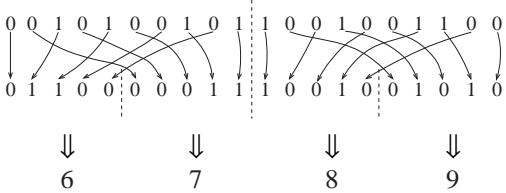
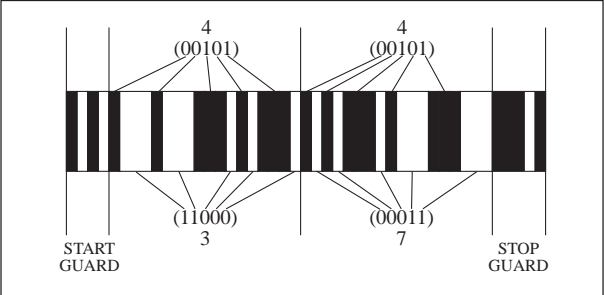


<p>Codes and Ciphers</p>	<p>UNIT 8 ITF Symbols Lesson Plan 1</p>																																																													
<p>Activity</p>			<p>Notes</p>																																																											
<p>1</p>	<p>Introduction</p> <p>T: Have you found any types of bar code apart from the 8- and 13-digit ones? <i>(Ps give examples: library cards, hospital numbers, on packing cases, road signs, etc.)</i></p> <p>T: Why isn't either the 8- or the 13-digit bar code suitable for everything? <i>(Not enough numbers, or too many numbers; no letters)</i></p> <p>T: ITF symbols solve one of these problems – that 8- and 13- digit bar codes are too restrictive. For an ITF code you just need an <i>even</i> number of digits.</p> <p>T: We first code each digit using a code with exactly <i>two</i> 1s and <i>three</i> 0s.</p> <p>For example, <table border="1" data-bbox="512 831 649 882"> <tr> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table></p> <p>Who can write another one on the board ...</p> <table border="1" data-bbox="512 943 649 994"> <tr> <td>1</td> <td>0</td> <td>1</td> <td>0</td> <td>0</td> </tr> </table> <p>T: Now find them all!</p> <p>T: Who thinks they have all the solutions? How many? <i>(10)</i></p> <p>Write them on the board. (Order should be systematic.)</p> <table border="1" data-bbox="791 1077 943 1379"> <tr><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td></tr> </table> <p>T: Now we are ready to use the code.</p>	1	1	0	0	0	1	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	0	1	0	1	1	0	0	0	1	0	1	0	0	1	0	0	1	0	0	1	1	0	0	0	1	0	1	0	0	0	1	1	<p>T: Teacher P: Pupil Ex.B: Exercise Book</p> <p>Before this lesson, T should ask Ps to look out for types of bar codes other than 8- or 13-digit EANs.</p> <p>T and Ps have an interactive discussion about the need for other types of bar codes (e.g. larger numbers, coding letters – see Unit 9).</p> <p>T writes on board or shows OS 8.1</p> <p>Ps have 5 minutes for this; T should encourage them to think logically and systematically. T praises when list is complete. Class agree/disagree; review of their answers. Praising when all 10 have been agreed on.</p>
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<p>2</p> <p><i>(continued)</i></p>	<p>Reading codes</p> <p>T: First note the 'start' and 'stop' guards. What else do you notice about these codes? <i>(Numbers are coded in pairs)</i></p> <p>T: That's right; you have to have an even number of digits and these are taken in pairs.</p> <p>Can you see how to read the number? <i>(The black bars code the first number of the pair)</i></p> <p>T: Yes; and how do you know if it is 1 or 0 ? <i>(1's are shown by wide bars; 0's by narrow ones)</i></p> <p>T: Well done – so you can read off the code of the first number, 1 1 0 0 0 and you know this is 3.</p> <p>T: Can you think of reasons why this system of coding is used? <i>(It is efficient; error detection is easy)</i></p> <p>T: Here are some examples for you to decode. Work in pairs with the person next to you. I'll give you a few minutes for the first one.</p>	<p>T shows OS 8.2 on OHP and gives each P a copy.</p> <p>Interactive discussion on the procedures, leading to Ps deducing the design rules rather than T just dictating them.</p> <p>Copy of OS 8.4 for each P.</p>																																																												

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<p>Activity 2 (continued)</p>	<p>T: Who has decoded the first example? Show us on the OS and describe what you are doing.</p> <p>P: Reading the thicknesses of the bars gives:</p>  <p>T: Well done; who agrees (disagrees)? Who would like more help? Now try the second example.</p> <p>T: Who can give us their answer?</p> <p>P: 0501 2345</p> <p>T: Well done.</p> <p style="text-align: right;">30 mins</p>	<p style="text-align: center;">Notes</p> <p>Ps work in pairs. T reviews method with whole class if Ps are floundering, otherwise T monitors their work, helping where necessary.</p> <p>T puts OS 8.4 on OHP.</p> <p>T gives Ps 5 minutes for this 6-digit number; monitors Ps work.</p> <p>Ps correct any mistakes and discuss misunderstandings.</p>
<p>3</p>	<p>Making a code</p> <p>T: Now we'll reverse the process and make a code from a number. We'll use a grid to help us.</p> <p>The first number to code is 4 3 4 7</p> <p>T: Who can tell us how to start? (Ps respond)</p> <p>T: I'll give you 5 minutes to complete this.</p> <p>T: Who can give us a solution?</p> <p>P (writing on OS and explaining to class): Putting into code in pairs, alternatively, gives</p> <p style="text-align: center;">0 1 0 1 1 0 0 0 1 0 0 0 0 0 1 0 0 1 1 1</p>  <p>T: Very good. Now start the next number, 4 4 1 0 3 5</p> <p style="text-align: right;">45 mins</p>	<p>T gives copies of Appendix 2 to Ps.</p> <p>Interactive discussion to ensure that Ps know what to do.</p> <p>T monitors Ps work, helping where necessary and also making sure that they are not spending too long on the shading!</p> <p>T puts OS 8.5 on OHP to help.</p> <p>T should ensure that all Ps understand the method.</p>
<p>Homework</p>	<p>Complete the coding of 4 4 1 0 3 5.</p>	