Learning from misconceptions in mathematics

These resources are intended to support departmental meetings in identifying and developing approaches to tackle pupils' misconceptions in mathematics. Four topics are included on the CD-ROM:

A Fractions and decimals;

B Multiplication and division;

C Area and perimeter;

D Algebraic representation.

Each topic includes:

1 examples of errors from a pupil's work;

2 a summary by researchers of the misconceptions evident in the pupil's work;

3 Key Stage 3 test questions relating to the specified topic;

4 an outline of an approach to uncover misconceptions;

5 a card sort activity to enable pupils to discuss their different interpretations.

The activities associated with this approach involve pupils in groups discussing their solutions. Two types of activity are illustrated in these materials:

- collecting together different but equivalent representations of a concept or process (e.g. activities in topics A and B);
- testing the validity of generalisations by asking whether they are always, sometimes or never true (e.g. activities in topics C and D).

The discussion and reflection generated by both types of activity contribute to pupils' learning as they share, exchange and clarify meanings and interpretations.

The examples are illustrations only. If you have already discussed your pupils' misconceptions, perhaps through analysis of test scripts, use those samples to consider changes in approach that would most benefit your pupils.