Precise calculations are often impossible due to mathematical or informational limitations. Estimates provide useful approximate answers, acting as a preliminary check for exact calculations; a significant discrepancy between an estimated and calculated result indicates an error. Order-of-magnitude estimates, approximating values to the nearest power of 10, are sufficient for many problems. Even crude estimates (within a factor of 10) offer valuable guidance; for example, estimating the number of people with a disease to within an order of magnitude can highlight significant public health concerns. In making these estimates, rounding numbers significantly (e.g., $\pi \approx 1$) is acceptable; for better accuracy, .systematically balancing over- and underestimation is helpful, even when some quantities are unknown

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