

You *must* hand in a copy of the assignment coversheet and your solutions to the problems on engineering paper. There are no Canvas submissions for this assignment.

Problems

1. The sides of a closed figure have been measured and found to have a total length of 5,432.1 ft. If the error in the measurements is estimated to be 1.35 ft., what is the precision of the work? Hint: Remember the rules for significant figures.
2. An error of ± 0.06 ft. is estimated for each of the 18 length measurements.
 - a. Estimate the total error?
 - b. Estimate the total error if the error is ± 0.6 ft. per length?
3. Estimate the total error as the estimated error per 100 ft. is ± 0.06 ft. and the measurements are 611.33, 562.22, 594.86, and 1,111.11 ft.
4. A surveying crew can tape distances with an estimated error of ± 0.041 ft. for each 100-ft. distance. Estimate the total error if a distance of 3,300 ft. is measured?
5. It is desired to tape a distance of 1,700 ft. with an estimated total error of not more than ± 0.3 ft.
 - a. How accurately should each 100-ft. distance be measured so that the permissible value is not exceeded?
 - b. How accurately should each 100-ft. distance have to be measured so that the estimated total error would not exceed ± 0.10 ft. in a total distance of 2,200 ft.?
6. The 12 interior angles of a polygon are being measured with a total station theodolite. Specifications require that the estimated total error may not exceed ± 60 seconds. How accurately must each angle be measured?
7. The "exact" measurements of a steel tape are 100.00 ft. in length, 0.025 in. thick, and 0.500 in. wide. If steel weighs 490.0 lb/ft³, how much does this tape weigh?
8. It is desired to determine the height of a church steeple. Assuming that the ground is level, a 300.00 ft. length is measured out from the base of the steeple, and an $18^\circ 45' 30''$ vertical angle is determined from that point on the ground to the top of the steeple. How tall is the steeple?
9. What is the total area in acres of three sections of land that are measured as: 11.0 acres, 5.23 acres, 150,123.0 ft²?