Trying to find ways of engaging students with problems involving percentages, which go beyond the standard exercise type of format where short questions are typically presented as: find 20 per cent of £42, is not always easy. The following two problems are intended to deepen students' understanding of how percentages work.

PROBLEM 1

Choose an amount of money and increase it by 10 per cent.

Take this new total and decrease it by 10 per cent.

We now have slightly less money than we had to start off with.

What happens if we increase an amount by 20 per cent then decrease the total by 20 per cent?

What happens if we increase by x per cent then decrease by x per cent?

PROBLEM 2

Choose an amount of money (e.g. €100).

Increase this by 10 per cent (€110).

Increase the new amount by 10 per cent (€121).

Keep increasing each previous amount by 10% until you at least double your money.

How many increases does it take to at least double your money?

Repeat the above but start with a different amount of money. How many increases does it take to double your money now?

How many increases does it take to double your money if the constant increase is 20 per cent or 5 per cent?

How many increases would it take to at least triple your money, for increases of 10 per cent, 20 per cent or 5 per cent?

If an increase is a constant measure of time, then how long would it take to exactly double your money for 10 per cent increases?

There are opportunities here for graphing results and constructing a formula for Compound Interest.

SECTION 2

Puzzles to NAG (Number, Algebra and Graphs) your students with