Section 1.2

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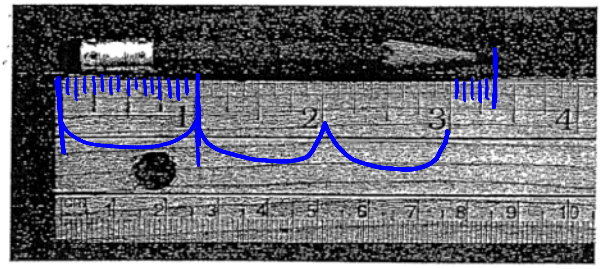
9:33 AM

Math 10 N Douglas

Section 1.2
Reading Si and Imperial Calipers

Objective:
- Learning how to read SI and Imperial Rulers
- Learning how to read SI and Imperial Calipers

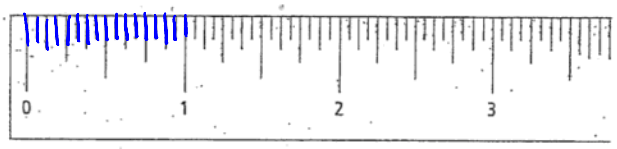
Many rulers marked with imperial units show one inch divided into eighths, tenths, or sixteenths. To measure the length of an object, you must first determine the smallest indicated unit by counting the number of divisions between two adjacent inch marks. For example, the ruler below has 16 divisions between 2 adjacent inch marks, so the smallest indicated unit is $\frac{1}{16}$ of an inch, which is written as $\frac{1}{16}$ in. What is length of the pencil? $3\frac{6}{16} = 3\frac{3}{8}$



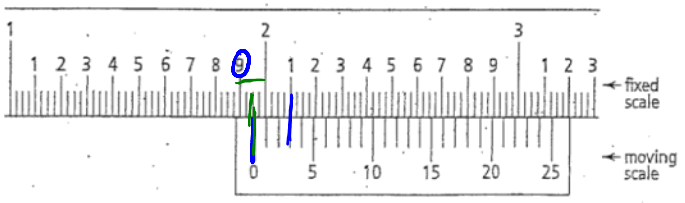
A fraction of an imperial measure of length is usually written in fraction form not decimal form. An imperial ruler or measuring tape can measure distances to the nearest $\frac{1}{16}$ in. A caliper can measure to the nearest $\frac{1}{1000}$ in.

Ex.1 How to read an Imperial Caliper

a) What does the smallest subdivision on this imperial ruler represent? $\frac{1}{16}$



b) Follow these steps to read an imperial caliper.



1. Read the whole number and tenth values on the fixed scale. This reading is 1.9

2. Determine where zero on the moving scale lies relative to, in this case, the 9 on the fixed scale.
This reading is 0.05 in. 2nd step ⇒ 2nd decimal place

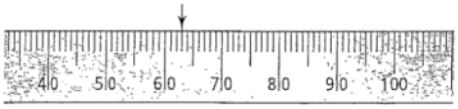
3. Identify the next line on the moving scale that aligns with a line on the fixed scale. In this example, it is 3rd. This reading is 0.003 in. 3rd step → 3rd decimal place

4. Add the measurement readings from steps 1 to 3. The final reading is
1.9 + 0.05 + 0.003 = 1.953 in.

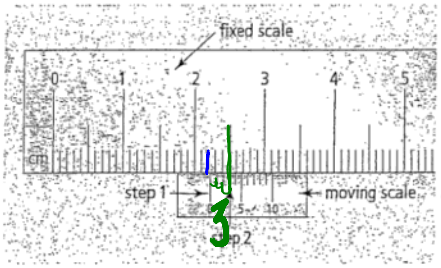
SI rulers, metre sticks, and measuring tapes give measurements to the nearest millimeter, or 0.1cm. A caliper can accurately measure to the nearest tenth of a millimeter, or 0.01cm, depending on the scales.

Ex. 2 How to read an SI ruler and Caliper

a) What reading is shown on the SI ruler? 63mm 6.3cm



b) Follow these steps to read the following SI caliper.



1. Read the value on the fixed scale that is located exactly at or just to the left of the zero on the moving scale. The reading is 2.2 cm. 1st step → 1st decimal place

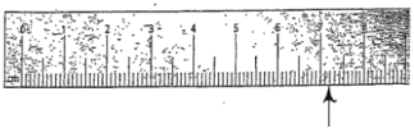
2. Identify the next line on the moving scale that aligns with a line on the fixed scale. Read the value on the fixed scale. The reading is 0.03 cm 2nd step → 2nd decimal place

3. Add step 1 and 2. The final reading is 2.2 + 0.03 = 2.23 cm.

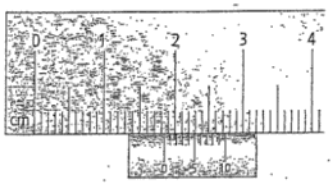
Practice for Reading SI and Imperial Calipers

1. What reading is shown on each measuring instrument? Give each reading in both millimeters and centimeters.

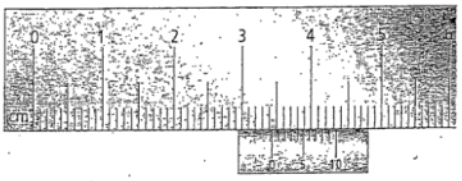
a) SI ruler



b) SI caliper

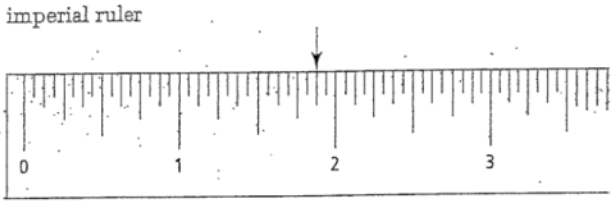


c) SI caliper

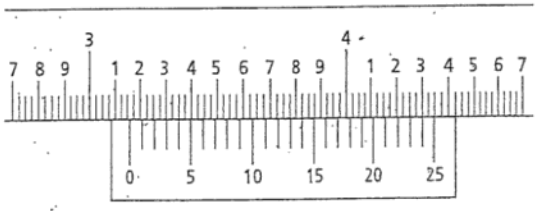


2. What reading is shown on each measuring scale? For each measurement, name one item that might have this dimension.

a) imperial ruler



b) imperial caliper



c) imperial caliper