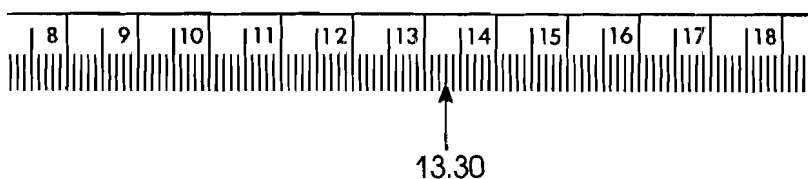
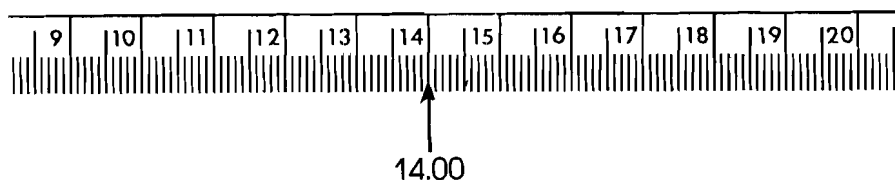


## Introducing the Metric Ruler

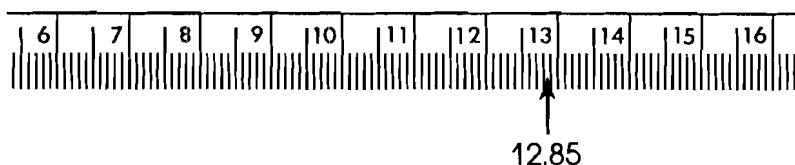
In an ordinary metric ruler, the smallest divisions are millimeters, 0.001 m. Rarely does the object being measured end very neatly at one of the lines of the instrument. However, since this does happen occasionally and forces the use of measurement (and not place-holder) zeros, let's deal with that first.



To indicate that the object being measured ends *exactly* at the third line after the 13, we *must* write 13.30 cm. This indicates that, to our best estimation, the measurement does not extend into the hundredth of the centimeter. This number could also be expressed as 0.1330 m or 133.0 mm. Whichever unit is used, the last zero must be written.



Now, according to our best estimation, the object ends *exactly* at the 14 cm line. Now we must have two zeros at the end. The number must be written 14.00 cm. This indicates that the measurement does not extend into the tenth of a centimeter space and that the instrument is precise to an estimation in the hundredth of centimeters. Of course, the number could also be expressed as 0.1400 m or 140.0 mm. The number must end with two zeros.



Most of the time, our measurements fall between the lines and, making sure that the instrument is directly in front of our eyes, we must make agonizing estimates about where the measurement does fall. We could estimate the above reading to be 12.85 cm. This means we “guess” that the object falls midway between 12.8 cm and 12.9 cm. This could also be written 0.1285 m or 128.5 mm.

