Chapter 16: Identification Numbers



Section 16.1 Check Digits (Airlines, Federal Express Mail, UPS packets, Avis and National Rental cars)

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Check Digits

- Check Digit
 - ☐ A digit included in an identification number for the purpose of error detection.
 - Mathematical calculations or schemes are used on the digits of the identification number to assign the check digit.
 - Computers use the check digit to help detect typing errors during data entry to prevent and detect fraud and to find other errors.

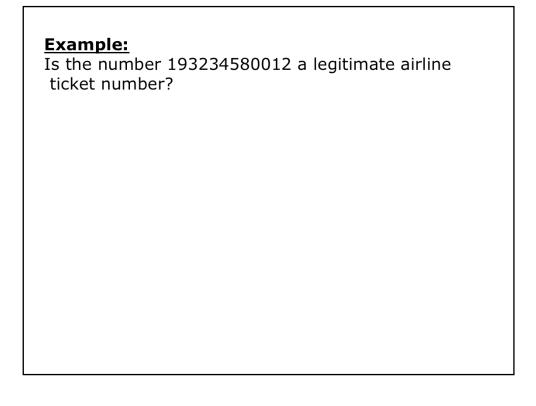
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Scheme used on Airline tickets, Federal Express mail, UPS packets, Avis and National rental cars

Assigns the remainder upon division by 7 of the number itself as the check digit.



 $127881879532 = 18268839933 \times 7 + 1$



Example:

Is the number 193234580012 a legitimate airline ticket number?

Solution:

Divide the number itself (without the check digit) by 7 and then use the remainder as the check digit. (19323458001 divided by 7 = 2760494000 with a remainder of 1, the check digit.) This is not a correct airline ticket number.

Try the example without reading the answer first.

Long Division (Do NOT use a calculator to compute Airline #) If you plug this problem into a calculator, you'll get 2760 494 000.142858 Doing it using long division, you can work it out this way: 2760494000 R 1 7 193233458001 - 42 - 42 - 42 - 42 - 42 - 53 - 28 - 65 - 28 - 00 - 00 - 00 - 01 - 00 - 00 - 01 - 01 - 02 - 03 - 04 - 0

Remarks on remainder

Example: 418 divide by 7

If you plug this problem into a calculator, you'll get 59.7143.

Doing it using long division, you can work it out this way:

The R stands for 'remainder.' That is, the number to the right of the R is the remainder of this division.