How well water passes through

POSSIBLE RESULTS TABLE

I changed type of material	I measured Does water pass through ?
cotton	yes
nylon	slow
wool	fast
plastic	no
paper	yes

APPARATUS



POSSIBLE GRAPHS

TYPE OF GRAPH none

POSSIBLE PUPIL CONCLUSIONS

'plastic keeps the water out best'

'wool is hopeless for umbrellas - it leaks'

'paper lets water through and it gets soggy'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** MATERIALS

INVESTIGATION WHICH MATERIAL IS THE STRONGEST?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
The story of the 3 little pigs- why did they go from the straw house into the wooden house? Is it really stronger? Which material would be the best for them to build a bridge with?	bar	1&2	Drinking straws, similar sized pieces of balsa wood and card, weight hangers with 100g weights

BRAINSTORM

What I could change

The material	

What I could measure

How many weights each material will hold	

Notes: Weight hangers can be borrowed from the local comprehensive school. They are heavy so take care with fingers and toes! Balsa wood strips will have to be cut beforehand.

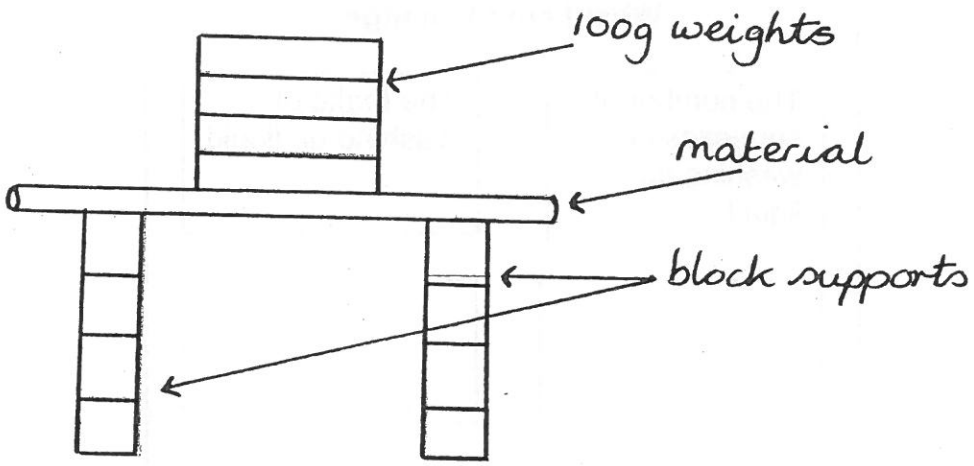
POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Type of material	Number of weights to break the material

POSSIBLE RESULTS TABLE

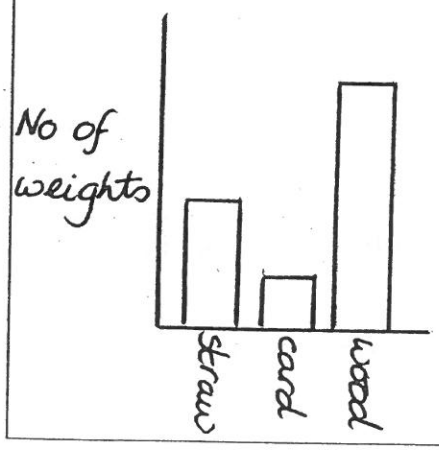
I changed	I measured
The material	No. of weights
'straw'	3
card	1
wood	8

APPARATUS



POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'It took less weights to break the straw than the wood'

'wood is stronger than straw'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** MATERIALS

INVESTIGATION HOW CAN WASHING UP LIQUID MAKE MORE BUBBLES?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
My father always does the washing up. The problem is he always seems to have too many or too few bubbles. Why do the pupils think this is? How could we help him to get the right amount of bubbles? How can we test our ideas?	none	1	Bowls, water (not above 60°), washing up liquids- different makes

BRAINSTORM

What I could change

The number of squeezes of washing up liquid	The make of washing up liquid

What I could measure

The amount of bubbles	

Notes: The amount of bubbles would have to be measured through observation, i.e., a lot, a few, just the right amount.

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
The number of squeezes of washing up liquid	The amount of bubbles

POSSIBLE RESULTS TABLE

I changed	I measured
The number of squeezes	The amount of bubbles
1	a few
2	some
3	some
4	lots

APPARATUS

POSSIBLE GRAPHS

TYPE OF GRAPH none

POSSIBLE PUPIL CONCLUSIONS

'more squeezes of washing-up liquid gives more bubbles'

'less washing-up liquid gives less bubbles'

'The more washing up liquid the better I can wash up'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** LIGHT AND DARK

INVESTIGATION WHICH IS THE MOST POWERFUL TORCH?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
How do we see at night/ in the dark? (could link to history) Have you been in a tent camping? How did you find your way around in the dark? Did you have a torch? Are all torches the same? How are they different? How can we test which is the most powerful torch?	none	1	Torches, darkroom (see overpage)

BRAINSTORM

What I could change

The type of torch

What I could measure

How easily pupils can see objects

Notes: The investigation can be made quantitative by fixing a sheet of letters on the back of the 'darkroom'. Pupils can count how many letters they can read with each torch- this would allow a bar graph.

POSSIBLE VARIABLES

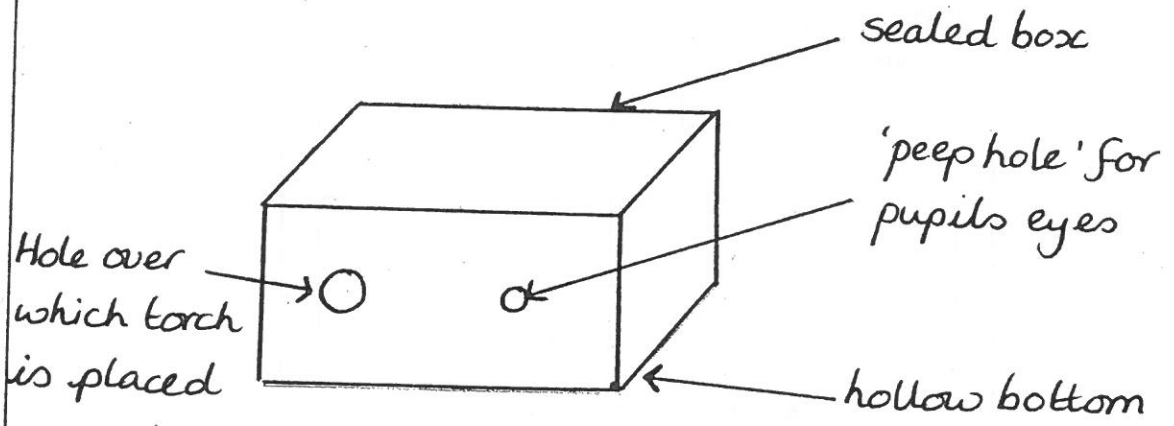
What pupils could change	What pupils could measure
Different types/powers of torch	How well the object can be seen

POSSIBLE RESULTS TABLE

I changed	I measured
Type of torch	How well I saw object
Ever Ready	yes
Varta	no
Red torch	a bit

APPARATUS

Objects are placed under the box



POSSIBLE GRAPHS

TYPE OF GRAPH none

POSSIBLE PUPIL CONCLUSIONS

'the Ever Ready torch was the strongest'

'I saw the objects best with the Ever Ready torch'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** SOUND AND HEARING

INVESTIGATION HOW FAR AWAY CAN YOU HEAR SOUNDS?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
My aunty has poor hearing and she finds it difficult to hear the telephone. Why is this? What could she do to make it easier for her to hear the phone?	Bar or line!	1,2&3!	A constant sound on a tape- a telephone ringing is the best.

BRAINSTORM

What I could change

The distance from the sound	

What I could measure

How many pupils can hear the sound at different distances	

Notes: Pupils tend to say they can hear the sound even when they can't! The distance from the sound can be measured in metres or steps.

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Distance from the sound	How many pupils heard the sound

POSSIBLE RESULTS TABLE

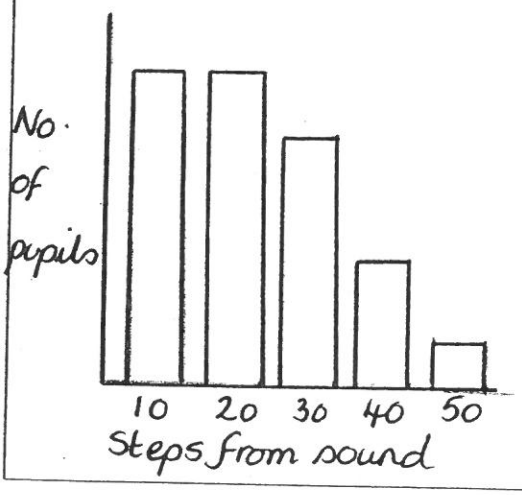
I changed	I measured
Distance (steps)	No. of pupils
10	23
20	23
30	15
40	8
50	3

APPARATUS

It is essential to use the same sound for a fair test. A recording, e.g. a telephone ringing, can be rewound and replayed at each distance.

POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'the sound gets quieter when you move away from it'

'most pupils only hear the sound when close to it'

'some of us have better hearing than others'

YEAR 2 INVESTIGATIONS

TOPIC	ATT. TARGET	INVESTIGATION
Health & Growth	2	What are our favourite foods?
Growing Plants	2	What do seeds need to germinate?
Plants	2	Where do plants live?
Variation	2	Why are pea pods different sizes?
Variation	2	Differences between pupils
Changing materials	3	What makes ice melt (1)?
Changing materials	3	What makes ice melt (2)?
Changing materials	3	Which substance melts fastest?
Changing materials	3	How does cooking change biscuits?
Forces	4	How far do cars go?
Forces	4	Which ball travels furthest?
Forces and Movement	4	What makes a boat go faster?
Forces and Movement	4	Wind me up!
Electricity	4	What materials carry electricity?

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** HEALTH AND GROWTH

INVESTIGATION WHAT ARE OUR FAVOURITE FOODS?

SCENE SETTER	**TYPE OF GRAPH POSSIBLE**	**1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS**	**RESOURCES REQUIRED**
My father works for a supermarket and has to supply the food for young children. How could he find out what to buy? Ask the children what their favourite foods are and discuss differences in opinion. Ask the children how they could find out what the favourite foods in the class are.	bar	1&2	Pictures of popular foods, tins, packets etc of popular food.

BRAINSTORM

What I could change

The type of food	

What I could measure

The number of children who like each food	

Notes: Keep the list of foods short-choose some of the most popular foods that the children suggest.

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Pupils' favourite foods	How many pupils like these foods

POSSIBLE RESULTS TABLE

I changed	I measured
Food	No. of pupils
burgers	14
chips	17
ice-cream	17
yoghurt	6
crisps	15

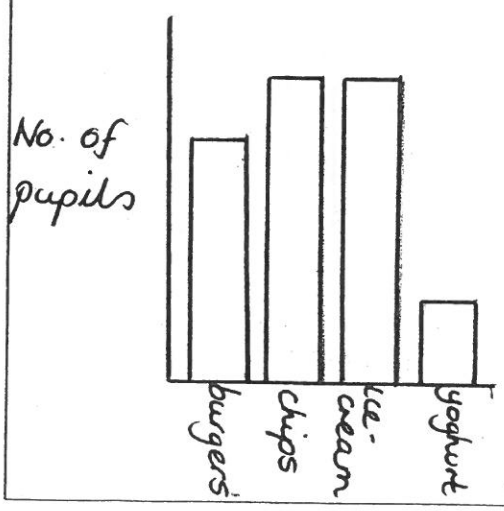
APPARATUS

None required

Keep the list of foods sensible in length by restricting it to some of the class' favourite foods. However, include at least one 'unpopular' food as a comparison.

POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'Chips and ice-cream are the most popular foods'

'more children like chips and ice-cream than the others'

'not many of us like yoghurt'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** GROWING PLANTS

INVESTIGATION WHAT DO SEEDS NEED TO GERMINATE?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
My mother has 'green fingers'. She loves gardening but she has real problems germinating seeds. How can we help her? At what time of year do seeds grow? Can the children suggest reasons why seeds grow in Spring? How would this help my mother to germinate seeds?	bar	1&2	Seeds (cress, pea, broad beans, sunflower). Grow the seeds in polystyrene egg-boxes with a few puncture holes for drainage.

BRAINSTORM

What I could change

The amount of water	The amount of light
The amount of warmth	

What I could measure

How many seeds germinate	

Notes:

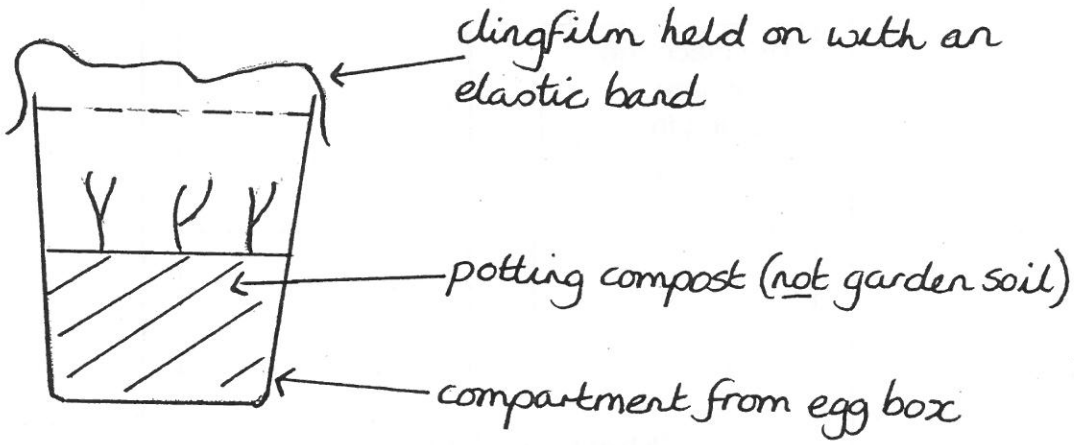
POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Amount of water, warmth or light	How many seeds germinate

POSSIBLE RESULTS TABLE

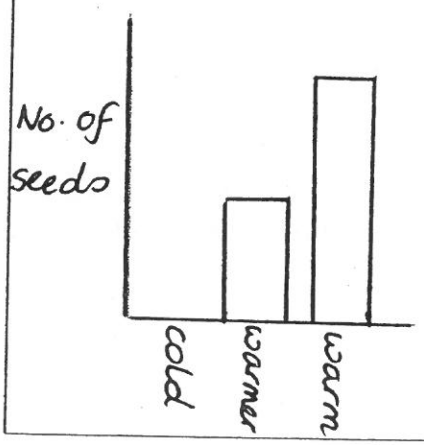
I changed	I measured
Temperature	No. of seeds growing
cold (in fridge)	0
warmer (on windowsill)	5
warm (near radiator)	9

APPARATUS



POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'more seeds grew in the warm'

'the warmer it was, the more seeds grew'

'seeds need to be warm to grow'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** PLANTS IN OUR ENVIRONMENT

INVESTIGATION WHERE DO PLANTS LIVE?

SCENE SETTER	**TYPE OF GRAPH POSSIBLE**	**1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS**	**RESOURCES REQUIRED**
Do the children go for walks in the countryside/park? Have they ever noticed wild flowers? Where have they seen the flowers- do they all grow in the same place? What type of place do different plants live?	bar	1&2	A square or circle of wire to give the **same area** for counting plants

BRAINSTORM

What I could change

The place the plants are growing in	

What I could measure

The number of plants in each place	

Notes: Suitable places to look for flowers would be on grassland, under a tree, mown grassland, wet and dry areas etc. Make sure pupils wash hands after handling plants and soil.

POSSIBLE VARIABLES

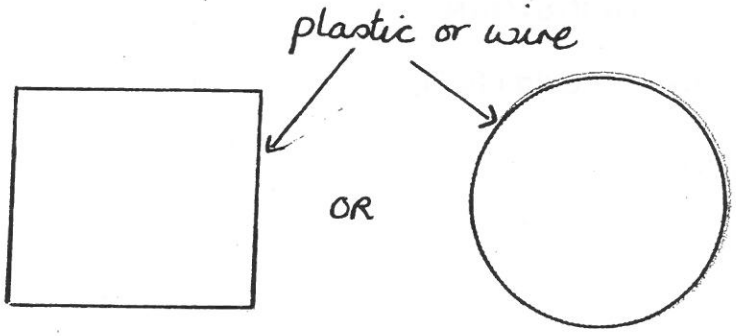
What pupils could change	What pupils could measure
Different areas e.g grassland, under trees, marsh	How many flowers e.g. daisies were found in a given area

POSSIBLE RESULTS TABLE

I changed	I measured
Area	Number of daisies
grass	7
under trees	1
marsh	2

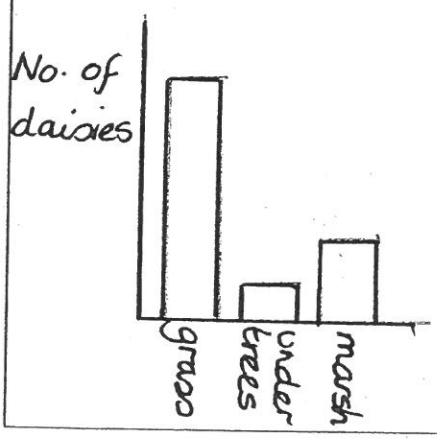
APPARATUS

Use hoops or squares to make sure area covered is equal each time. These are thrown randomly (CARE!) in the different areas.



POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'daisies like growing in grass'

'more daisies grow in grass than in other areas'

'daisies do not grow as well under trees'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** VARIATION

INVESTIGATION WHY DO PEA PODS COME IN DIFFERENT SIZES?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Show the pupils some fresh pea pods and ask them to tell you about any differences they can see in them (someone should indicate differences in size/length). Ask the pupils what is inside the pea pods. Do all the pea pods have the same number of peas (seeds) inside them? Which pods have the most seeds? How can we test this?	bar (or line!)	1, 2& 3!	Fresh pea pods

BRAINSTORM

What I could change

The length of the pea pods	

What I could measure

The number of peas (seeds) inside the pods	

Notes: The investigation needs to be carried out when the peas are available. Other fruits and seeds can be substituted. For example kidney beans/broad beans or counting the pips on different sized strawberries. Measure pea pods to the nearest cm.

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Length of different pea pods	Number of seeds in the pods

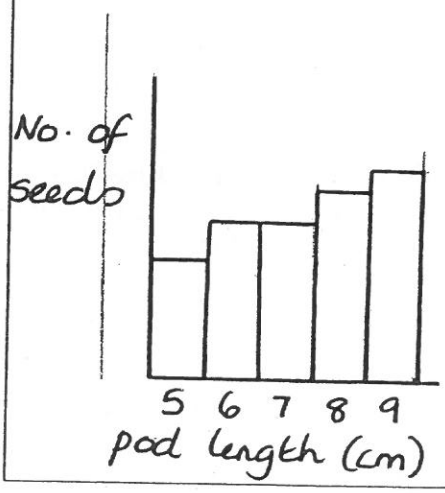
POSSIBLE RESULTS TABLE

I changed	I measured
Pod length (cm)	No of seeds
5	5
6	6
7	6
8	7
9	8

APPARATUS

POSSIBLE GRAPHS

TYPE OF GRAPH bar (joined)



POSSIBLE PUPIL CONCLUSIONS

'bigger pods have more seeds'

'the bigger the pod the more seeds inside them'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** VARIATION

INVESTIGATION WHAT DIFFERENCES ARE THERE BETWEEN PUPILS?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Ask the children whether we are all the same. Ask pupils to look at each other and suggest differences that can be **measured.**	bar	1&2	Measuring tapes, rulers, scales (in kg).

BRAINSTORM

What I could change

Hand span	Height
Weight	Foot length

What I could measure

The number of pupils with a given weight/height	

Notes: Looking at differences that can be measured (quantitative) shows progression from noting observable differences such as eye and hair colour. Measure to the nearest cm, kg, shoe size etc. Do not measure or weigh pupils if it may be potentially embarrassing.

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
The pupils themselves - measurement of a physical feature	How many pupils have a particular measurement

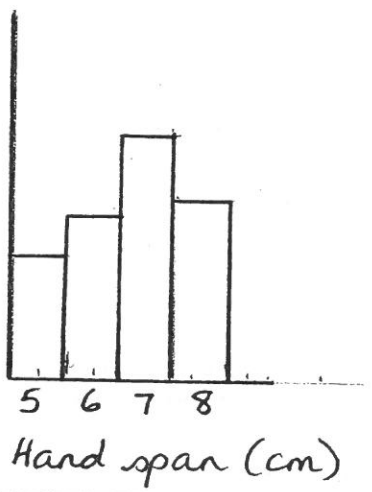
POSSIBLE RESULTS TABLE

I changed hand span (cm)	I measured No. of pupils
5	2
6	3
7	5
8	4
etc	

APPARATUS

POSSIBLE GRAPHS

TYPE OF GRAPH bar (joined)



POSSIBLE PUPIL CONCLUSIONS

'The most common handspan is 7cm'

'Not many children have very big and small handspans'

'Different children have different handspans but most have mediuin sized handspans'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** CHANGING MATERIALS

INVESTIGATION WHAT MAKES ICE MELT?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Ask the children whether they have ever had a drink in the summer with ice in it. What happens to the ice? Why do they think the ice melts? If they want to keep their drink cold for longer what could they do?	bar or line!	1, 2 & 3	Ice cubes made from coloured water- this is easier for pupils to see, beakers, different temperature water, timers

BRAINSTORM

What I could change

The temperature of the place the ice is placed in.	

What I could measure

How long it takes for the ice to melt	

Notes: The ice can be put in different places around the classroom/school. For example on a radiator, outside, on a windowsill. The ice melts quicker if it is put in beakers of different temperature water (not over 60). Time to melt can be to the nearest minute. Using food colouring/cordial makes the ice easier to observe and adds interest as does using shapes rather than cubes. **Food colouring can stain!**

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Temperature (word descriptions or thermometer)	Time for ice cubes to melt

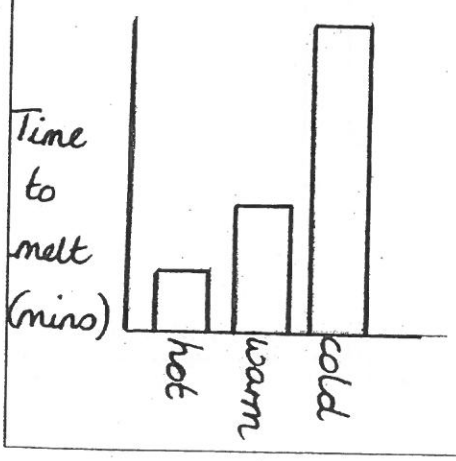
POSSIBLE RESULTS TABLE

I changed	I measured
Temperature (°C)	Time to melt (min)
hot	3
warm	8
cold OR	12
20	3
30	8
40	12

APPARATUS

POSSIBLE GRAPHS

TYPE OF GRAPH bar (or line)



POSSIBLE PUPIL CONCLUSIONS

'It took the ice cube longer to melt in cold water'

'hot water melts the cubes faster'

'The hotter the water - the faster the ice melts'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** CHANGING MATERIALS

INVESTIGATION WHAT MAKES ICE MELT?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
How many of the children have been on holiday to somewhere hot? Did they have drinks which were kept cool with ice? When my sister went on holiday she noticed that the small ice cubes in her drink did not keep it cold for long. Why? Do the pupils think that small ice cubes melt quicker than large ones? How could this be tested?	bar or line!	1, 2 & 3	Ice cubes made from coloured water- this is easier for pupils to see, beakers, different temperature water, timers

BRAINSTORM

What I could change

The size of the ice cubes.	

What I could measure

How long it takes for the ice to melt	

Notes: The ice melts quicker if it is put in beakers of different temperature water (not over 60). Time to melt can be to the nearest minute. Using food colouring/cordial makes the ice easier to observe and adds interest, as does using shapes rather than cubes. **Food colour can stain!**

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Size of ice cubes - pupils could measure one side of the cube	Time for ice cubes to melt (to nearest minute)

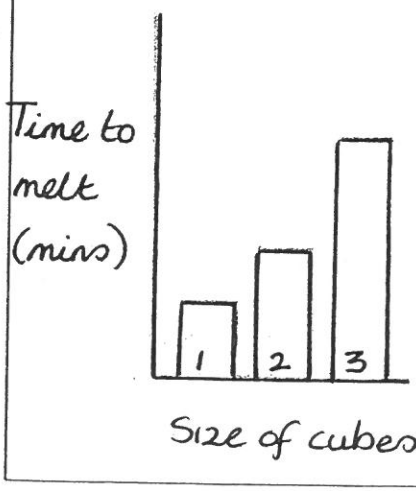
POSSIBLE RESULTS TABLE

I changed Size (cm)	I measured Time (mins)
1	3
2	6
3	10
4	16

APPARATUS

POSSIBLE GRAPHS

TYPE OF GRAPH bar (or line)



POSSIBLE PUPIL CONCLUSIONS

'The biggest ice cube took longest to melt'

'The smaller the ice cube - the shorter time it takes to melt'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** GROUPING AND CHANGING MATERIALS

INVESTIGATION WHICH SUBSTANCE MELTS FASTEST?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
My aunt always has a fridge that is totally full. Sometimes she has to leave something outside the fridge. What should she leave outside the fridge on a hot day? How can we test how long substances can be left outside the fridge without melting?	bar	1 & 2	Margarine, chocolate, ice, radiator or warm water to melt substances.

BRAINSTORM

What I could change

The type of substance	

What I could measure

How long each substance takes to melt	

Notes: A cooker could be used for this investigation if the heat is kept constant and adult supervision is available. Water temperature should not be over 60

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
The type of substance	Time taken to melt

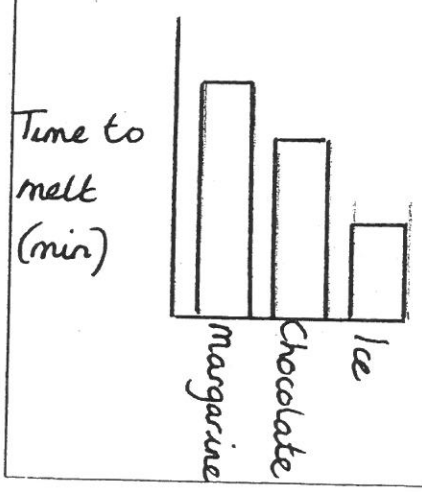
POSSIBLE RESULTS TABLE

I changed	I measured
Substance	Time to melt (mins)
Margarine	8
Chocolate	6
Ice	3

APPARATUS

POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'Margarine takes the longest to melt'

'Chocolate melts quite slowly - ice melts faster'

'Ice should stay in the freezer or it will melt'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** CHANGING MATERIALS

INVESTIGATION HOW DOES COOKING CHANGE BISCUITS?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
My sister loves homemade biscuits but she isn't very good at cooking them. They are always black or too hard/soft. What do you think she is doing wrong? Is she cooking them for too long/not long enough?	None	1	Ingredients for cooking

BRAINSTORM

What I could change

The time the biscuits are cooked for	

What I could measure

How hard the biscuits are	The colour of the biscuits

Notes: Results can be recorded in a table.

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
The time the biscuits are cooked for	How hard the biscuits are OR The colour of the biscuits

POSSIBLE RESULTS TABLE

I changed Time (mins)	I measured Hardness
5	very soft
10	soft
15	firm
20	very hard

APPARATUS

POSSIBLE GRAPHS

TYPE OF GRAPH none

POSSIBLE PUPIL CONCLUSIONS

'If biscuits are cooked for a long time they go hard'

'Biscuits that are not cooked for long are soft'

'The longer biscuits are cooked for the harder they get'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** FORCES

INVESTIGATION HOW FAR DO CARS GO?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
My son/niece etc likes to play with toy cars and races them down ramps with their friends. The problem is his car always loses. What could he do to make his car go faster? What could he change about the car/slope he uses? How can we test our ideas?	bar or line	1,2 & 3	A variety of toy cars (big wheels are best), a slope, standard/non standard measuring equipment

BRAINSTORM

What I could change

- The height of the slope
- The distance up the slope
- The weight of the car
- The type of car

What I could measure

- How far the car travels off the slope
-

Notes: Highest cars do not always go the furthest as they hit the floor at the bottom of the ramp. Cars with big wheels work best. Smooth out the join between the slope and the floor.

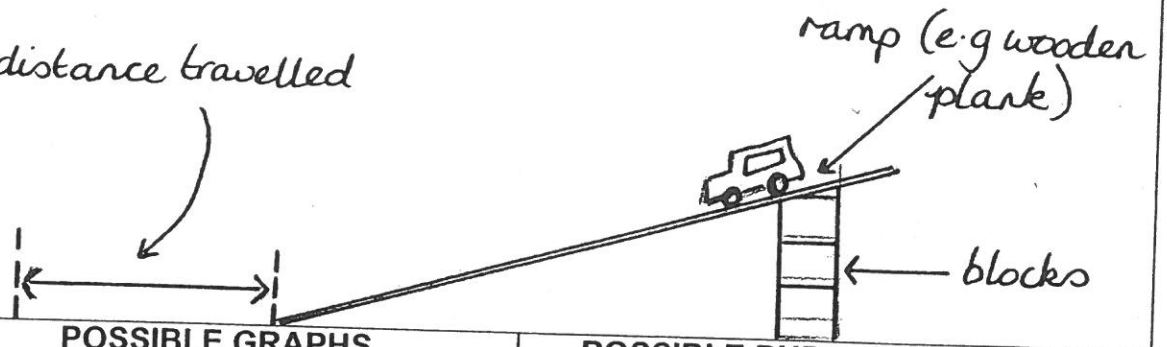
POSSIBLE VARIABLES

What pupils could change	What pupils could measure
See overpage	How far the car(s) travel (standard or non-standard measures)

POSSIBLE RESULTS TABLE

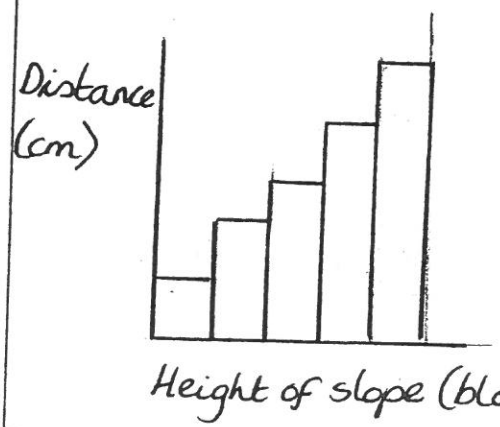
I changed Height of slope	I measured Distance travelled (cm)
1 block	12
2 blocks	17
3 blocks	26
4 blocks	34
5 blocks	39

APPARATUS



POSSIBLE GRAPHS

TYPE OF GRAPH bar (or line)



POSSIBLE PUPIL CONCLUSIONS

'The car on the highest blocks went the furthest'

'The higher the block - the further the car goes'

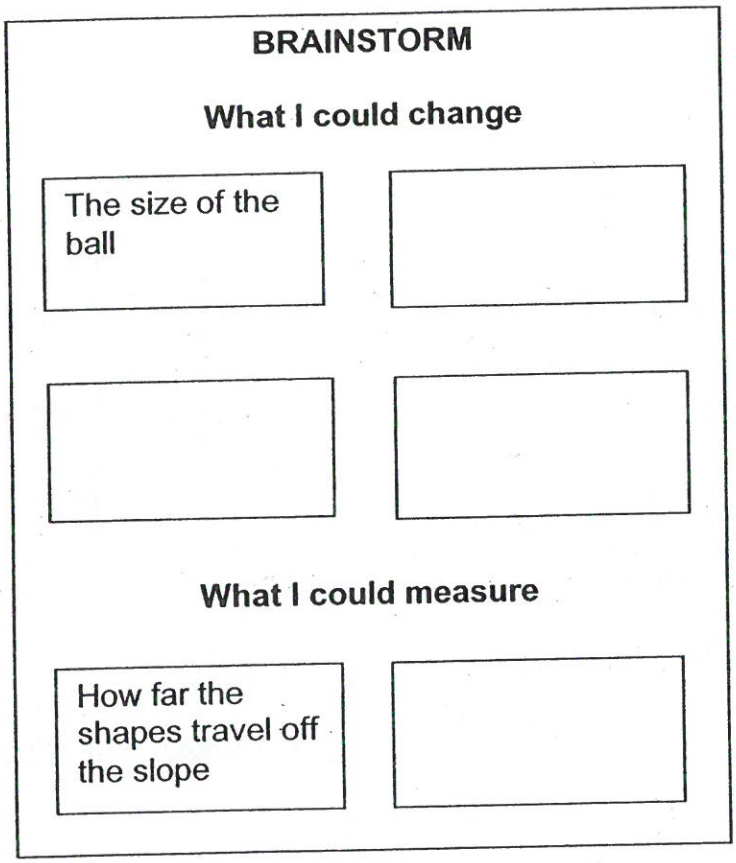
NOTE if highest cars hit floor at base of ramp talk about steep hills + bridges causing problems for real cars.

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** FORCES AND MOVEMENT

INVESTIGATION WHAT SIZE BALL MOVES FURTHEST DOWN A SLOPE?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
What shape wheels do bikes have? Why are they round? How many of the children have younger/older brothers and sisters with different sized bikes? Are the wheels all the same size? How can the pupils test their ideas?	bar or line!	1, 2 & 3	Slopes, plastecine, metre sticks or blocks for measuring distance



Notes: The balls can be small, medium or large. More able/older pupils could measure the circumference of the balls. Smooth out the join between the ramp and the floor. Larger balls should travel further.

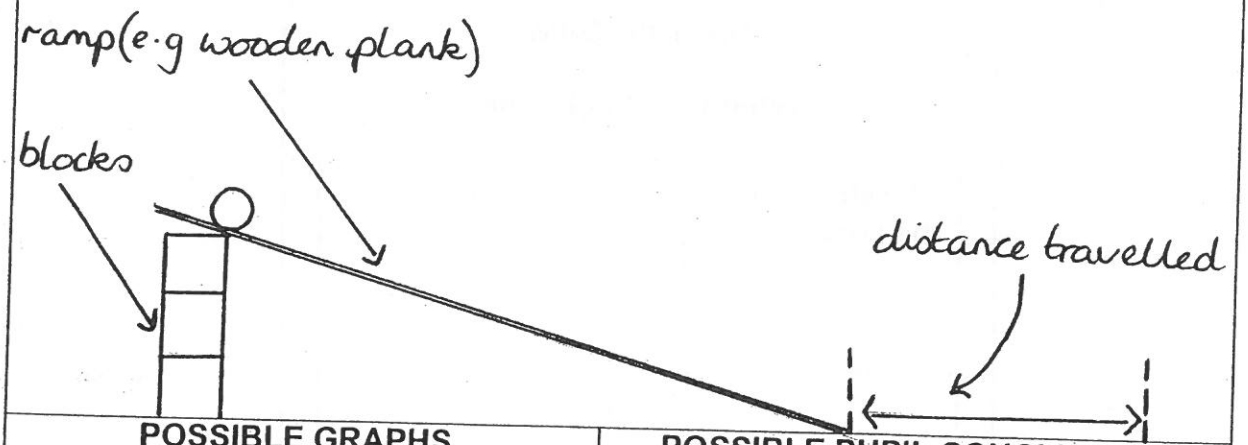
POSSIBLE VARIABLES

What pupils could change	What pupils could measure
The size of the ball (description or diameter)	How far it travels off the slope

POSSIBLE RESULTS TABLE

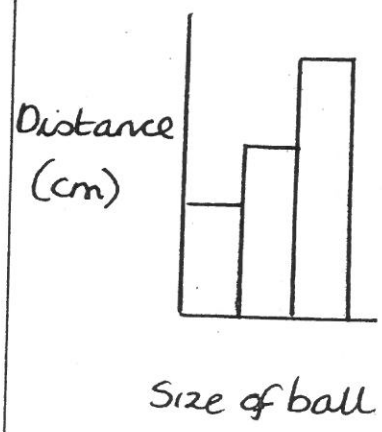
I changed Size of ball	I measured Distance (cm)
Large	36
Medium	21
Small OR	15
5cm	15
7cm	21
9cm	36

APPARATUS



POSSIBLE GRAPHS

TYPE OF GRAPH bar (or line



POSSIBLE PUPIL CONCLUSIONS

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** FORCES AND MOVEMENT

INVESTIGATION WHAT MAKES A BOAT GO FASTER?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Ask the children if any of them have been on a boat. What type of boat have they been on? Are all boats the same? Show the pupils pictures of different boats and ask them to describe their functions. Do boats have different shapes? Are some heavier then others? Can we test if the shape/weight of a boat affects how it travels through water?	bar or line!	1, 2 & 3	Different shaped boats, a waterway made from plastic guttering (see diagram overpage), plastecine/ blue tac, marbles, timer

BRAINSTORM

What I could change

The shape of the boat	The weight of the boat

What I could measure

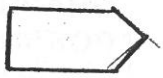
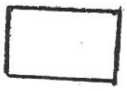
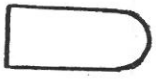
How long it takes to travel a certain distance	

Notes:

POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Shape of toy boat	How long it takes the boats to travel a certain distance

POSSIBLE RESULTS TABLE

I changed	I measured
Shape	Time to travel 1 metre (secs)
	9
	15
	12

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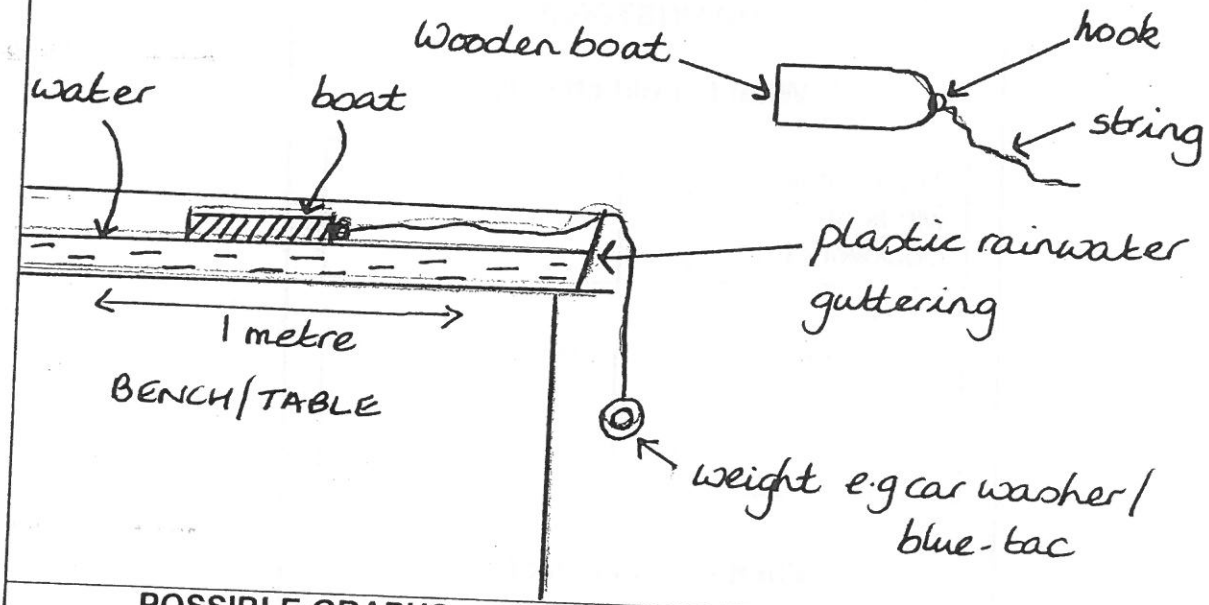
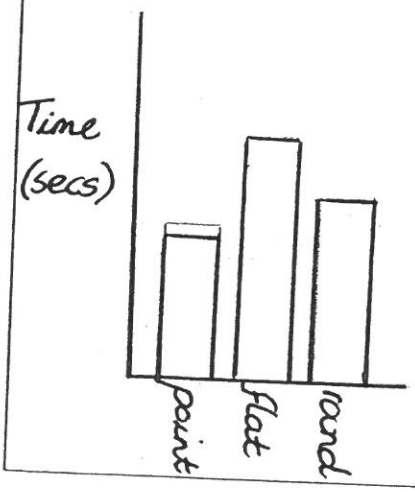


POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'The pointy boat was the fastest'

'The more pointed the front - the faster the boat was'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** FORCES AND MOVEMENT

INVESTIGATION WIND ME UP!

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Ask the children how many of them have a clockwork toy. How does it work? Does it make any difference if it is fully wound or not? How can the pupils make the toy go further/faster? How can we test this?	bar (or line)	1, 2 & 3	Clockwork toys, flat surface for cars and water for frogs/ducks etc!

BRAINSTORM

What I could change

The number of winds on a clockwork toy

What I could measure

How far the car or boat travels

Notes: Mark the winder handle with paint etc. so that pupils see how many times they have wound the handle.

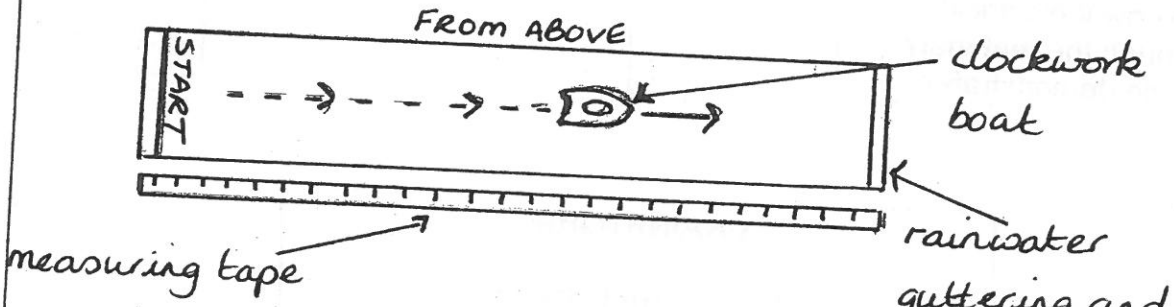
POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Number of 'winds' of clockwork toy	How far the car travels (to nearest cm)

POSSIBLE RESULTS TABLE

I changed No. of winds	I measured Distance (cm)
1	5
2	11
3	16
4	20
5	23

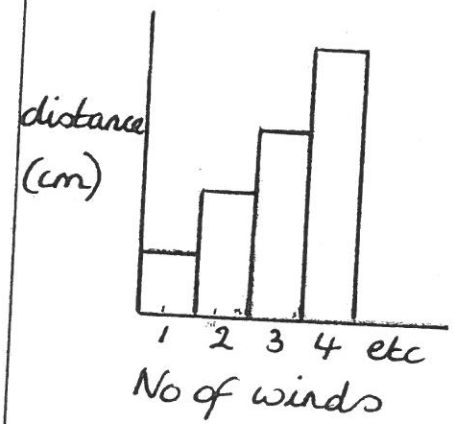
APPARATUS



Mark winding handle with paint etc so that pupils can see how many times they have turned the handle.

POSSIBLE GRAPHS

TYPE OF GRAPH bar (or line)



POSSIBLE PUPIL CONCLUSIONS

'If you didn't wind it much - then it didn't go very far'

'The more winds - the further the car went'

SCIENCE INVESTIGATIONS FOR PRIMARY SCHOOLS

KEY STAGE 1 **TOPIC** GROUPING MATERIALS/ELECTRICITY

INVESTIGATION WHAT MATERIALS CARRY ELECTRICITY?

SCENE SETTER	TYPE OF GRAPH POSSIBLE	1. WORDS/WORDS 2. WORDS/NUMBERS 3. NUMBERS/NUMBERS	RESOURCES REQUIRED
Ask pupils- what do you need to make a circuit? What do the wires do? What are they made from? My sister has a young baby who is crawling. She is coming to visit me next week and I'm worried about the baby putting her fingers in the socket. I need to cover the sockets. What materials could I use? How will I know if electricity passes through the material? Give a simple demonstration.	bar	1 & 2	Batteries, bulbs and wires, crocodile clips, an assortment of metal and plastic objects, fabrics, wood etc.

BRAINSTORM

What I could change

The material in the circuit

What I could measure

Whether the bulb lights up

Notes: The children need to have constructed a circuit before this activity. A bar graph can be drawn showing how many materials light the bulb and how many do not.

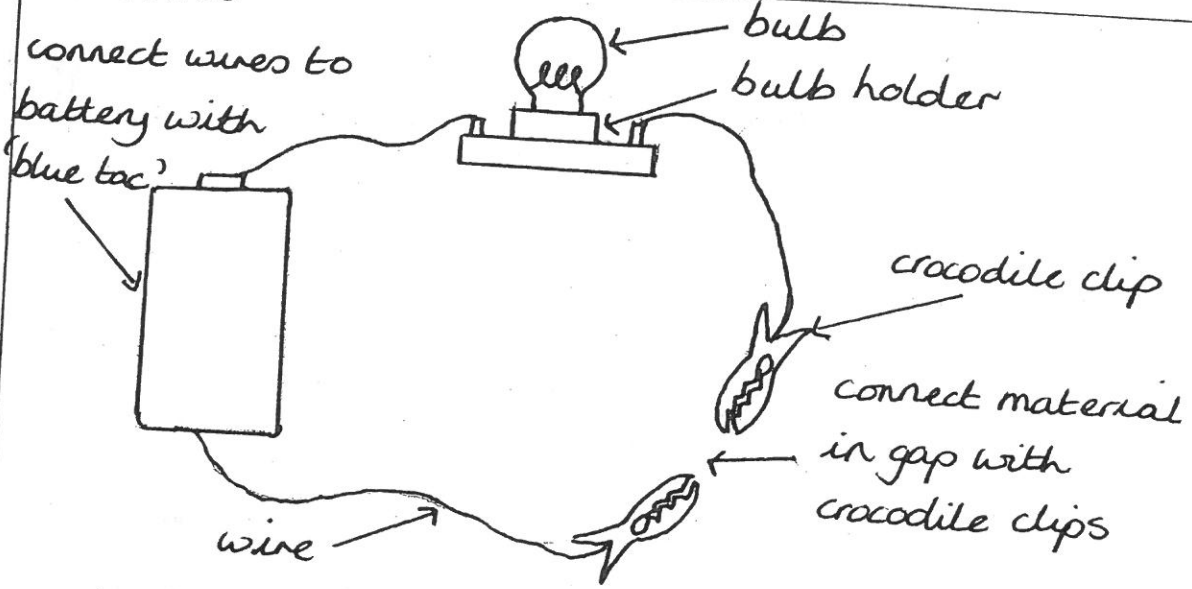
POSSIBLE VARIABLES

What pupils could change	What pupils could measure
Type of material	Whether bulb lights up

POSSIBLE RESULTS TABLE

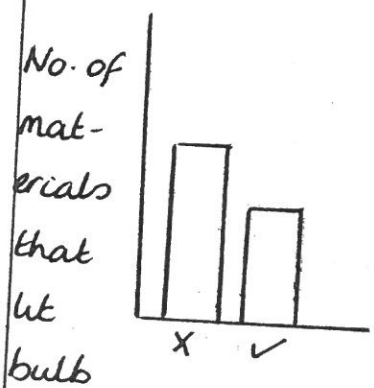
I changed	I measured
Material	Does bulb light up
Plastic	X
Metal	✓
Card	X
Foil	✓
Cotton	X

APPARATUS



POSSIBLE GRAPHS

TYPE OF GRAPH bar



POSSIBLE PUPIL CONCLUSIONS

'metal objects make the bulb light'

'metals can carry electricity