Calculating uncertainties
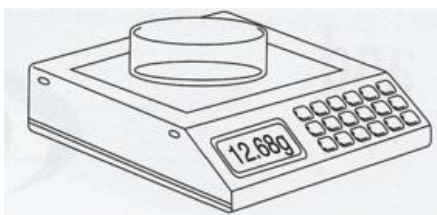
1) Calculate the uncertainty for each of the measurements on the following equipment:

a) Electronic mass balance

Absolute uncertainty:

Measurement including absolute uncertainty:

% uncertainty:

b) Digital thermometer

Absolute uncertainty:

Measurement including absolute uncertainty:

% uncertainty:
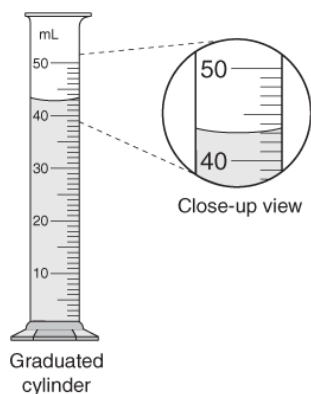
c) Digital pH meter

Absolute uncertainty:

Measurement including absolute uncertainty:
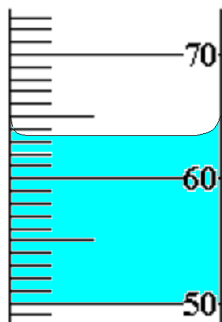
% uncertainty:

d) Measuring cylinder

Absolute uncertainty:

Measurement including absolute uncertainty:

% uncertainty:

e) Measuring cylinder

Absolute uncertainty:

Measurement including absolute uncertainty:

% uncertainty:

f) Burette

Absolute uncertainty:

Measurement including absolute uncertainty:

% uncertainty:

2) Propagating Errors Practice

A sample of aluminium is found to have a mass of 11.26 ± 0.05 g and a volume of 4.31 ± 0.01 cm^3

    a. Calculate the percentage uncertainties in the mass and the volume:

    b. What is the experimental value for the density of the aluminium? (with uncertainty)

    c. Given that the density of aluminium is 2.71 g cm^{-3}, what is the percentage error?