

This topic uses the context of entertainment to bring in a variety of mathematical topics – mostly either number based or developing, using and applying information in some form of a database. We hope that the contents will be motivating, but do remember that pupils have varied interests, so you may need to pick and choose carefully.

Some of the activities require pupils to find out information, and this must be carefully planned. It is sometimes easier to obtain the relevant information in advance of the lesson where it will be needed, or to undertake the surveys as a whole class activity.

In terms of the National Curriculum, the two main Attainment Targets covered are **Number** and **Handling Data**. The particular *Yearly Teaching Programmes* in the National Numeracy Framework are given in the chart below.

| Topic | Sheet number | National Numeracy Framework reference |
|------------------------------|--------------|---------------------------------------|
| Introduction | 0 | |
| Recipe | 1 | 6/A3 and C3 and 5/D2 |
| TV programmes | 2 | 5/E1 |
| Top of the Pops | 3 | 5/E1 |
| The Ice Show | 4 | 5/C3 and A3 |
| Sports people watch | 5 | 6/E1 |
| Hobbies and interests | 6 | 6/E1 and A3 |
| The puzzle book | 7 | 4/C2 |
| In-car sound | 8 | 6/A3 |
| Video value | 9 | 6/D2 and B6 |
| The health club | 10 | 6/D1 and D2 |
| Solutions | | |

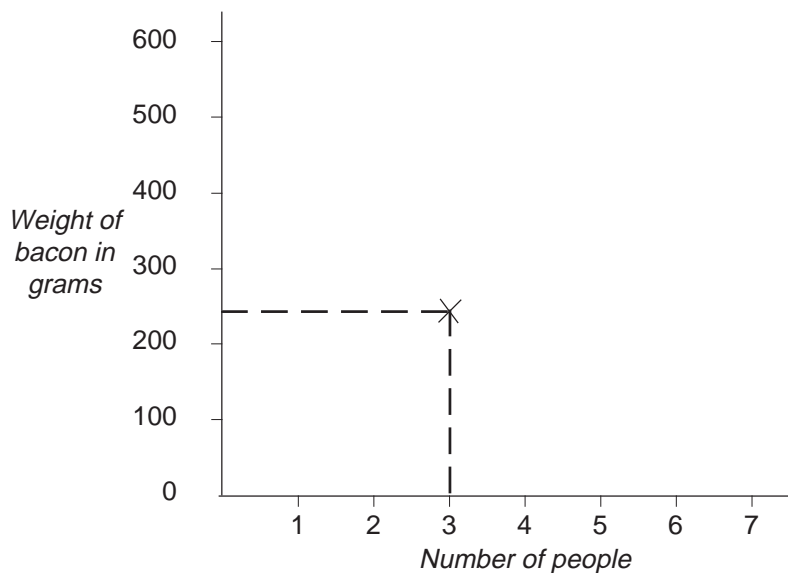
The ingredients needed to prepare a frankfurter and bacon casserole for 3 people are shown below.

| | | | |
|-------|----------------------------|--------|-----------------------------|
| 240 g | <i>streaky bacon</i> | 6 | <i>frankfurter sausages</i> |
| 30 ml | <i>cooking oil</i> | 30 g | <i>cornflour</i> |
| 90 g | <i>chopped onion</i> | 180 g | <i>sweetcorn</i> |
| 30 g | <i>chopped red peppers</i> | 120 ml | <i>stock</i> |

Problems

1. If you are going to make a casserole for 5 people instead of 3, how many frankfurter sausages will you need?
2. Rewrite the rest of the quantities so as to make a casserole for 5 people.
3. If the cost of bacon is £4.80 per kg, what will it cost to buy the bacon for a casserole for 5 people?
4. Cornflour costs £1.05 for 375 g. What will the cost of cornflour for a casserole for 5 people?

This graph can show the weight of bacon needed to make the recipe for 1 to 7 people. The point marked shows that 240 g is needed for 3 people.



Activity

Complete the graph and make a similar conversion graph for the weight of onion needed for 1 to 7 people.

Activity 1

Estimate how many hours of television you watched yesterday or one day recently.

Write down a list of the names of all the programmes you watched that day and, by using TV programmes listings, find the actual length of time each programme lasted.

Use the times to calculate the total number of hours and minutes you spent watching TV. (If you did not watch some programmes completely, then estimate the length of time you did spend watching them.)

Was your estimate correct?



Ask three or four of your friends which programmes they watched and calculate how many hours and minutes they watched TV. Draw a graph to show the number of hours of television you each watched on that particular day.

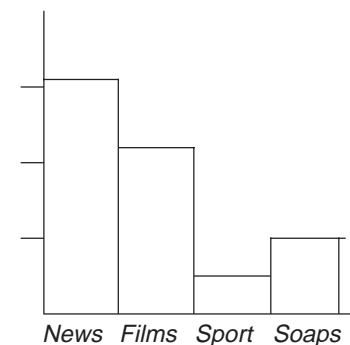
Activity 2

Use TV programmes listings to find the total time the BBC spends on a particular **weekday** showing the types of programme listed on the right.

Repeat the activity for your local commercial TV channel for the same day.

National and local news
Films
Sport
Soaps

Hours



Activity 3

Draw a block graph like the one opposite to show your results from Activity 2.

Activity 4

Now repeat Activity 2 for programmes shown on a **Saturday**. Draw another block graph to show these results.

What differences, if any, do you notice?

Make a list of five recently released singles that you like.

Activity 1

Make a survey of the most popular music amongst the pupils in your class by asking each person to list their five favourites from a recent listing of popular singles.

Problems

1. If you combine all the results from Activity 1, which of these is the most popular single?
2. Make a block graph to show how many 'votes' each single was given. List them in order of popularity.

Activity 2

Usually music shops and music magazines have lists of top singles in order of popularity. When you next see these listings, compare your results with theirs.

Activity 3

Keep a record of the 'Top Twenty' chart for five consecutive weeks. Score

20 points for Number 1

19 " " 2

18 " " 3

and so on, finishing with

1 point for Number 20.

For each single, add up its total points for the 5 weeks and make an overall 'Top Twenty' for the whole time period.

Useful website: bbc.co.uk/radio1/chart/singles.shtml

Imagine you are going with your whole family to the Ice Show which is advertised below. There are three different prices for seats, the best and most popular being next to the ice rink stage. On the Gala Charity Performance, part of the money taken for the tickets will be given to a children's charity. On that night all the tickets are more expensive.

The Christmas Ice Show

SNOW WHITE

10th Dec – 23rd Dec

Opening Gala Charity Performances 10th December

2.00 p.m. and 7.30 p.m.

All other performances at 7.30 each day including Sunday

Ticket Prices

| | | | | |
|-------------------------------|---------------------------|--------|--------|--------|
| Gala Performance only | Adults | £18.00 | £15.00 | £12.50 |
| | Senior Citizens (over 60) | £17.00 | £12.50 | £10.00 |
| | Children (under 14) | £12.50 | £10.00 | £6.50 |
| All other performances | Adults | £15.00 | £11.50 | £8.00 |
| | Senior citizens | £11.50 | £8.00 | £5.50 |
| | Children | £8.00 | £5.50 | £3.50 |

Problems

1. Assuming you do not go to the Gala Performance, what is the most expensive cost of the tickets for your family?
2. The Williams' family consisting of 4 adults, one of whom is a senior citizen, and two children, go to the 7.30 p.m. Gala Performance. They buy the second most expensive seats. How much does it cost them?
3. How much more or less is this family's cost than yours?
4. If the company running the show gives 10% of the ticket sale money to the charity at the Gala Performance, what amount will be given to the charity from a ticket sale to a family of one adult, two senior citizens and three children buying the cheapest seats?

How many people in your class watch some kind of sport other than that shown on TV or played at school?

Activity 1

Carry out a survey asking the pupils if they have watched some kind of sport, 'live', at least once in the last month. In your survey include sports such as horse racing, motor car racing, athletics, swimming, etc. as well as games such as soccer, rugby, hockey. Remember, watching the sport on TV or at school does not count.

Problems

1. Work out the percentage of girls in your class who have watched some kind of sport 'live' in the last month.
2. What percentage of boys have watched 'live' sport in that time?

Activity 2

Using a newspaper on a day when it does most reporting of sport, find which sports activities are reported. Make a list of all the different sports activities reported.

You will often find that most sports reporting in the newspaper is on football. Excluding football, how can you tell which other sports have the greatest following?

Activity 3

Make a list of three or four popular sports reported in the newspaper over several days, not including football. Now measure the column length of the article (in cm) used in reporting these sports. Don't forget some sports may have several different reportings. Add all these together.

Activity 4

List all the sports in order of column length of type used to report them.

Do you think this is a good method for deciding which sport has the greatest following? Write down two reasons that suggest it is not a particularly good method.

On the right are listed some of the things people do as hobbies or interests.

Activity 1

*What other things might be included in the list?
Do you have a hobby? If so, what is it?*

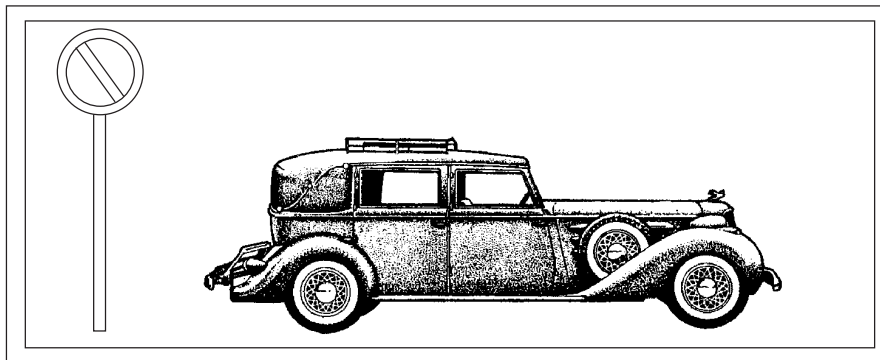
Collect stamps
Make models (cars, planes etc.)
Belong to a drama club
Play in a musical group
Read books
Play a sport
Take photographs

Maybe you have one or more hobbies or interests.

Activity 2

Make a survey of the pupils in your class to find their interests and hobbies. What is the most popular activity?

Gary's hobby is photography. The picture below is of his uncle's vintage car. In real life, the distance between the centres of the front and rear wheels is 400 cm.



Problems

1. Measure and write down the distance between the centres of the two wheels in the picture.
2. Using the information you have been given, how many cm in real life are equivalent to 1 cm in the picture?
3. Use the picture to find how long in cm the real car is.
4. If Gary, who is 2 metres tall, was standing beside the car, how tall would he be in the picture?
5. What is the height, in real life, of the road sign beside the car?

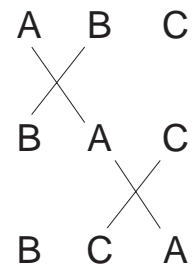
Tim is travelling with his family on a long train journey. To amuse himself he has a book of puzzles. One of the puzzles is as follow.

The three letters A, B and C are to be arranged in a new order so that no letter remains in its original position. For example, ACB **is not** a solution since the A is still in the same place; BCA **is** a solution.

Problems

1. Using the rules above, write down as many orders as you can. How many in all are there, including the original order of ABC?
2. If four letters, A, B, C and D are used, write down all the orders of letters possible. Remember, no letters may stay in their original position. How many different orders are there?
3. Try the same puzzle for five letters, ABCDE. How many different orders are there?

Three letters are to be arranged in a new order with the same rules as given above, but this time we are interested in how many swaps between letters next to each other are needed. In the diagram on the right two swaps have been used to rearrange ABC into the order BCA.



4. How many swaps are needed for all the other arrangements of three letters you found above? Draw diagrams like the one given to show how you did the swaps.
5. How many swaps are needed for rearranging four letters into each of the orders you found above? Draw diagrams to show the swaps.

Sharon's father is thinking of buying a CD player for his car. He will either buy it from a local store or through a mail-order company. He can afford to spend about £100.

A local store has a particular CD player normally for sale at £120.00 but at the moment they are offering it with a reduction of £20.

Problems

1. What fraction of £120 is £20.00?
2. He could also buy it at the normal price but paying £22 deposit and the remaining amount over 28 equal weekly payments. What would be the amount of each weekly payment?
3. The mail-order company has another CD player that Sharon's father particularly likes, but unfortunately it costs £110.00. He could pay the mail-order company over 48 weeks at £2.65 per week. If he does this, how much in total will he have paid?
4. A bank is willing to lend Sharon's father the £110.00 so that he could pay the mail-order company in full. The bank would add 10% to the £110 and then require the amount to be paid off in 10 equal monthly instalments. What would be the amount of each instalment?
5. If Sharon's father paid for the CD player by instalments, would it cost less to buy it using the mail-order instalment method or borrowing the money from the bank?



At a supermarket, certain video films are on offer at specially reduced prices.

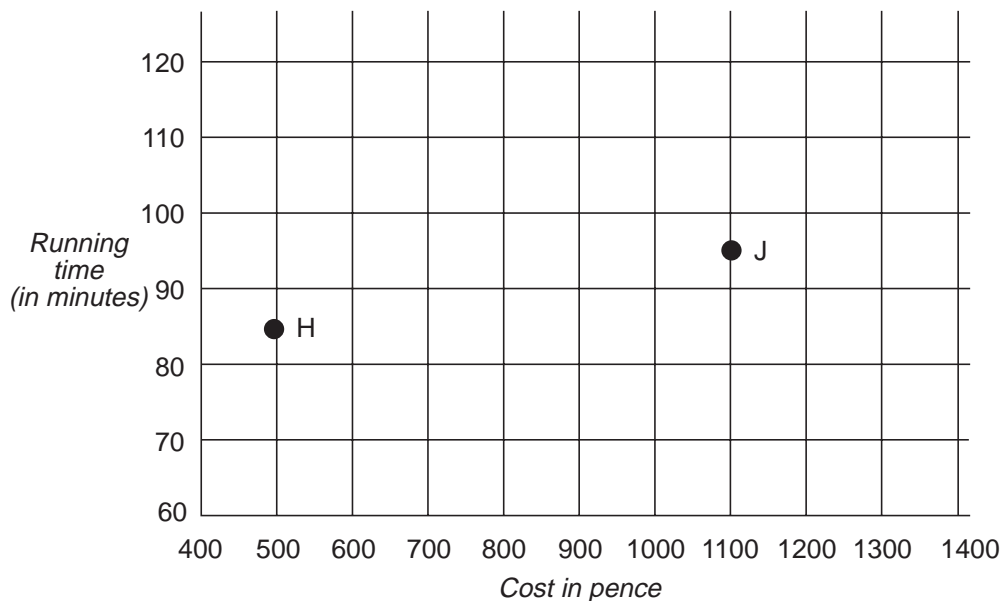
The table shows the cost and running time of 12 films.

| Film | Cost (£s) | Running time (mins) |
|------|-----------|---------------------|
| A | 6.99 | 101 |
| B | 6.99 | 99 |
| C | 13.99 | 125 |
| D | 10.99 | 120 |
| E | 13.99 | 83 |
| F | 12.99 | 75 |
| G | 12.99 | 125 |
| H | 4.99 | 85 |
| I | 6.99 | 65 |
| J | 10.99 | 95 |
| K | 7.99 | 82 |
| L | 6.99 | 90 |

Problems

1. What is the mode of the costs of the video films?
2. What is the average running time in minutes?

Part of a scattergram to show the cost in pence against the running time in minutes is shown below. The data for the films H and J is plotted.



3. Copy and complete the graph.
4. Do you think the graph indicates that short films are always cheaper?
5. The cost in pence per minute of film A is found from $6.99 \div 101$. Find the cost in pence per minute of each of the films.

Kevin's mother and father belong to a health club. One evening each week they go to work out in the club's gym for $1\frac{1}{2}$ hours.

The health club is organising a sponsored slim, the money going towards new medical equipment for a hospital in Botswana.

Kevin's father weighs 92.6 kg.

His mother weighs 10 stone 4 lbs (ten stone four pounds).

Problems

1. There are 14 lbs in one stone. What is Kevin's mother's weight in lbs?
2. There are approximately 2.2 lbs in one kg. What is Kevin's mother's weight in kg?

Activity

Each week a record is kept of their weights measured in kg.

The table below shows the weights over 8 weeks. Note that you need to fill in the first recording for Kevin's mother's weight in kg.

| Week | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--------|------|------|------|------|------|------|------|------|------|
| Mother | | 64.5 | 63.1 | 62.2 | 61.3 | 60.6 | 60.0 | 58.9 | 57.9 |
| Father | 92.6 | 92.2 | 91.0 | 89.7 | 88.3 | 87.5 | 86.9 | 85.8 | 85.3 |

Plot the data on two graphs, one for Kevin's mother and one for his father.

Problems

3. Kevin's mother is sponsored for 24p for each 0.1 kg lost.
Kevin's father is sponsored for £2.40 for each whole kg lost.
Which of Kevin's parents raised the most money from the sponsored slim and how much was it?

- Sheet 1 Problems**
- 10
 - 400 g streaky bacon
50 ml cooking oil
150 g chopped onion
50 g chopped red peppers
50 g cornflour
300 g sweetcorn
200 ml stock
 - £1.92
 - 14 p
- Sheet 4 Problems**
- £77.50
 - £5.20
- Sheet 6 Problems**
- 5 cm
 - 80 cm
 - 608 cm
 - 2.5 cm
 - 320 cm (3 m 20 cm)
- Sheet 7 Problems**
- ABC, CAB, BCA ; 3
 - 10
 - 45
 - Two
- Sheet 8 Problems**
- $\frac{1}{6}$
 - £3.50
 - £127.20
 - £12.10
 - Borrowing from the bank
- Sheet 9 Problems**
- £6.99
 - 95.4 minutes
 - No
- 5.**
- | | A | B | C | D | E | F | G | H | I | J | K | L |
|-----------------|-----|-----|------|-----|------|------|------|-----|------|------|-----|-----|
| Cost per minute | 6.9 | 7.1 | 11.2 | 9.2 | 16.9 | 17.3 | 10.4 | 5.9 | 10.8 | 11.6 | 9.7 | 7.8 |
- Sheet 10 Problems**
- 144 lbs
 - 65.5 kg
 - Mother raised most: £18.24
(Father raised £16.80)
- Activity** Mother's initial weight = 65.5 kg