UNIT 5 *Data Analysis* Activities

Activities

ACTIVITY 5.1 *Daily Life*

Keep a diary of your daily life for a period of at least 2 weeks. Note, for example, for each day:

- *how many hours of sleep you had*
- *the time when you woke up*
- *what you ate for breakfast*
- *the time that you left home for school*
- *the time you arrived at school*
- *the length of time you spent at school*
- *what you had for lunch*
- *any sports you played*
- *other activities in which you took part*
- *the time you left school*
- *the time you returned home*
- *what you ate during the evening*
- *how long you spent doing homework*
- *how long you spent watching TV*
- *the time when you went to bed*

(You might need to modify the questions for Saturday and Sunday.)

At the end of the period, analyse your data and write a report on how you spend your time.

ACTIVITY 5.2 *National Lottery*

Each week there are two National Lottery draws in which 6 numbered balls (plus a bonus ball) are drawn at random, without replacements, from balls numbered 1, 2, 3, . . . , 49.

1. Keep a record of the numbers drawn (not including the bonus ball) over a period of at least 10 weeks.

   You can find a complete record on the internet at the address:

   http://lottery.merseyworld.com/

2. Draw a vertical line graph to illustrate the frequency of occurrence of each number.

3. List all the frequencies in numerical order. Find the:

   (a) *mean*

   (b) *mode*

   (c) *median*

   (d) *range*

   for the frequency data.

Extension

What do you expect the frequency of occurrence of each number to be, if the balls are drawn randomly? Does your data above support the hypothesis that "the balls are drawn randomly" ?

ACTIVITY 5.3 *Postal Efficiency*

The activity is for the whole class; all pupils should participate, and then collate their data.

Each postal area keeps records on the efficiency of their service. Certain performance targets have to be met and these relate to:

- local district
- adjacent districts
- distant districts.

You will need to contact a post office to obtain details of your local district and adjacent districts to enable you to classify the data you collect. Details of performance targets are published in the *Post Office Annual Report and Accounts*, available free on request from:

The Post Office, Public Relations,
130 Old Street
LONDON
EC1V 9PQ

The activity will check how successful your local office might be in achieving its targets.

1. All pupils (on the same day) post 3 (or more) envelopes, noting for each one:

   (a) time of posting,

   (b) locality of posting (e.g. post box, post office, sorting office),

   (c) location of destination (local, adjacent or distant district),

   (d) class of post used (i.e. first or second).

   Each envelope should contain a letter asking the recipient to note when it is received, and should also contain a stamped addressed envelope which is to be returned to the sender. Again, all data related to the returning mail should be noted.

2. The data from all pupils in the class should be collated, and represented for analysis.

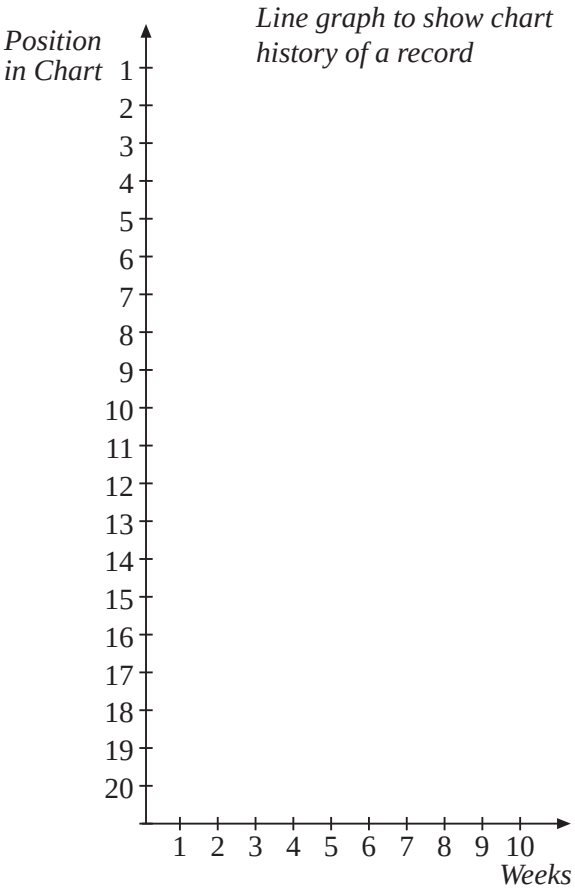
3. Analyse the data, and report on how well you think the Post Office might be achieving its targets.

ACTIVITY 5.4 *Top of the Pops*

Choose 5 (or 10) new records that have just been released and follow their chart progress for 10 (or more) weeks. You could do this retrospectively by obtaining the relevant data from the internet at:

http://charts.merseyworld.com/

Now carry out the following activities:



Line graph to show chart history of a record

1. Draw a line graph, for each record followed, to show its chart history. Use a scale from 20 to 1 on the vertical axis to record its position in the chart, and the horizontal axis to record the time (in weeks).

2. Compare the line graphs of the records that you have tracked. Which has been:

   (a) *most* successful,

   (b) *least* successful ?

3. Find, for each record, the

   (a) *mean*, (b) *mode*, (c) *median*, of its position in the charts.

   (If it doesn't appear at all in positions 1 - 20, then enter the position as 21.

4. Do the results in question 3 support your answers from question 2? If not, explain why not.

5. What is the best method for comparing success of records?

ACTIVITY 5.2 *Notes for Solutions*

Notes and solutions given only where appropriate.

5.2 Extension

If you record data for n weeks, then the total number of balls drawn is 12 n; since there are 49 numbers, the expected frequency of each number is $\frac{12n}{49}$.