

## # PUZZLER

For thousands of years the spinning Earth provided a natural standard for our measurements of time. However, since 1972 we have added more than 20 “leap seconds” to our clocks to keep them synchronized to the Earth. Why are such adjustments needed? What does it take to be a good standard? (*Don Mason/The Stock Market and NASA*)



## chapter

# 1

# Physics and Measurement

### Chapter Outline

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| <b>1.1</b> Standards of Length, Mass, and Time | <b>1.5</b> Conversion of Units                           |
| <b>1.2</b> The Building Blocks of Matter       | <b>1.6</b> Estimates and Order-of-Magnitude Calculations |
| <b>1.3</b> Density                             | <b>1.7</b> Significant Figures                           |
| <b>1.4</b> Dimensional Analysis                |  |