



Rock concert – Joe and Karen

Objectives

The relevant framework objectives are:

- calculate mentally a difference such as $8006 - 2993$ (key objective);
- extend written methods to: column addition/subtraction of two integers less than 10,000 (key objective);
- use all four operations to solve simple word problems involving numbers and quantities, including time (key objective).

Activity description

The teacher asked the pupils to solve these word problems:

- '5009 people attended a rock concert. How many were there after 2476 had left?'
- 'how many more words are there in a book with 7453 words than in one with 1632 words?'

Commentary

Joe has initially misunderstood the problems, but has realised that his calculations have not given him sensible solutions and he has started again. However, his work demonstrates the use of standard column addition and subtraction.

Joe's work demonstrates attainment at level 4 in this aspect of Ma2 because he is using efficient written methods. To develop, Joe needs more practice at solving worded problems.

Karen has found the difference easier to calculate mentally for the first problem and has explained how she worked out 5009 minus 2476 in her head.

For the second problem, Karen has used a compensation method, first subtracting 2000 and then adding back the difference between 1632 and 2000.

Karen is able to use expanded written methods for addition and is ready to be taught the standard methods that Joe is using, since these are more efficient than the methods she is using.



Karen confidently uses different mental methods of calculation and explains her methods, thus demonstrating achievement at level 4 in Ma2. She needs to learn efficient written methods in order to demonstrate level 4 in Ma2 for efficient written methods of addition and subtraction.



Items of work

Joe demonstrates his use of standard column addition and subtraction

$$\begin{array}{r} 5009 \\ 2476+ \\ \hline 7485 \end{array} \quad \times$$

$$\begin{array}{r} 7453 \\ 1632+ \\ \hline 9085 \end{array} \quad \times$$

$$\begin{array}{r} 4981 \\ 5009 \\ 2476- \\ \hline 2533 \end{array}$$

$$\begin{array}{r} 61 \\ 7453 \\ 1632- \\ \hline 5821 \end{array}$$



Karen's explanation of how she subtracted 'in her head' and her use of the compensation method

$$\begin{array}{r} 5009 \\ - 2476 \\ \hline \end{array}$$

+ 24 to 2476 to make 2500
Now 2500 to make 5000 add 9 =
2533

$$\begin{array}{r} 7453 \\ - 1632 \\ \hline 5453 \\ \quad 8 + 1640 \\ \quad 60 \quad 1700 \\ \quad 300 \\ \hline 5821 \end{array}$$



Karen uses an expanded method to check Joe's additions

$$\begin{array}{r} 5000 + 2400 = 7400 \\ 9 + 6 = 15 \\ \underline{70} + \\ \hline 7485 \end{array}$$

$$\begin{array}{r} 7453 \\ 1632 \\ \hline 8000 \\ 1000 \\ 80 \\ 5 \\ \hline 9085 \end{array}$$



About this entry

Subject: mathematics

Year: 5

Key stage: 2

NC programme of study: Ma2p3e, Ma2p3i, Ma2p4a, Ma2p4c

Attainment target: Ma2

Evidence for: level 4

Framework for teaching mathematics – objectives:

- Calculate mentally a difference such as $8006 - 2993$.
- Extend written methods to: column addition/subtraction of two integers less than 10,000.
- Use all four operations to solve simple word problems involving numbers and quantities (including time).