

3 THEORY OF ERRORS IN OBSERVATIONS

- 3.1** Discuss the difference between an error and a residual.

From Section 3.3, an error is the difference between the observation and its true value, or $E = X - \bar{X}$ whereas a residual, which is defined in Section 3.11 is the difference between the mean of a set of observations and the observation or $v = \bar{M} - M$

- 3.2** Give two examples of (a) direct and (b) indirect measurements.

From Section 3.2: A direct observation is made by applying a measurement instrument directly to a quantity to be measured and an indirect observation is made by computing a quantity from direct observations.

Examples should vary by student response.