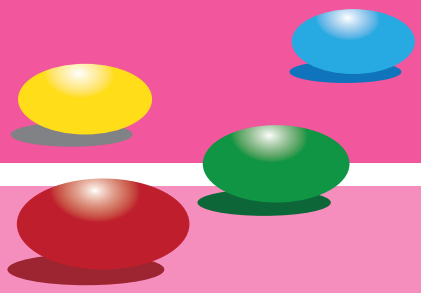
Sweet Chromatography

Aim: To separate out the dyes that give sweets their colour.



Background Information

To stay healthy, it is important for us to eat a range of foods so that we can get everything we need - vitamins, proteins, fats and carbohydrates. We get these from eating a variety of different foods like those below.

To make sure we follow a balanced diet, it is important that we know exactly what is in the food we are eating. Nutrition labels on food, like the one here, give us this information.

Nutrition information (Typical values)	Per 100g	Per Pack Serving
Energy - kJ/kcal	247/59	742/176
Protein	2.5g	7.5g
Carbohydrate	9.0g	27.0g
- of which sugars	0.8g	2.4g
Fat	1.4g	4.2g
- of which saturates	0.9g	2.7g
Fibre	1.9g	5.7g
Sodium	0.3g	0.9g
Salt equivalent	0.8g	2.3g
Guideline Daily Amounts	**Women**	**Men**
From official figures for average adults of a healthy weight	2000 kcal	2500 kcal
Fat (of which saturates)	70g (20g)	95g (30g)
Salt	6g	6g

There are guidelines to tell you if a food is high in fat, sugar or salt.

High Fat = more than 20g of fat per 100g
Low Fat = 3g or less of fat per 100g

High Sugar = more than 15g total sugar per 100g
Low Sugar = 5g or less total sugar per 100g

High Salt = more than 1.5g of salt per 100g
Low Salt = 0.3g or less of salt per 100g

? Have a look at the nutrition labels below.
Are the foods low or high in fat sugar and salt?

Nutritional Information	
TYPICAL COMPOSITION WHEN COOKED	PER 100G
ENERGY	1260kJ 300kcal
PROTEIN	13.2g
CARBOHYDRATE	32.6g
OF WHICH SUGARS	3.6g
TOTAL FAT	12.5g
OF WHICH SATURATES	5.4g
FIBRE	2.3g
SODIUM	0.48g
SALT EQUIVALENT	1.2g

Circle the correct answer.

Fat	**Sugar**	**Salt**
High	High	High
Low	Low	Low
Neither	Neither	Neither

Have a look at the nutrition labels below.
Are the foods low or high in fat sugar and salt?

Nutritional information	
Typical Values	Per 100g
Energy (kJ)	495kJ
Energy (kcal)	117kcal
Protein	5.3g
Carbohydrates	17.7g
(of which sugars)	0.7g
Fat	2.8g
(of which saturates)	1.5g
Fibre	0.6g
Sodium	0.11g
- equivalent as salt	0.3g

Circle the correct answer.

Fat	Sugar	Salt
High	High	High
Low	Low	Low
Neither	Neither	Neither

Experiment

The experiment we will do now allows us to investigate the different dyes found in sweets that give them their colour.

Equipment Required

- 6 pieces of filter paper.
- Small cup of water
- Dropper
- 6 disposable plates
- 3 Skittles (one red, one green and one purple)
- 3 M&Ms (one red, one green and one blue)
- Ruler

What to do

1. Place a piece of filter paper onto each plate.
2. Place one sweet into the centre of each piece of paper.
3. Using a dropper, place about 15 drops of water onto each sweet.
4. Leave the paper to dry. After a few minutes you should be able to see bands of colour around each sweet.
5. Record the number of bands and the distance of these bands from each sweet in the table.

Results

Type of Sweet	Colour of Sweet	Number of Bands	Distance travelled from the sweet (cm)				
			Band 1	Band 2	Band 3	Band 4	Band 5

Conclusions

1. Which sweet had;

a) The most bands?

b) The least bands?

c) Bands that travelled the furthest distance?

d) Bands that travelled the shortest distance?

2. Which sweet had the most colourings in it?

3. Why do you think the different coloured dyes travel different distances?