Haydock High School

Year 6 Science Transition Booklet

Name……

Year 6 Transition

Hello and welcome to Science at Haydock High. We are really looking forward to meeting you all in September.

This booklet contains some activities to prepare you for science in Year 7 and some fun activities that you can try at home.

Try your best with all the activities and write your answers into the spaces provided. Make sure that you bring this booklet with you when you start in September.

Have Fun!

Contents

Lab Safety

The science lab can be a dangerous place if we are not careful. Look at the picture below and circle all the things that the pupils are doing wrong.

Lab Safety

Thinking about the dangerous things that you have just seen, you now need to create a set of rules to help you stay safe in a lab.

This can be done as:

- Bullet points
- A poster
- A song/poem

Use the space below to present your work.

Science Equipment

During your science lessons, you will use lots of different pieces of equipment. Try to match the name of the equipment to the picture, then check the answers on the next page to see how many you got right. The first one has been done for you.

Test Tube

Beaker

Measuring Cylinder

Thermometer

Bunsen Burner

Tripod

Science Equipment

Answers – How many did you get right?

Extension:

Can you think of a use for each of these pieces of equipment?

Test Tube

Beaker

Measuring Cylinder

Thermometer

Bunsen Burner

Tripod

Drawing a Table

In science, it is very important that we record the results of any experiments that we carry out, this is usually done in a table.

The left hand column usually displays what we are changing and the right hand column, what we are measuring.

Tables are always drawn with a pencil and ruler and must have headings with units.

Have a look at the example below.

What we have changed

Clear headings both with units (°C) and (g)

What we have measured

Temperature of water (°C)	Mass of Salt Dissolved (g)
20	3
30	4
40	6
50	8
60	9

Drawing a Table

Have a go at drawing your own table in the box below using the results given.

Remember the rules:

1. What is being changed in the left column
2. What is being measured in the right column
3. Table drawn with a pencil and ruler
4. Clear headings with units

<u>Results</u>

A pupil changed the area of a parachute so he made parachutes with the following areas:

$5cm^2$, $10cm^2$, $15cm^2$, $20cm^2$

They fell to the ground in the times below:

$5cm^2$ - 2 seconds

$10cm^2$ - 4 seconds

$15cm^2$ -7 seconds

$20cm^2$ - 9 seconds

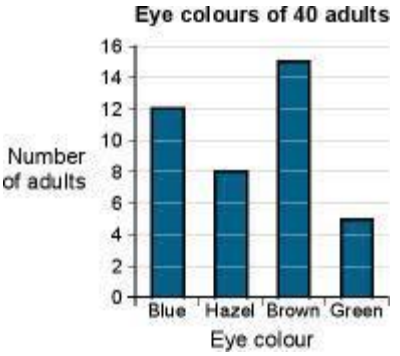
Plotting a graph

There are two main types of graph that you will be asked to plot in science;

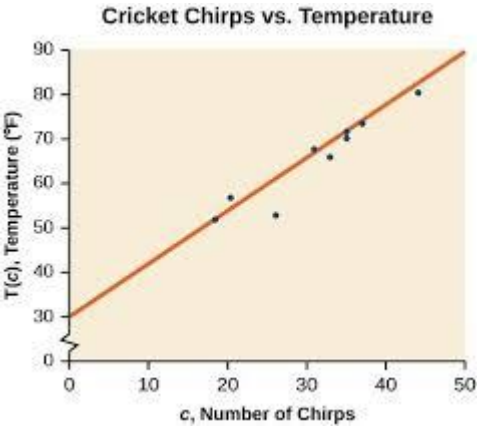
1. A bar chart
2. A scatter graph

A bar chart is used when the information you need to display is in set categories (discreet data) for example if you count the number of people in the class with specific eye colours.

You cannot be in two categories for eye colour (you have blue, brown or green eyes for example) so the data is discreet and we would plot this using a bar chart.



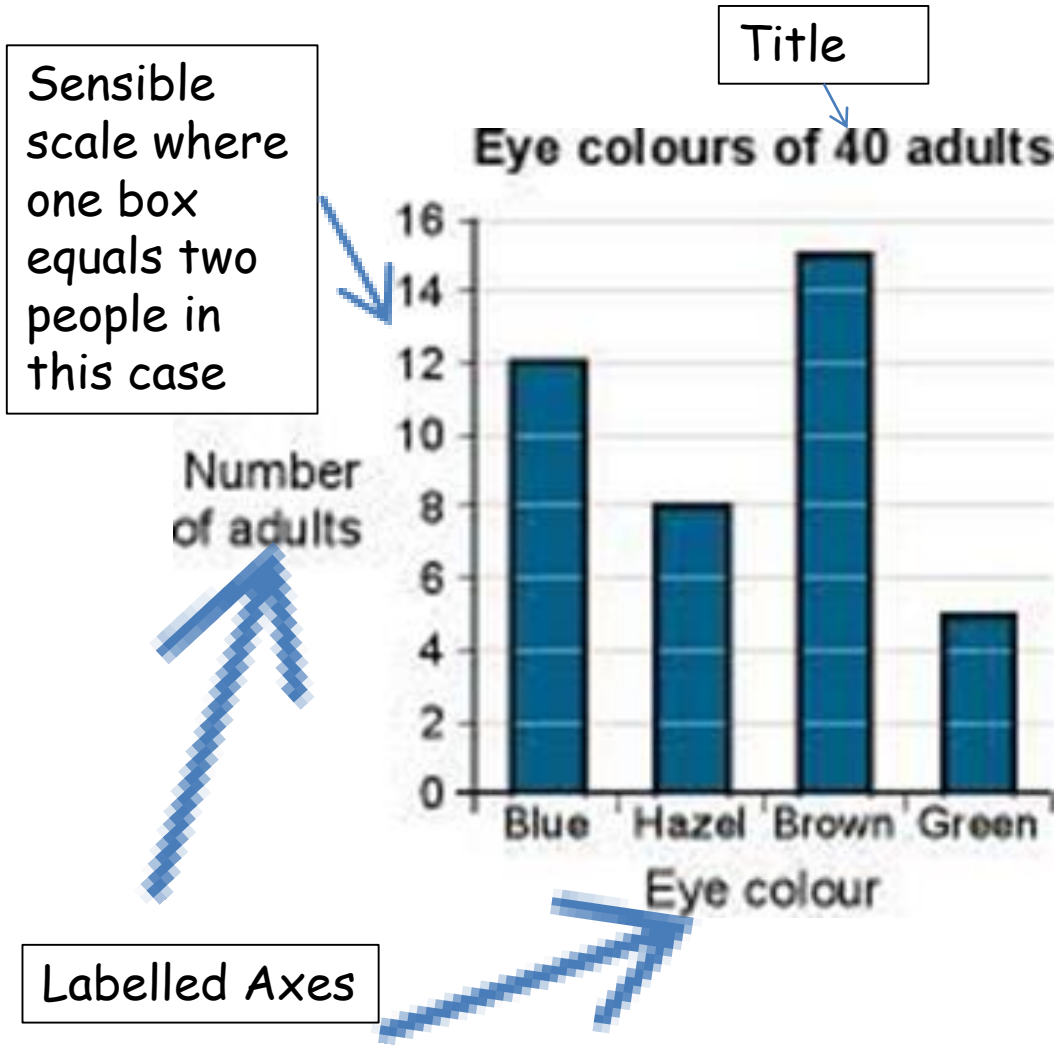
A **scatter graph** is used when the data is continuous (not set categories) for example if we were plotting a graph of how changing the temperature of water affects the mass of salt dissolved. You will learn more about scatter graphs as you complete investigations in your lessons.



Plotting a graph

A graph should always:

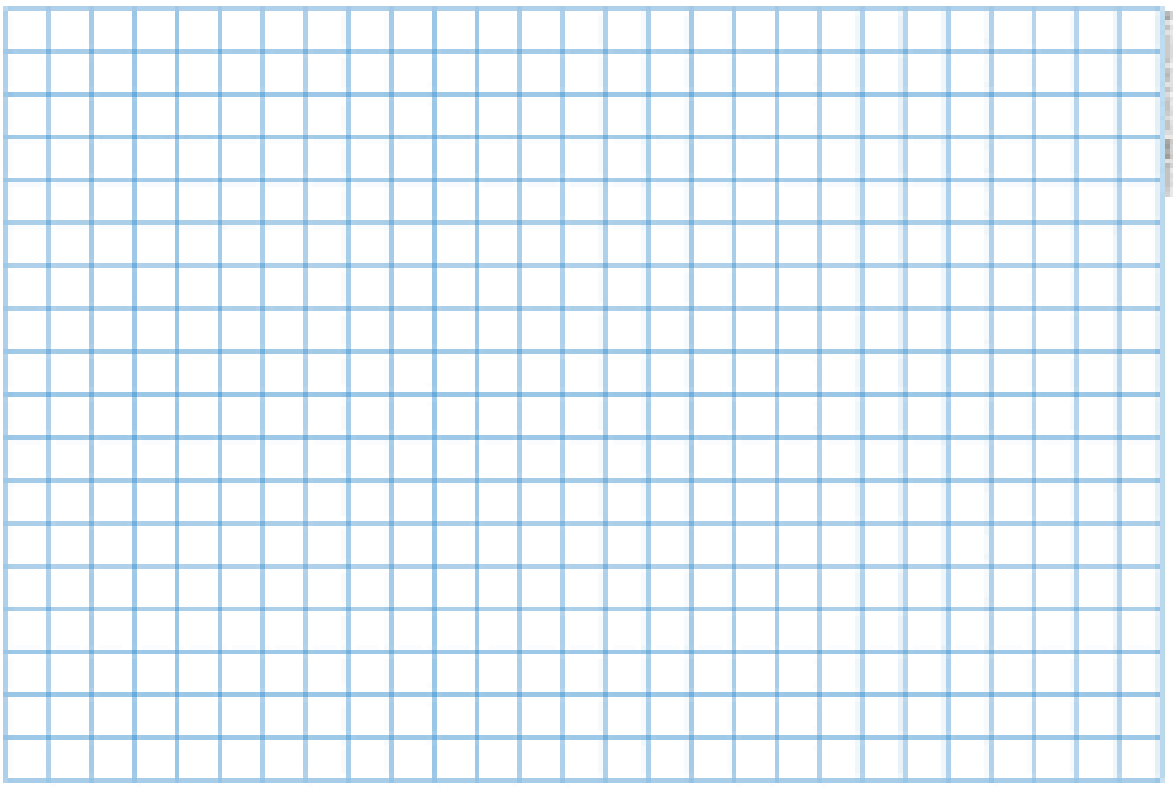
1. Be drawn with a pencil and a ruler
2. Have labelled axes with units if needed
3. Use a sensible scale so it takes up at least half of the paper
4. Go up in equal amounts eg one square always equals two people
5. Have a title



Plotting a graph

Have a go at plotting your own bar chart using the information below. Use the success criteria on the previous page to help.

Hair Colour	Number of people with this hair colour (frequency)
Blonde	15
Brown	8
Red	3
Grey	2



Variables

When carrying out investigations in science, it is important that we know what our variables are. There are three variables that you need to be able to identify, these are:

The independent variable (what we are changing in the investigation)

The dependent variable (what we are measuring in the investigation)

The control variables (what we need to keep the same to keep it a fair test in the investigation)

For example if we were investigating how the size of a parachute affects the time it takes to fall to the floor, the

- Independent Variable would be the size of the parachute
- Dependent Variable would be the time it takes to hit the floor
- Control Variables would be the material that the parachute is made from and the height it is dropped from

Variables

Can you identify the variables in the investigation below:

A pupil had three different sized beakers and wanted to see if a candle would burn for different lengths of time under each beaker. The pupil lit the candle and placed it under a beaker and used a stopwatch to time how long it took to go out. She then repeated this with different sized beakers.

The independent variable (what she is changing) is:

……

……

The dependent variable (what she is measuring) is:

……

……

The control variables (what she needs to keep the same) are:

……

……

Activities to try at home

The next few pages of this booklet contain some fun, safe activities that you can try at home.

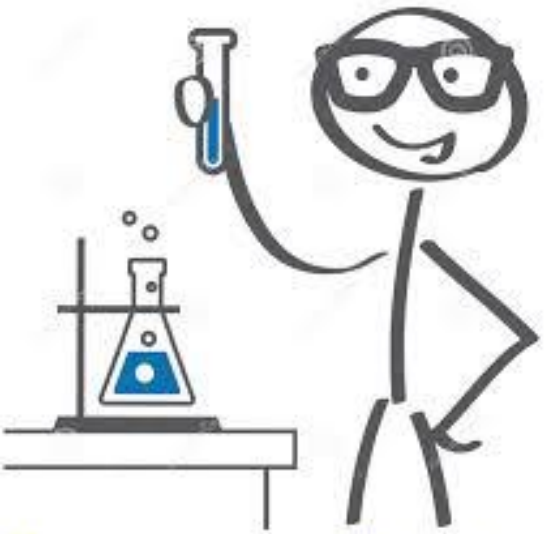
Read the instructions carefully and always ask an adult before completing any practical activities.

The following websites also have some fun science and technology based activities.

www.smallpeicetrust.org.uk

www.sciencebob.com

www.science-sparks.com



Activities to try at home

Roto-Copter

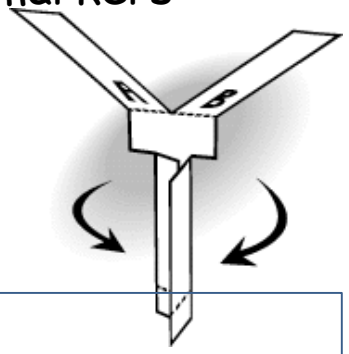
This simple paper toy spins through the air like a mini-helicopter

Method

1. Print out the Roto-Copter pattern (next page) Cut along the solid lines only. Fold on the dotted lines.
2. Fold A toward you. Fold B away from you.
3. Fold C and D over each other so they overlap..
4. Fold the bottom up and put a paper clip on it..
5. Hold the Roto-Copter by the paper clip. Throw it like a baseball, as high and far as you can. It will spin to the floor. You can also stand on a chair or on the stairs and drop it. Ask a grown-up if you can drop it out the window.
6. If you want, you can use crayons or markers to colour your Roto-Copter before you fold it. The colours will blur together when it spins.

What you need

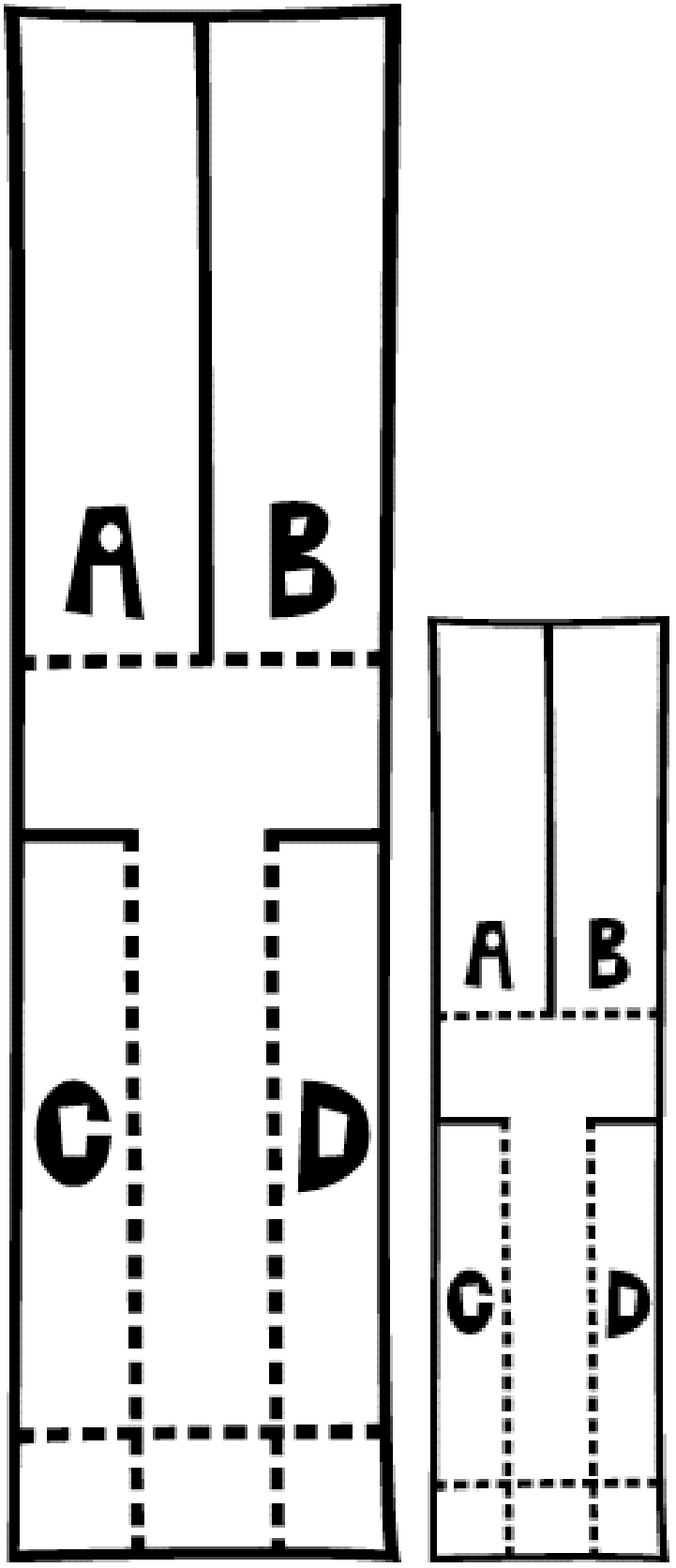
- print-out of the Roto-Copter pattern
- pencil
- scissors
- paper clips
- crayons or markers
- newspaper
- cereal bowl



Game

Make three Roto-Copters for each person. Use a marker to draw a 1-foot circle on a piece of newspaper. Put a cereal bowl in the middle of the circle. The circle is the target area and the bowl is the bull's-eye. Take turns standing on a chair at the edge of the newspaper and dropping your Roto-Copters. At the Exploratorium, we get 3 points for a bull's-eye, 2 points for a copter inside the circle, and one point for just hitting the newspaper-but you can make up any rules you want.

Activities to try at home



Why does this work?

Why does the Roto-Copter spin?

When the Roto-Copter falls, air pushes up against the blades, bending them up just a little. When air pushes upward on the slanted blade, some of that thrust becomes a sideways, or horizontal, push.

Why doesn't the copter simply move sideways through the air? That's because there are two blades, each getting the same push, but in opposite directions. The two opposing thrusts work together to cause the toy to spin.

Activities to try at home

Home made ice-cream

- **You will need:**
- 100ml of milk
- 1/4 tsp of vanilla (or use other flavours usually found near the vanilla in a grocery store – you can use chocolate syrup for chocolate ice cream)
- 4 tsp of sugar
- A few drops of food colouring (optional – if you want colourful ice cream)
- Lots of ice
- Lots (half cup) of salt. Rock salt (sold at hardware stores) works best.
- Small zip-lock freezer bag
- Large zip-lock freezer bag
-
- **What to do:**
- Put the milk, flavouring, colouring, and sugar into the SMALL zip-bag and zip it shut (be **sure** it is zipped up and closed completely)
- Put about a cup of ice into the large bag and the cover the ice with a small handful of salt. Put the small bag with your ingredients into the larger bag.
- Add some more ice and then some more salt. Keep adding salt and ice until the bag is almost full.
- Zip it shut (be sure it is zipped) and then carefully hold opposite sides of the bag and shake the bag back and forth (like your steering a car) for about 5-8 minutes.
- Open the larger bag and take out the smaller bag – it should be full of ice cream! Rinse off the bag under running water to remove any salt that may be near the opening of the bag.
- Open and enjoy!

The Science of Ice Cream
When you added salt to the ice, the chemistry between the two forced the ice to melt. Before the ice could melt though, it needed to borrow heat from objects that surround it. This is called an *ENDOTHERMIC* process. Since your ingredients are not as cold as the ice, it borrowed heat from your ingredients making them colder! When they get colder, they freeze up into ice cream. Yum!

Roll a can with static electricity

You will need

An empty can of pop
Blown-up balloon
A head of hair

Method

- Place the can on its side on a flat smooth surface like a table or a smooth floor.
- 2. Rub the blown up balloon back and forth through your hair really fast.
- 3. Now the fun part – Hold the balloon close to the can without actually touching the can. The can will start to roll towards the balloon without you even touching it!
- Try This Too: While you've got the balloon out, tear up part of a tissue into tiny pieces about 1/4 inch (.5 cm) big. Rub the balloon in your hair again and bring it close to the tissue pieces. They will be attracted to the balloon and then jump away.

How does this work?

When you rub the balloon through your hair, invisible electrons (with a negative charge) build up on the surface of the balloon. This is called static electricity, which means "non-moving electricity" The electrons have the power to pull very light objects (with a positive charge) toward them – like the can.