

UNIT 4 *ISBN Numbers*

Overhead Slides

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OS 4.1

Components of an ISBN Number

ISBN 0 85020 014 8

Group identifier

(up to 5 digits long) gives information about country of publication (UK uses '0' or '1')

**0****8 5 0 2 0***Publisher's code*

(up to seven digits long)
uniquely identifies the
publisher

0 1 4*Title number*

(up to six digits long)
identifies book in
publisher's list

*Check
digit***8**

OS 4.2

How the Check Digit Works

Multiply the first nine numbers by 10, 9, 8, ..., 2 respectively and find the sum of the resulting numbers.

The check digit is the smallest number that needs to be added to this total so that it is exactly divisible by 11.

So for

0 8 5 0 2 0 0 1 4 8

we have

$$0 \times 10 + (8 \times 9 + 5 \times 8 + 0 \times 7 + 2 \times 6 + 0 \times 5) \\ + (0 \times 4 + 1 \times 3 + 4 \times 2)$$

$$= 0 + \boxed{} + \boxed{}$$

$$= \boxed{}$$

But $\boxed{} + 8 = \boxed{}$ is divisible by 11.

So 8 is the check digit.

