



Creating and Manipulating Expressions

Stage 3 ★

Mixed Selection 1

1. Inspector Remorse

Inspector Remorse estimates that he can solve the average murder in x hours, a bank robbery in half that time, and a car theft in one third of the time he takes to solve a bank robbery.

How much time would he expect to take in solving two murders, six car thefts and four bank robberies?

2. Multiple magic

Think of any whole number. Double it and add five. Double this answer and add two. Now take away the number you first thought of. Which whole number will your final answer always be a multiple of?

3. Square and cube

The square of a positive number is twice as big as the cube of that number. What is the number?

4. Forming groups

Seventy pupils, 37 boys and 33 girls, are divided into two groups, with forty pupils in group 1 and 30 pupils in group 2. How many more boys are there in group 1 than there are girls in group 2?

5. No matter

Think of a whole number, double it, then add 3. Multiply your answer by 4 and from this take away 5. Now also take away the number you first thought of. No matter what your first number was, your answer will be a multiple of which number?

6. Nine in a line

The sum of 9 consecutive positive whole numbers is 2007. What is the largest of these numbers?

These problems are adapted from UKMT Mathematical Challenge problems (ukmt.org.uk).