A model of mathematical structure is a representation that allows students to make sense of the underlying structure of the mathematics taking place.

For example, to solve the proportional problem 'calculate the mass of 10 metres of rope if 4 metres have a mass of 18 kg', one common representation used is a rate (or ratio) table.

4	18
10	?

$\rightarrow$ $18 \div 4 \times 10 = 45$

This method is not necessarily a bad method – but is not a model of structure. It does little to help make sense of the mathematics taking place in each step of the calculation. It is not obvious how this representation can be used to understand why one should divide by four (and then multiply by ten). Is a student doing this seeing it as finding the mass of 1 metre? Do they view this as finding the rate 4.5 kg/m? Or is this simply a procedure that they follow with no meaning?

In contrast a double number line (which would be a model of structure) can help students to make sense of the mathematics taking place.

For instance, the unitary method can be explained in the following diagram:
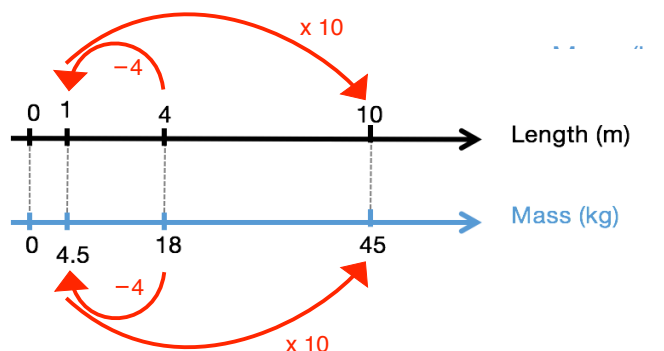
This leads to two important points regarding models of structure:

1. The model of structure does not need to be taught to provide a new procedure. Some students may like to use the representation to help them solve problems, others may prefer to retain another representation. However, all students should be able to make sense of their method using the model of structure.
2. Once students have understood their method using a model of structure they are then better able to comprehend alternative structures using the same model.