This idea is about giving students an answer and asking them to find questions or ways of producing the answer. Students might write stories where a certain number appears with some prominence so that the stories give meaning to the number. The aims are for students:

○ to find different ways of arriving at a given numbers;
○ to help them recognize different properties numbers have;
○ to see numbers arise in different contexts.

One might decide to choose a number for the week, where students are asked to work out (and display) their ideas. This could make a useful homework task, particularly if parents/guardians are encouraged to take part.

The following statements are all about the number 45; they could of course all be turned into questions.

○ 45 is the angle between North and North East, North East and East, etc.
○ 45 is the sum of two squares ($x^2 + y^2$), (therefore, x, y, $\sqrt{45}$ is a right-angled triangle).
○ 45 is the difference of two squares and, therefore, the product of $(a + b)(a - b)$.
○ 45 is the speed 'single' records rotate in one minute.
○ 45 is the ninth triangular number ($1 + 2 + 3 + \ldots$ $8 + 9$).
○ In a right-angled isosceles triangle there are two 45° angles.
○ Tan 45° = 1.
○ The prime factors of 45 are $3^2 \times 5$.
○ 45 is palindromic when written in binary (or base 2), i.e. 1 0 1 1 0 1.
○ The best 45 minutes I spent at a football match was seeing Liverpool score three second-half goals against Olympiakos.

What stories can you make up about the number 45?

This idea can be used to help students consolidate their knowledge of properties of numbers by posing questions based upon the outcome of throwing three dice. It works as follows.

Throw three dice and use +, −, ×, ÷ and brackets to combine the numbers showing on the top face of the dice to gain different values, for example.

○ the highest total;
○ the lowest total;
○ the highest prime number;
○ the lowest prime number;
○ the highest square number;
○ the lowest square number.

Other target values could be to gain the highest and lowest:

○ triangle numbers;
○ Fibonacci sequence numbers;
○ Lucas sequence numbers (i.e. 1, 3, 4, 7, 11 . . .);
○ numbers nearest to zero;
○ negative numbers.