

Spreadsheet Programs

- automatic (re)calculation

Spreadsheet Basics

- rows and columns
- address of a cell: (c, r)
- data types
 - numbers
 - text

Expressions

- **expression**: a calculation on operands

- $34 + 8$

- $6 * 7$

- $5 * 8 + 2$

- **formula**: an expression used to calculate a result

- $= 34 + 8$

- $= 5 * 8 + 2$

Cell Addressing

- formulae can contain cell addresses:
 - `= A1 + B1`
- on changes, formulae will be automatically recalculated

Relative Addressing

- plain addresses are relative
 - $D2 = A1 + B2$
 - $(c, r) = (c-3, r-1) + (c-2, r)$
- copy / pasting the formula preserves the relation
 - if pasted into E5:
 - $(E, 5) = (E-3, 5-1) + (E-2, 5)$
 - $= B4 + C5$

Absolute Addressing

- if an axis starts with a \$ it's absolute
 - $D2 = A\$1 + \$B2$
 - $(c, r) = (c-3, 1) + (B, r)$
- value doesn't change when pasted
 - if pasted into E5:
 - $(E, 5) = (E-3, 1) + (B, 5)$
 - $= B1 + B5$

Functions

- take parameters, return result
- examples:
 - ABS: 1 parameter
 - SQRT: 1 parameter
 - ROUND: 2 parameters
 - RAND: no parameters, different result every time

Ranges

- **range**: block of consecutive cells
- **start:end**
- range functions:
 - COUNT: count numeric values
 - COUNTA: count all values (non-empty)
 - SUM
 - AVERAGE
 - empty cells are ignored

Selection Function

- select one of two values based on a condition:
 - `IF(condition, true_value, false_value)`
 - `IF(A1 >= 18, "Adult", "Minor")`
- counting based on a condition:
 - `COUNTIF(range, condition)`
 - `COUNTIF(A3:A50, "=Adult")`

Advanced Operations

- filtering
- sorting
- charts

CSV

- comma separated values
- only the active sheet is exported
- values can be exported, not the formulae
- style can not be exported
- settings: separator, text delimited, character set

Style

- fonts, colours
- borders
- column width, row height
- alignment: horizontal and vertical
- cell merging