



Notes for teachers

These notes suggest extension activities that you may wish to use in association with **The Story of Billy's Drink**. Summarised below, they cover a range of curriculum topics at Key Stages 1 and 2. Full details of each activity are provided in the following pages.

How to use

Ten questions have been designed to stimulate discussion around topics covered in the presentation. Suggested responses to each one are provided in the following pages and can be used to encourage pupils to research the topics further. The activities require minimal resources and can be extended or modified to suit your group.

Each sheet indicates whether activities are designed to suit the individual, small-group or whole-group situations, and worksheets are provided where appropriate. Italic text contains information for teachers with suggested responses to questions, ideas for equipment and how the activity can be used. The curriculum coverage is indicated at the end of each activity.

Slides	Question	Activity	Curriculum coverage
1 - 4	What are our favourite drinks?	A group activity that may be extended to cover the whole school.	English
5 - 6	What does your favourite drink contain?	Individual work where pupils use information from drinks labels to create charts and graphs.	Maths Science
7 - 8	What does each symbol mean?	Small group work around understanding and designing symbols.	English Design & Technology
9 - 12	What do we need for healthy growth?	Group work requiring pupils to have a basic understanding of life processes.	Science
13 - 15	How important is water for growth?	Practical group work exploring the elements required to encourage seed growth.	Science
16 - 20	What happens to the apple pulp after the juice is pressed out?	Pupils work in small groups to make informed estimates of weights using a variety of methods.	Science
21 - 23	Is ice heavier than water?	Fun (but potentially messy) activity where pupils work in small groups to make predictions and carry out experiments.	Science
24 - 27	Are bottles better?	A whole group debate where pupils prepare and present ideas on recycling and sustainability.	English & Science
28 - 31	Can you invent your very own soft drink?	Pupils create their own drink recipe using guidance from books, magazines or the internet.	Design & Technology
32 - 36	Can you design an advertisement?	A creative activity where pupils create an advert for their new drink.	English Art

What are our favourite drinks?



Slides 1 - 4 (Group work)

This activity can be carried out within the group or, preferably, within the whole school. A trial might be conducted within the group, with the group then using their findings to predict whether similar results will be obtained from the whole school.

Equipment

Access to a computer may be helpful to generate a questionnaire. A worksheet is provided on the following page.

Activity

Conduct a survey to find out what type of drink is the most popular within the school. You will need to create a short questionnaire that lists some of the most popular drinks available (you could also find out what is the most popular flavour too). You might like to discuss the design of the questionnaire with the whole group and decide what format to use. Make sure you have an option on the questionnaire for people to name a drink that you might not have included on your list.

Once you have completed your questionnaire, ask as many people as you can to identify their favourite type of drink. When you have finished your survey, collate the results to try and identify the most popular drink. Your results should be presented using a graph or chart.

What were the most and least popular drinks? You might like to extend your survey to include how often each individual consumes their favourite drink, where they buy it from and how much it costs.

Curriculum coverage

Key stage 1: English: En3 2a b c, 8, 9a b c d ICT: 1a b c, 2a b c, 3a b

Key stage 2: English: En3 1a b c d e, 2a b c d, 8, 9a b c d ICT: 1a b c, 2a b c

What are our favourite drinks?



What is your favourite drink and where would you buy it ?

Conduct a survey

Create a short questionnaire to find out other people's favourites. It could look like this



Example

What is your favourite type of drink?

* Juice drink	11
* Milk drink	
* Squash	1111 1
* Cola	
* Water	
* Smoothie	1
* Fizzy drink	1
* Other	

Questionnaire

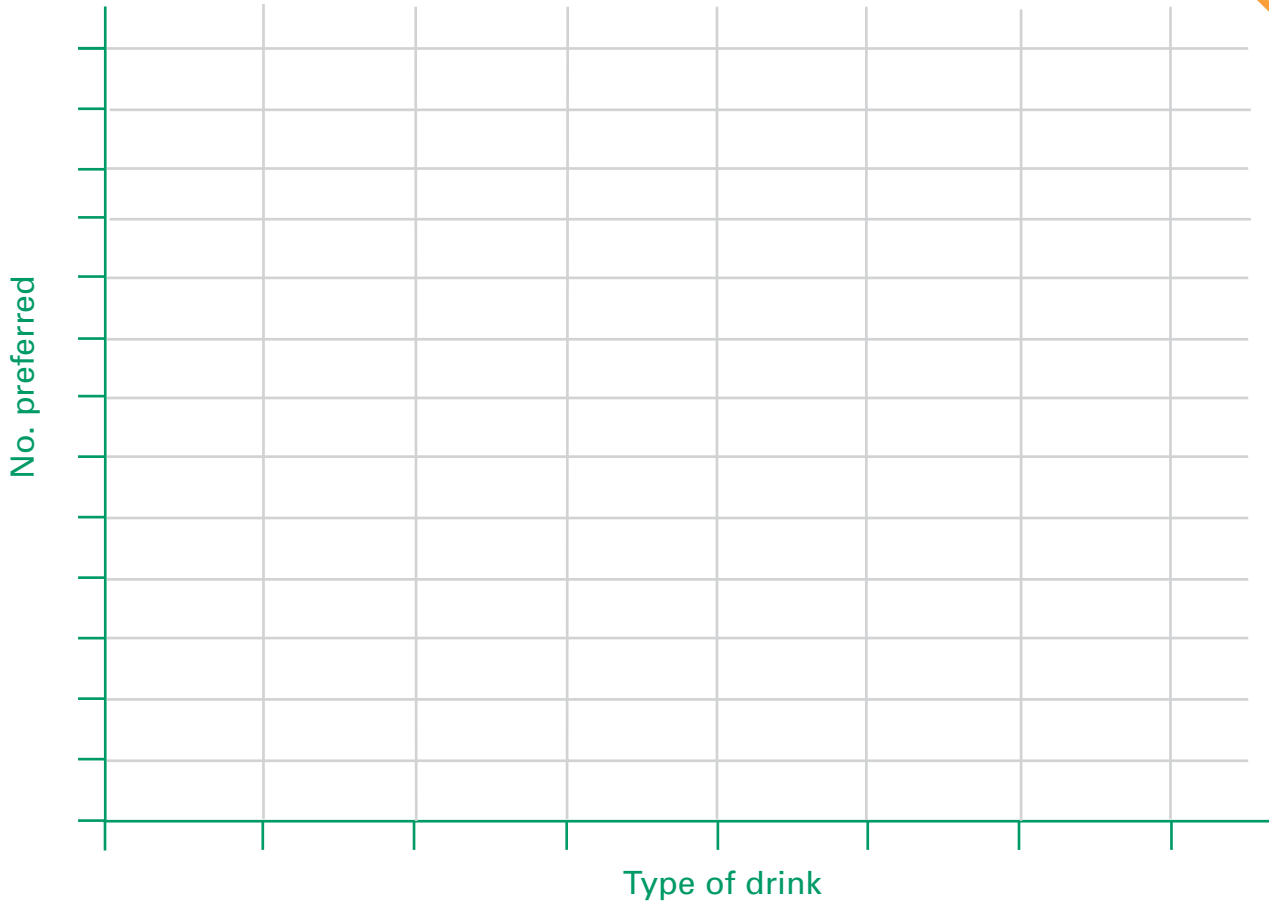
What are our favourite types of drink? (eg juice, milk drink, squash, cola, water, smoothie, fizzy pop etc)

Where do you buy your favourite drink? (eg newsagent, vending machine, supermarket, tuck shop, school canteen, etc)

How often do you consume your favourite drink? (eg once a day, once a week etc)

Now create a graph of your results

Display them on the graph from least to most common :



Which are the three most popular?

1

2

3

Which are the three least popular?

1

2

3

What does your favourite drink contain?



Slides 5 - 6 (Individual work)

This activity encourages pupils to familiarise themselves with the range of ingredients found on food and drink labels, and asks them to record their findings on graphs or charts.

Pupils could be encouraged to bring sample labels to school or you could list a selection of ingredients for them to choose from. In addition to ingredients that are well known (such as fruit and sugar), you may find some additional ingredients such as citric acid, ascorbic acid (vitamin C), colourings and flavourings. More information about ingredients like these is provided on the following page.

Equipment

Pupils may need access to a computer and the relevant software to create their charts. A worksheet is provided.

Activity

Some drinks will contain many of the same, or similar, ingredients and in some drinks you will find ingredients that are not used in another drink. This activity is in two parts:

- Your first task is to make a list of the main ingredients that are contained in your favourite drink (Most manufacturers show the percentage of each ingredient, starting with the most important.) Compare your list with other members of the group. How many ingredients are the same?
- Your second task is to look at the different types of drink you have at home. Look at the labels to find out which ingredients they contain. Make a list of all the ingredients within each drink - make sure that you keep note of which drinks contain which ingredients!

Now, using the information you've collected from home, create a graph or chart that allows you to identify the most common ingredient and least common.

- Do you know why some of the ingredients are included in the drinks?
- What function do these ingredients have?
- What would happen if some ingredients were not added to the drink?
- What other information is included on a drinks label?
- Why is that information important?

Curriculum coverage

Key stage 1: Maths: Ma2: 1a b, 3a b, 4a b Science: Sc1 1, 2a b c d ICT: 1a b c, 2a b c, 3a b

Key stage 2: Maths: Ma2: 1a b, 2d e f g h ICT: 1a b c, 2a b c

What do we put in our drinks?

In addition to water, fruit juice and sugar (sucrose), some drinks may contain some of the following additives:

- **Preservatives**

Although many drinks are preservative free nowadays, some may contain a tiny amount (less than .04%) of natural or synthetic ingredients to prevent spoilage and keep the drink fresh for longer. Examples include sodium benzoate and potassium sorbate.

- **Sweeteners**

A range of sweeteners including fructose or glucose syrup, deionised juices and low-calorie artificial sweeteners, such as aspartame (E951), Acesulfame K (E950) and saccharin may be used.

- **Colours**

Although less common these days, natural or artificial colours may be used to improve appearance.

Natural colours are extracted from a recognised food source, such as anthocyanin colour from grapes.

Some artificial colours such as tartrazine and allura red may cause hyperactivity in children and are therefore no longer used by most responsible companies.

- **Flavours**

Natural or artificial flavours may be added to enhance taste, although artificial flavours are becoming less common, particularly in drinks aimed at children.

- **Minerals and vitamins**

These may be added to supplement a product's nutritional value and include vitamins C, B6, B12 niacin, pantothenic acid, thiamine, riboflavin and folacin.

- **Other additives**

These may include antioxidants, such as ascorbic acid and tocopherols (vitamin E), and carbon dioxide (CO₂), the gas that gives carbonated drinks their fizz.

What does your favourite drink contain?



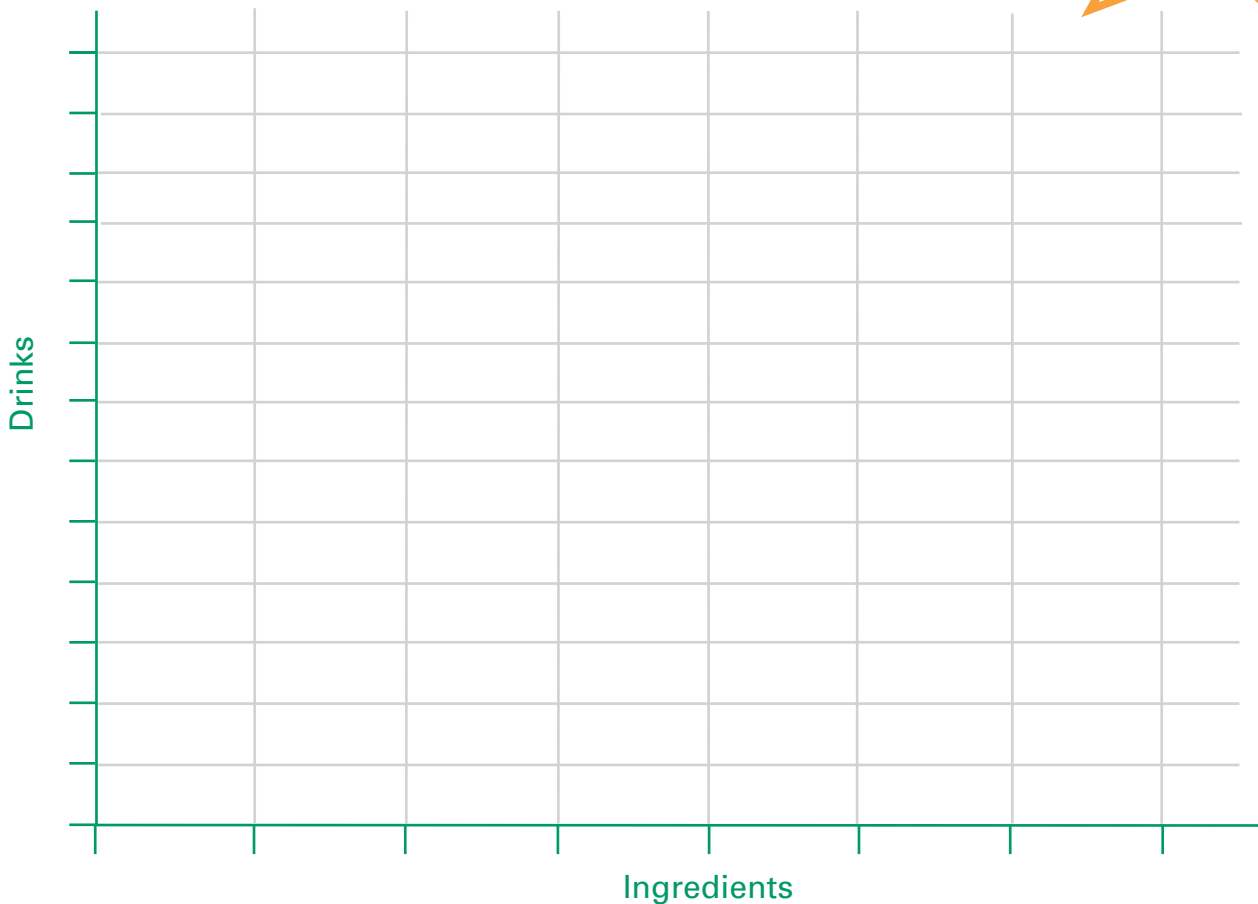
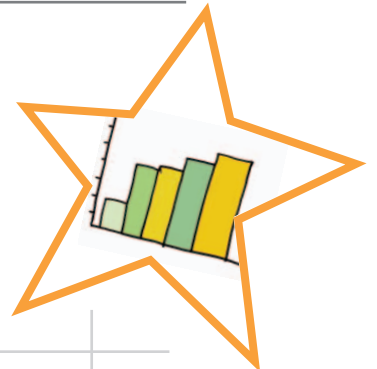
What are the five main ingredients listed on your drink's label?

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

Compare your list to those of your classmates - which ones are the same?

-  Concentrated apple juice
-  Water
-  Sugar
-  Citric acid (fruit acidity)
-  Ascorbic acid (Vitamin C)
-  Natural colouring
-  Natural flavourings

Now create a graph of your results



What does each symbol mean?

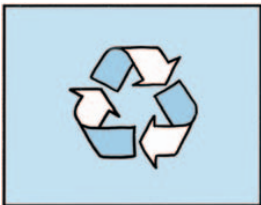


Slides 7 - 8 (Small group work)

This activity can be started by examining a selection of symbols that are commonplace in the school, shops and streets. Ask pupils to try and identify each one and evaluate its effectiveness.

Equipment

Pupils may need access to a computer and drawing/graphics software. They should experiment with their design ideas on paper before deciding on their final design. A worksheet is provided.



The mobius loop

This is used to indicate that an object is capable of being recycled. It does not necessarily mean that an object has been recycled, and can sometimes be misleading.



Tidyman

Featured on drinks packaging for many years, the Tidyman symbol is now disappearing as the idea of the litter bin is being replaced by recycling.

Activity

Before you start this activity, ask the following questions:

- Why are symbols important?
- Would it be just as effective to use words?
- What makes a symbol effective?
- Does colour matter?

Ask your pupils to look at other symbols and discuss why they are effective before creating a symbol of their own, which is easy to understand and won't get confused with other symbols. If they can't think of a symbol they'd like to design, you could suggest that they do one to remind people to stay hydrated. Don't forget that some people are partially sighted so their symbol needs to be easy to read.

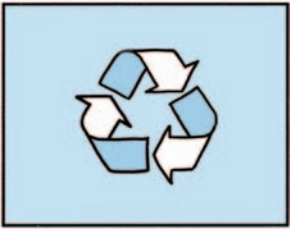
Why not display your symbols for the whole school to see? Don't tell them what the symbols are meant to show. Can they work out what each symbol is trying to tell them?

Curriculum coverage

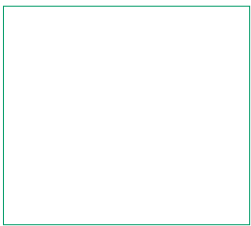
Key stage 1: English: En: 1a b c d e f. 3a b c d e Design & Technology: 1a b c d

Key stage 2: English: En1: 1a b c d e f, 3a b c d e f Design & Technology: 1a b c d

What does this symbol mean?



Copy four other symbols that you have seen and say what each one means



Design your own symbol

(If you can't think of a subject, how about reminding people to stay hydrated?)



The purpose of my symbol is _____

What do we need for healthy growth?



Slides 9 - 12 (Group work)

This activity requires pupils to have a basic understanding of life processes and what is required for healthy body growth.

Dependent upon the variety, apples will normally grow in most temperate areas (areas that are cold in winter, but not so cold that the fruiting plant is killed). Apple trees cannot grow successfully in extreme temperatures or in dry, arid conditions.

Equipment

A worksheet is provided.

Pupils could also use an outline world map and identify by colour those areas of the world where apples are grown.

Activity

Split up into pairs and compile a list of all the things that an apple tree needs to grow. For example, can an apple tree grow in the dark? Share your answers with the whole group. Do you all agree on the different sorts of things trees need to grow healthily? Using your list, give each item a rating from 1 - 10, from 1 being the most important to 10 being not quite so important.

Again in pairs, make a list of all the things people need to grow healthily. For example, what do we need for healthy bones, teeth, eyes, blood? Compare your list with the rest of the group. Can you give each item on your list a rating from 1 - 10?

Looking at your growth lists for you and the apple tree, are the most important things the same for each? Why is that, do you think?

Create a chart for both a tree and a human, listing the essential requirement for healthy growth.

Curriculum coverage

Key stage 1: Science: Sc1: 1, 2a b Sc2: 1a, 2a b c, 3a b c

Key stage 2: Science: Sc1: 1a b, 2a b f h, Sc2: 1a b c, 2b f, 3a b c

What do we need for healthy growth?



What do apple trees need to grow?

List as many ideas as you can



What do we need to make us grow?

List as many ideas as you can

Complete this chart

	Trees need	People need
1		
2		
3		
4		
5		

How important is water for growth?



Slides 13 - 15 (Group work)

This activity should be started towards the beginning of the topic or used as an ongoing project throughout the term.

Equipment

You will need eight or ten small plant pots, potting compost and labels. You will also need several apples from which to harvest the seeds. A worksheet is provided to help record results.

Activity

Can you remember what is needed for an apple tree to grow healthily and produce fruit? As you will already have guessed, water is essential for everyone, including apple trees! As a whole group, can you describe the water cycle?

Now, you need to plant an apple seed into each of the plastic containers. Use the same type and amount of soil for each one, and label each pot with a letter or number. Place the pots where they will get plenty of light and give each one a different amount of water every day. For example, pot A will receive 2.5ml of water every day, pot B will receive 5ml, pot C will get 7.5ml and so on. Each pot must receive exactly the same amount of water every day.

- Can you predict which pot will grow best?
- Which pot do you think will not grow at all?

Keep a daily chart for each pot, detailing how much water it receives and, when the seed begins to grow, how much growth is made each week.

- Which pot grew the best?
- What happened to the pot that received the least water?
- What happened to the pot that received the most water?

Also consider other variables such as the amount of natural or artificial light and temperature.

Curriculum coverage

Key stage 1: Science: Sc1: 1a b c d e f g h, Sc2: 3a b c.

Key stage 2: Science: Sc1: 1a b, 2a b c d e f g h, Sc2: 3a b c

What happens to the pulp after the juice is pressed out?



Slides 16 - 20 (small group work)

Usually the apple pulp is used as animal feed, compost or discarded. Can pupils think of other ways that apple pulp might be used?

This activity requires pupils to make informed estimates of weights using a variety of methods.

Equipment

The pupils will need several apples, weighing scales and charts to record their findings. Cutting the apples into sections should be carried out by an adult.

Activity

You have a small selection of apples. Label each apple and then try and guess its weight. Now weigh the apples and compare their actual weight with your guesses.

- How close were you to the actual weights?

Carefully cut each apple into quarters and then weigh each quarter - try to keep the apple quarters separate to avoid confusion. Weigh just one quarter for each of the apples, then multiply each quarter by four.

- Are the multiplied weights the same as for the whole apple?
- Why?

You can try guessing the weight of apples before and after peeling, or with their seeds removed.

Curriculum coverage

Key stage 1: Science: Sc1: 1, 2a b c d e f g h i j, Sc3: 1a b

Key stage 2: Science: Sc1 : 1a b, 2a b c d e f g h, Sc3: 1a

Is ice heavier than water and how quickly does it melt?



Slides 21 - 23 (Small group work)

This is a fun but potentially messy activity! The pupils are encouraged to make predictions and carry out experiments to develop their understanding of physical processes.

To maintain its quality, fresh apple juice must be frozen or chilled. This helps to prevent the juice fermenting or becoming tasteless, and preserves the nutrients and flavour.

Equipment

You will require weighing scales, waterproof containers, water, ice cubes and fruit juice.

Activity

1 Is ice heavier than water?

This activity will help you find the correct answers to these questions.

Firstly, weigh your empty container and note its weight. Now, put the ice cubes into the container and weigh it again. Once you have done this, place the ice cubes and container on a shelf or appropriate surface and allow the ice cubes to melt slowly. When the ice cubes have melted completely, weigh the container once again.

- Are the weights the same or different?
- What do you think might account for any difference in weight?

2 How long does it take to melt?

Take five plastic beakers and pour the same amount of juice into each one. Put a different amount of ice into each one, starting with just a small cube and finishing with a glassful. Note the level of each drink including the ice. Time how long it takes for the ice in each glass to melt and measure the level of liquid once it has done so.

- Has the level changed? What does that tell you?
- Why does the ice take longer to melt when there are more cubes? (The more ice there is, the colder the drink becomes.)
- Is it better to fill a drink full of ice or just add a little? (If you just add a cube or two, the ice will melt more quickly, diluting the drink and altering its taste, rather than keeping it cold till the end.)

Curriculum coverage

Key stage 1: Science: Sc1: 1 2a b c d e f g h i j, Sc3: 1a 2a

Key stage 2: Science: Sc1: 1 2a b c d e f g h i j, Sc3: 1a 2b c d

Are bottles better?



Slides 24 - 27 (Group work)

This activity allows the pupils to examine various issues concerning recycling and sustainability. A whole group debate should encourage pupils to research and prepare their ideas, present them and listen to others. The pupils might require some guidance on the structure of a debate.

Equipment

The pupils will need access to the Internet, books and magazines, paper and pens.

Activity

There is a lot of discussion about the use of glass, cartons or plastic containers, and which is the best. What do you think?

Use the following questions to help the whole group debate the issues.

- How many different kinds of drinks packaging can you think of?
- Can they all be recycled easily?
- Does the type of packaging change the way you feel about a drink? Do some kinds look more appealing or expensive than others?
- Does the packaging affect the taste?
- Do bottles have any benefits over cans or cartons?
- Is shape important? Are some shapes easier to hold or carry than others? Why?
- Are some shapes easier to stack?
- When are glass bottles most commonly used? What about plastic? Why?
- What are the pros and cons of each different type of packaging?

Why not carry out a tasting experiment? Using different types of container, fill each with the same drink and conduct a blind tasting with the whole group. Ask pupils to say which drink they prefer and record their answers. Could the group taste a difference in the drink depending upon the type of container used?

Curriculum coverage

Key stage 1: English: En1: 1a b c d e f, 3a b c d e f Science: Sc1: 1, 2a b c d e f g

Key stage 2: English: En1: 1a b c d e f, 2 a b c d e, 3 a b c d e f Science: Sc1: 1a b, 2a b c d e f g h

Can you invent your very own soft drink?



Slides 28 - 35 (Small group work)

The activity offers pupils the opportunity to be creative.

Flavour is the sensory impression of a food or other substance, and is determined mainly by the chemical senses of taste and smell. We can taste sweet, sour, bitter, salty and savoury things and smell a wide variety of scents, which help us decide what we might want to eat or drink. Taste and smell can, importantly, help us determine whether something is fresh enough to consume or whether it has started to deteriorate.

Equipment

Pupils will need access to the Internet, books, magazines, paper and pens. A worksheet has been provided.

Activity

Separate into small groups and make a list of all your favourite flavours.

- Is there a drink that contains all of your favourite flavours? If not, why not create one?

In your group try and decide on a drink that you would all like.

- Which fruit would you use?
- Have you thought about combining fruit and vegetables?
- Will your drink contain bubbles (be carbonated) or not?

Once you have decided on the main ingredients, try to devise a recipe for your drink.

Then think about a name for it and decide which kind of packaging would be best.

Remember, products need to be easily recognised and appeal to their potential consumers.

Curriculum coverage

Key stage 1: Design & Technology: 1a b c d e, 2b c d, 3a b c d e f

Key stage 2: Design & Technology: 1a b c d, 2a b c f, 3a b c, 4a b

Can you design an advertisement?



Slides 32 - 36 (small group work)

This is another activity where the pupils can use their imagination and creativity. The exercise encourages everyone to be involved and although it may be simpler to stick with a printed advertisement to begin with it can be extended to include video if required.

Equipment

Access to the Internet, examples of adverts from magazines and newspapers, pens and paper. A worksheet has been provided.

Activity

Start by taking a look at some adverts for existing products. Look through some of the magazines available.

- Are some adverts better than others? Why is this?
- What makes some adverts stand out more than others?

Make a list of some of the features that you think combine to make a good advert.

Now it's your turn to create an advert.

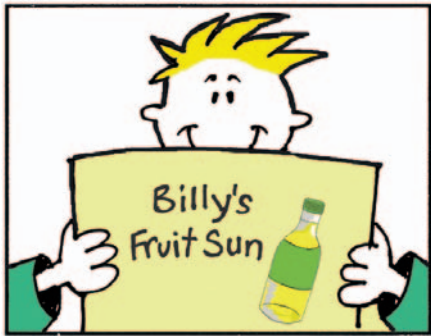
Think about what's special about your drink and who it's aimed at. Which magazines or papers do your audience read - or are they more likely to see your advertising on posters or the internet? What's the best way of reaching your target audience, and what will persuade them to try it?

Curriculum coverage

Key stage 1: English: En1: 3a b c d e, 10a b c En3: 1a b c d e f, 2a b c d Art: 1a b c, 2a b c 4a,b

Key stage 2: English: En1: 3a b c d e f, 10a b c En3: 1a b c d e, 2a b c d e f Art: 1a b c, 2a b c, 4a,b

Design an advertisement!



• What is special about your drink?

• Who are your target audience?

• What's the best way to reach them? (eg posters, magazines)

• What will persuade them to choose your drink?