

Rounding without error

When dealing with monetary results from calculations it is useful to round to the nearest penny. `ROUND(Value, 2)` rounds Value to the nearest penny. A previous tip showed a spreadsheet with detail records beginning at row 19. Just using the round function to calculate FICA and Medicare withholding would result in a problematic accumulation of round off error. The solution is to use calculations based on year-to-date incomes. In my sheet column F beginning at row 19 held the wage amount subject to FICA and Medicare. Another column, L, is used to hold the year-to-date amount (L19 has the formula, `= L18 + F19`). Year-to-date withholding amounts are rounded and are in columns M and N [the formulas for row 19 are `= ROUND(L19*0.062, 2)` in M19 for FICA and `= ROUND(L19*0.0145, 2)` for Medicare in N19]. The values withheld for the check represented by row 19 are then M19 – M18 for FICA and N19 – N18 for Medicare. The details of these calculations were not obvious in the illustrations because columns L, M, and N are hidden columns.

A similar calculation is performed on the summary page where monthly payroll amounts are totaled. Hidden columns there calculate the year-to-date payroll subject to withholding and the year-to-date amount due to the IRS (15.3 %). The amount due for the month is calculated by difference between consecutive year-to-date amounts. The employer contribution is calculated by subtracting the total amounts withheld. The resulting calculations yield numbers that add together properly without round off errors on quarterly and annual forms.