

Chapter 2 ARCHITECTURAL SCALES

INTRODUCTION

Design requirements are demanding, especially with the need for close accuracy for all dimensions in a set of working drawings. Therefore the ability to use an architect scale accurately is imperative to insure fast and accurate construction from the working drawings. Because of the large reduction of drawing size caused by the scaling down of architectural working drawings, close accuracy is even more critical. The degree to which a drawing must be scaled down will depend upon the size of the drawing format and the actual size of the structure being drawn.

The architect's scale is usually open divided as shown in figure 2-1. Each foot is marked without the inch divisions. The foot unit opposite the zero is divided into twelve parts (12"). When reading a measurement, first find the number of feet. Then add on the number of inches on the opposite side of the zero mark. Because each architecture scale will vary in size, so will the size of the inch divisions. Because all the foot divisions are 12" it is a simple matter to figure the distance of one inch. To do so, first find the center of the foot division (6"). Half of this distance is 3". It is now easy to divide this distance into three parts to find the distance for 1" (fig. 2-2).

The procedure to make the measurements on the exercise worksheets are: (fig. 2-3)

1. Select the correct scale.
2. Lay the scale parallel to the horizontal line.
3. Locate the required number of feet.
4. Adjust the scale to add the required number of inches and place a short dark vertical line to mark the total measurement.
5. The designation of an architectural dimension must always be shown as, for example, 15'-9".

Note to instructors: Prepare a clear plastic overlay with the correct locations and dimensions for all exercises to use for fast checking.

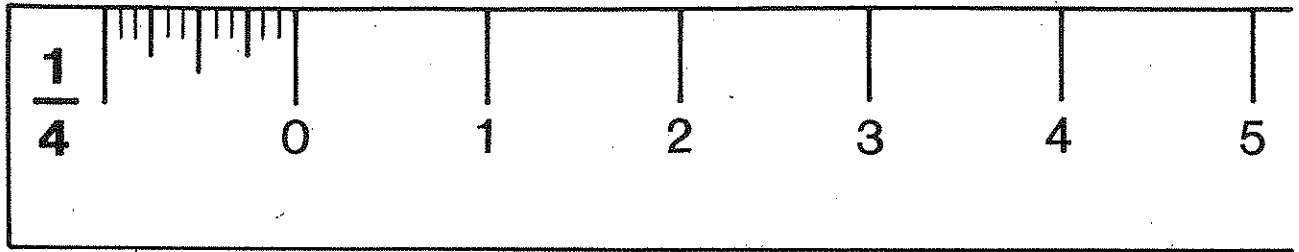


Fig. 2-1 An example of an open divided architect's scale

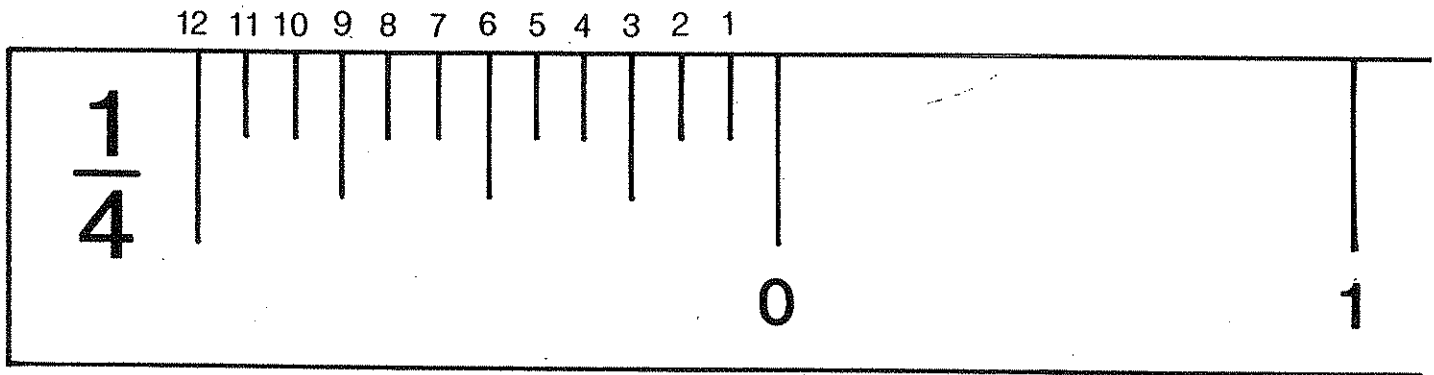


Fig. 2-2 Locating the inch divisions on an architect's scale

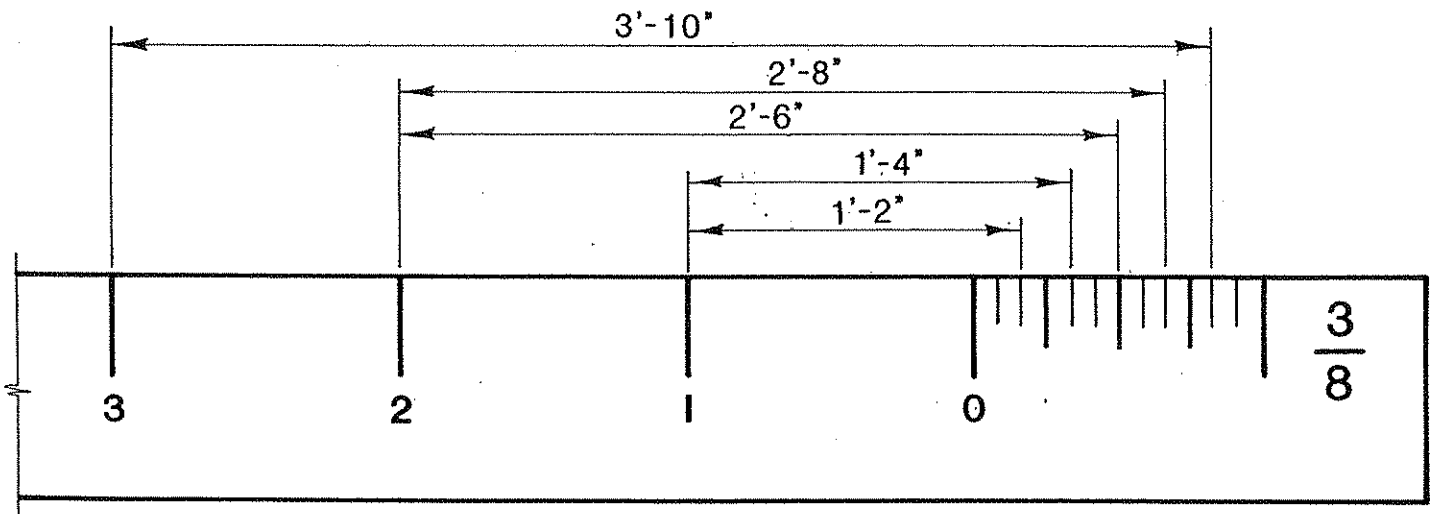
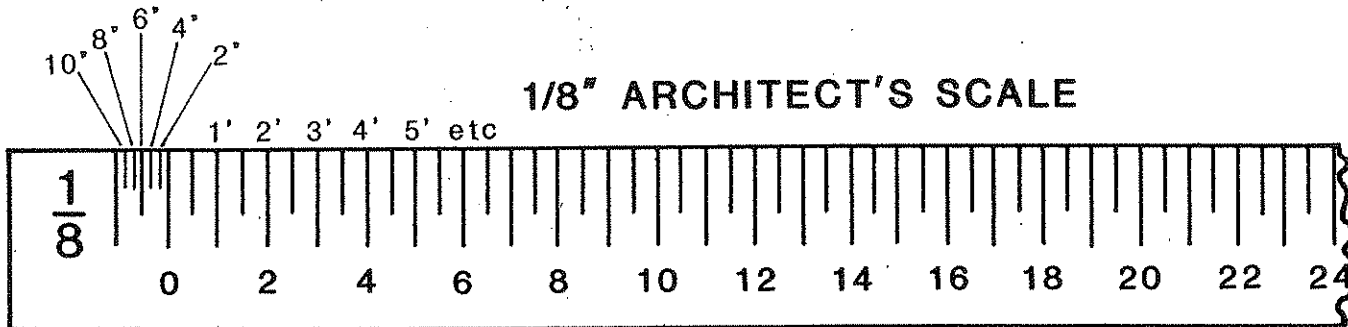
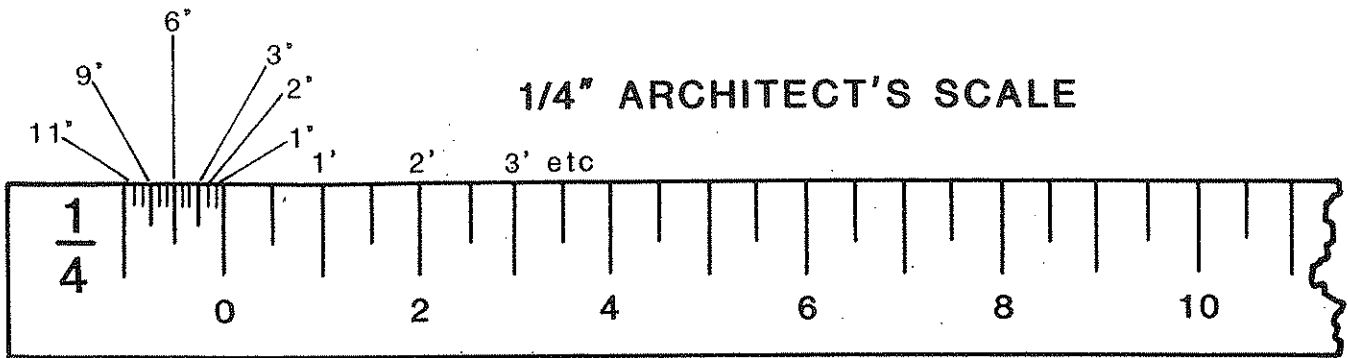


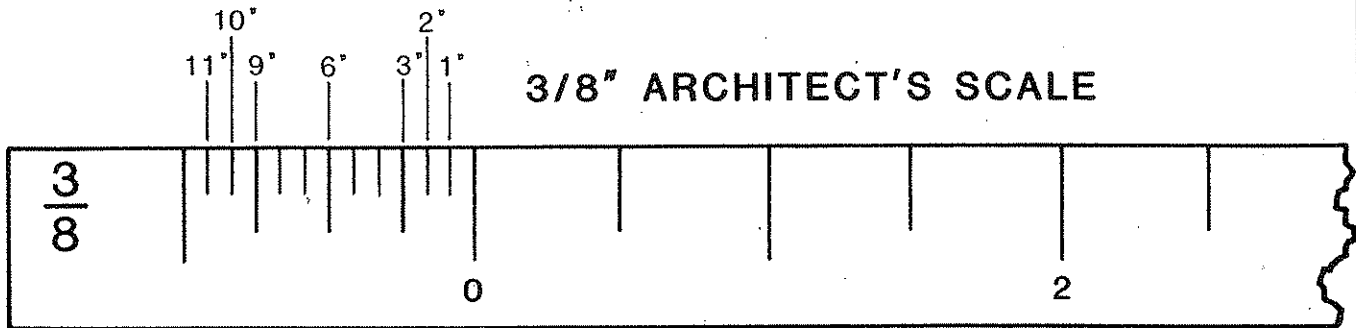
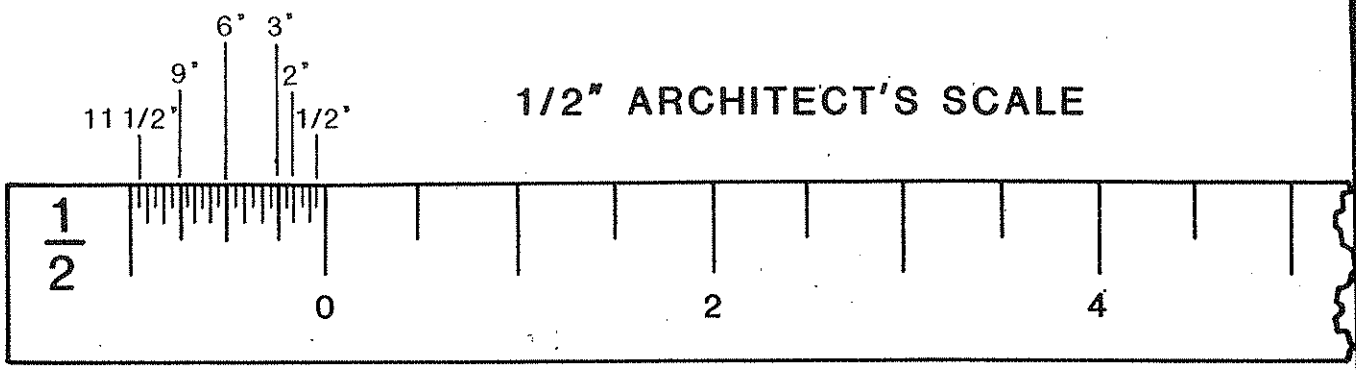
Fig. 2-3 Measurement on the architect's scale $\frac{3}{8}'' = 1'-0''$



LAYOUT EACH DISTANCE AS GIVEN WITH THE 1/4 OR 1/8 SCALE AS INDICATED

distance	scale	
11'-0"	1/4" = 1'-0"	1
15'-0"	1/4" = 1'-0"	2
10'-6"	1/4" = 1'-0"	3
8'-3"	1/4" = 1'-0"	4
2'-9"	1/4" = 1'-0"	5
22'-2"	1/4" = 1'-0"	6
13'-10"	1/4" = 1'-0"	7
17'-11"	1/4" = 1'-0"	8
9'-1"	1/4" = 1'-0"	9
6'-4"	1/4" = 1'-0"	10
14'-8"	1/4" = 1'-0"	11
44'-0"	1/8" = 1'-0"	12
24'-6"	1/8" = 1'-0"	13
19'-2"	1/8" = 1'-0"	14
5'-4"	1/8" = 1'-0"	15
10'-6"	1/8" = 1'-0"	16
33'-8"	1/8" = 1'-0"	17
7'-7"	1/8" = 1'-0"	18
15'-9"	1/8" = 1'-0"	19
38'-0"	1/8" = 1'-0"	20

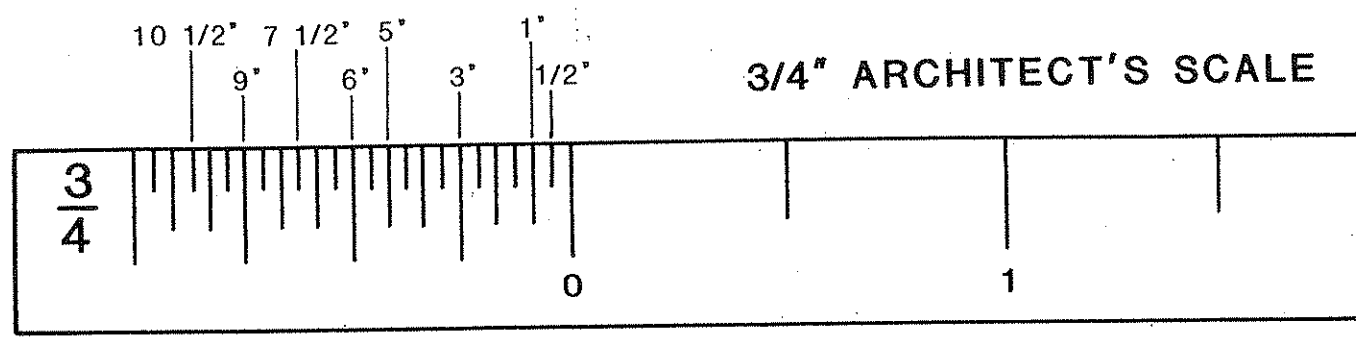
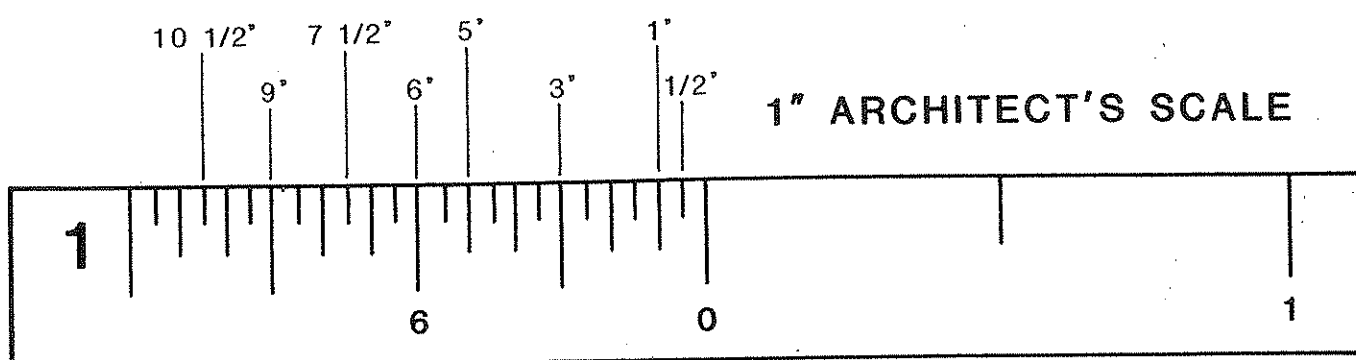
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LAYOUT EACH DISTANCE AS GIVEN WITH THE 1/2 OR 3/8 SCALE AS INDICATED

distance	scale	
6'-6"	1/2"=1'-0"	1
11'-0"	1/2"=1'-0"	2
5'-6"	1/2"=1'-0"	3
8'-3"	1/2"=1'-0"	4
1'-7 1/2"	1/2"=1'-0"	5
4'-8 1/2"	1/2"=1'-0"	6
7'-2"	1/2"=1'-0"	7
10'-9"	1/2"=1'-0"	8
9'-1 1/2"	1/2"=1'-0"	9
2'-2"	1/2"=1'-0"	10
22'-0"	3/8"=1'-0"	11
7'-0"	3/8"=1'-0"	12
21'-6"	3/8"=1'-0"	13
8'-3"	3/8"=1'-0"	14
12'-9"	3/8"=1'-0"	15
1'-1"	3/8"=1'-0"	16
15'-7"	3/8"=1'-0"	17
18'-11"	3/8"=1'-0"	18
19'-4"	3/8"=1'-0"	19
10'-2"	3/8"=1'-0"	20

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LAYOUT EACH DISTANCE AS GIVEN WITH THE 1 OR 3/4 SCALE AS INDICATED

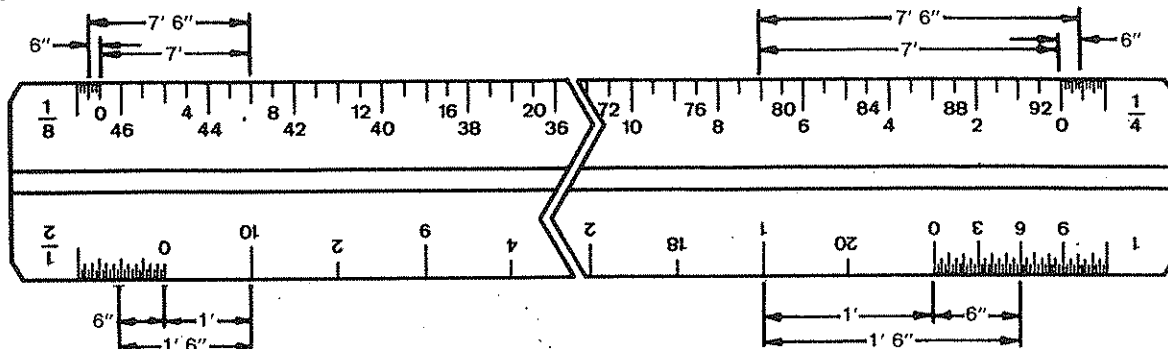
distance	scale	
5'-6"	1"=1'-0"	1
3'-0"	1"=1'-0"	2
1'-0"	1"=1'-0"	3
2'-2"	1"=1'-0"	4
4'-6"	1"=1'-0"	5
1'-3 1/2"	1"=1'-0"	6
0'-9 1/2"	1"=1'-0"	7
2'-8 1/2"	1"=1'-0"	8
3'-10"	1"=1'-0"	9
4'-11 1/2"	1"=1'-0"	10
4'-0"	3/4"=1'-0"	11
8'-0"	3/4"=1'-0"	12
11'-6"	3/4"=1'-0"	13
13'-11 3/4"	3/4"=1'-0"	14
12'-9"	3/4"=1'-0"	15
9'-9"	3/4"=1'-0"	16
3'-3 1/2"	3/4"=1'-0"	17
6'-1 1/2"	3/4"=1'-0"	18
5'-7 1/2"	3/4"=1'-0"	19
2'-2 1/2"	3/4"=1'-0"	20

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Scale $1/8" = 1'-0"$

Scale $1/4" = 1'-0"$



Scale $1/2" = 1'-0"$

ARCHITECT SCALE

Scale $1" = 1'-0"$

The triangular Architect Scale contains 11 graduated scales and is used to measure and lay out distances on a drawing, either in full size, or larger or smaller than full size.

When using the architect scale, think in terms of feet and inches. When a drawing is done to a reduced scale in which $1/4" = 1'-0"$, think of this $1/4"$ as actually being 1 foot (12") long.

When you begin using a scale, be sure you know what the smallest division is, on that scale. On the $1/4"$ scale, there are 12 units on the subdivided end as shown above. If $1/4" = 1'-0"$, each division is equal to 1" or $1/12$ of a foot. Since there are only 6 divisions on the $1/8"$ scale, if $1/8" = 1'-0"$, then each unit in the subdivided area is equal to 2".

Instructions: On the lines below, lay out the given distances from the vertical line at the left. Use the proper scale as indicated.

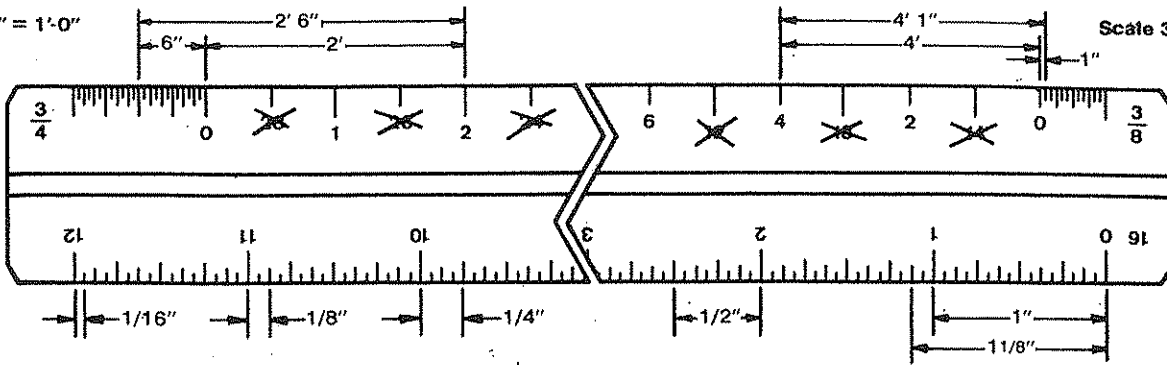
SCALE:

- 1. $1/4" = 1'-0"$ 1. $15'-6"$
- 2. $1/4" = 1'-0"$ 2. $7'-2"$
- 3. $1/4" = 1'-0"$ 3. $3'-7"$
- 4. $1/8" = 1'-0"$ 4. $30'-6"$
- 5. $1/8" = 1'-0"$ 5. $15'-4"$
- 6. $1/8" = 1'-0"$ 6. $5'-2"$
- 7. $1/2" = 1'-0"$ 7. $10'-0"$
- 8. $1/2" = 1'-0"$ 8. $9'-3"$
- 9. $1/2" = 1'-0"$ 9. $2'-11\frac{1}{2}"$
- 10. $3/8" = 1'-0"$ 10. $11'-3"$
- 11. $3/8" = 1'-0"$ 11. $7'-2"$
- 12. $3/8" = 1'-0"$ 12. $8'-10"$
- 13. $3/4" = 1'-0"$ 13. $5'-11"$
- 14. $3/4" = 1'-0"$ 14. $1'-8\frac{1}{2}"$
- 15. $1" = 1'-0"$ 15. $4'-6\frac{1}{2}"$
- 16. $1" = 1'-0"$ 16. $2'-7\frac{1}{4}"$
- 17. $1\frac{1}{2}" = 1'-0"$ 17. $1'-4\frac{1}{2}"$
- 18. $1\frac{1}{2}" = 1'-0"$ 18. $9\frac{3}{4}"$
- 19. $3" = 1'-0"$ 19. $1'-6"$
- 20. $3" = 1'-0"$ 20. $8\frac{3}{4}"$

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Scale $\frac{3}{4}'' = 1'-0''$

Scale $\frac{3}{8}'' = 1'-0''$



ARCHITECT SCALE

Distances measured with the Architect Scale are generally given in feet (') and inches ("). The symbols are always added. For example: 2'-6" (not 2 1/2').

When working with a scale such as the 3/4 shown above, measure full one foot units to the right of zero, toward the center. Inches and fractions are measured to the left of zero, toward the end of the scale.

On each face of the triangular architect scale, you will notice two sets of numbers. The double digit numbers (those crossed out above) refer to the scale at the opposite end; generally they are ignored. In this case, however, they can be used to represent 6 inches, as each falls halfway between full foot divisions.

To assure accuracy when measuring or laying out a distance with an open divided scale such as this, always be sure one end of the line measured lines up with zero, or within the subdivided area at the end of the scale you are using.

Instructions: With the standard triangular architectural scale, measure each line and record its length with the designated scale.

SCALE:

1:1	1.	_____
1:1	2.	_____
1:1	3.	_____
$\frac{1}{8}'' = 1'-0''$	4.	_____
$\frac{1}{8}'' = 1'-0''$	5.	_____
$\frac{1}{8}'' = 1'-0''$	6.	_____
$\frac{1}{4}'' = 1'-0''$	7.	_____
$\frac{1}{4}'' = 1'-0''$	8.	_____
$\frac{1}{4}'' = 1'-0''$	9.	_____
$\frac{1}{2}'' = 1'-0''$	10.	_____
$\frac{1}{2}'' = 1'-0''$	11.	_____
$\frac{1}{2}'' = 1'-0''$	12.	_____
$\frac{3}{4}'' = 1'-0''$	13.	_____
$\frac{3}{4}'' = 1'-0''$	14.	_____
$\frac{3}{4}'' = 1'-0''$	15.	_____
$\frac{3}{8}'' = 1'-0''$	16.	_____
$\frac{3}{8}'' = 1'-0''$	17.	_____
$\frac{3}{16}'' = 1'-0''$	18.	_____
$1\frac{1}{2}'' = 1'-0''$	19.	_____
$3'' = 1'-0''$	20.	_____

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