

## 3.3 Fundamentals of data representation

### 3.3.8 Data compression

Content	Additional information	Chk
<p>Explain what <b>data compression</b> is.</p> <p>Understand why data may be compressed and that there are different ways to compress data.</p>	<p>Students should understand that it is common for data to be compressed and should be able to explain why it may be necessary or desirable to compress data.</p>	
<p>Explain how data can be compressed using <b>Huffman coding</b>.</p> <p>Be able to interpret <b>Huffman trees</b>.</p>	<p>Students should be familiar with the process of using a tree to represent the Huffman code.</p>	
<p>Be able to calculate the number of bits required to store a piece of data compressed using Huffman coding.</p> <p>Be able to calculate the number of bits required to store a piece of uncompressed data in ASCII.</p>	<p>Students should be familiar with carrying out calculations to determine the number of bits saved by compressing a piece of data using Huffman coding.</p>	
<p>Explain how data can be compressed using <b>run length encoding (RLE)</b>.</p>	<p>Students should be familiar with the process of using frequency/data pairs to reduce the amount of data stored.</p>	
<p>Represent data in RLE frequency/data pairs.</p>	<p>Students could be given a bitmap representation and they would be expected to show the frequency and value pairs for each row, eg 0000011100000011 would become 5 0 3 1 6 0 2 1.</p>	