SCALES

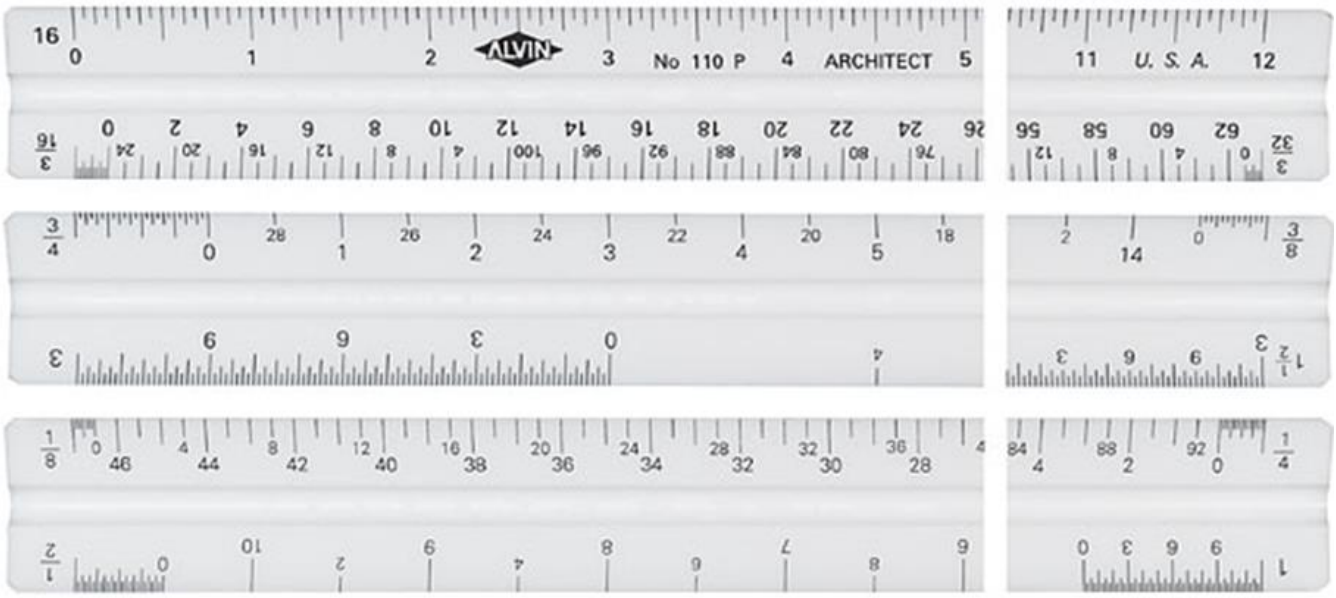
How does a drafter represent objects that are either very large or very small?

Scales are used to lay off distances and to make measurements. Measurements can be full sized or scaled, meaning that are in a specified proportion to full size.

Different scales are used to make different types of drawings. The commonly used inch-based scales include architectural scales, mechanical engineer's scale and civil engineer's scale.

The Architect's Scale

The Architect's Scale is divided into proportional feet and inches. Many offices use the triangular form because it versatile. Symbols are used to represent feet (0') and inches (0"). For example, three foot four and one-half inches is written 3'-4 ½".



Proportional scales are used for drafting in general and particularly for drawing buildings and making mechanical, electrical and other engineering drawings. The proportional scale to which the views are drawn should be given on the drawing.

If you use only one scale, you indicate this in the title block. The title block is the area on the drawing where reference information such as the drawing's title, name of company, the drafter, checked by, the date, etc. is shown. If there are different parts on the drawing at different scales, the scales are given near the views.

The Mechanical Engineer's Scale

The Mechanical Engineer's Scale shows inches and fractions of an inch divided to represent inches. The usual divisions are:

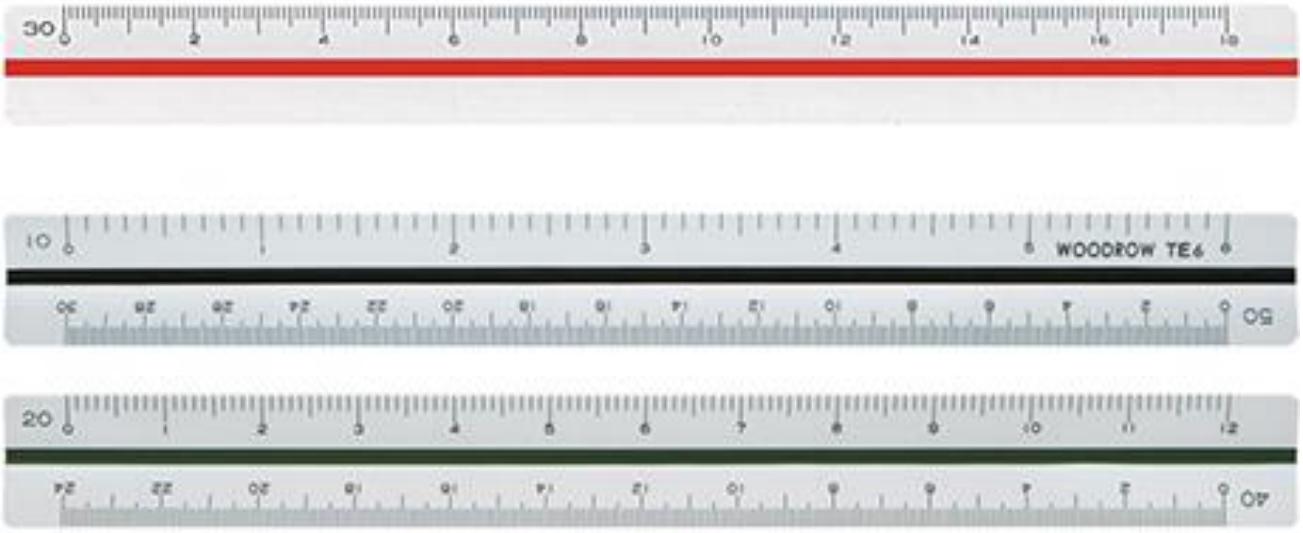
- Full size- 1" divided into 32nds
- Half size- ½" divided into 16ths
- Quarter size- ¼" divided into 8ths
- Eighth size- 1/8" divided into 4ths

These scales are used for drawing parts of machines or when larger reduction in scale are not needed.

The Civil Engineer's Scale

The civil engineer's scale divides inches into decimals. The usual divisions are as follows. 1 inch may stand for feet, miles and so forth. It is often used for maps, roads, and public projects.

- 10 parts to the inch
- 20 parts to the inch
- 30 parts to the inch
- 40 parts to the inch
- 50 parts to the inch
- 60 parts to the inch



The Decimal-Inch Scale

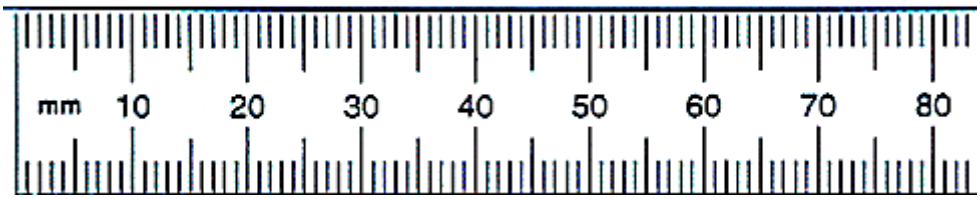
This is divided into tenths of an inch. Because many manufactures now use decimals rather than fractions (4.25" rather than 4 ¼"), the decimal-inch scale is used for many machine drawings.

The Metric Scale

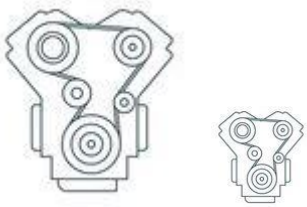
Metric scales are divided into millimeters. The usual proportional scales are listed as ratios in the table below. The number shown indicate the difference in size between the drawing and the actual part. For example, the ratio 10:1 shown on a drawing means that the drawing is 10 times the actual size of the part. A ratio of 1:5 on the drawing means the object is 5 times as large as it is shown on the drawing.

Enlarged	Same Size	Reduced
100:1	1:1	1:2
50:1		1:5
20:1		1:10
10:1		1:20
5:1		1:50
2:1		1:100

Notice the scales are generally given in multiples of 2 or 5.



(10mm= 1 cm, 100cm= 1m, 1000m = 1km)



Scale: 1:1

Scale: 1:2

Scale: 1:1

Scale 2:1