

There are problems to be noted with subtraction:

EXAMPLE. Use 4 digit chopping

$$\text{fl}(\pi) = 3.141 \quad \text{relative error} \approx 1.89 \times 10^{-4}$$

$$\text{fl}\left(\frac{22}{7}\right) = 3.142 \quad \text{relative error} \approx 2.73 \times 10^{-4}$$

Both representations have 4 significant digits, but

$$\frac{22}{7} \ominus \pi = \text{fl}(3.142 - 3.141) = 0.001 \text{ with}$$

$$\text{relative error} = \frac{|(\frac{22}{7} - \pi) - 0.001|}{|(\frac{22}{7} - \pi)|} \approx 2.09 \times 10^{-1},$$

yielding a result with only 1 significant digit. \square

Thus subtracting nearly equal numbers cancels significant digits, and these cannot be recovered. We get small absolute error, but large relative error.