Construction Math Lab
Reading a Ruler and Tape Measure Quick Lesson

There's a well-worn saying among construction workers: measure twice, cut once! It means what it says—always double-check your measurements. Failing to do so can mean having to cut something again. And that wastes time, materials, and money.

Like every other activity on a construction site, measuring things properly requires the right tools, and knowing how to use them. In this short lesson, you will be introduced to two of the most common and useful tools for measuring things: the folding ruler and the tape measure.

To begin this lesson, watch the video called ***Reading a Ruler and Tape Measure*** (click on the link below). It will explain what these tools are, how they differ, and a little bit about how they measure things. After you have finished watching the video, you will be asked a series of questions about what you've learned. Then, you will be given a series of exercises to put what you've learned into action.

(To complete this lesson, you will need a measuring tool—a tape measure, a folding ruler, or just a plain straight-edge ruler.)

Reading a Ruler and Tape Measure

Now that you have watched the video, you may have noticed something. Measuring things involves two steps. First, there is the physical action of measuring things—unfolding the folding ruler or placing the tape measure against the object you are trying to measure. Then comes the mental action of measuring things—the math.

In this lesson, we're going to focus more on the second step—the math.

Answer the following questions about the video you just watched:

1) Different length lines on a tape measure indicate different fractions of an inch.
T) True F) False

2) The inch on the typical tape measure is divided into how many segments?
A) 4 B) 8 C) 16 D) 32

3) Fourteen inches is equal to one foot and _____ inches.

4) The longest line on a tape measure denotes inches. What length does the second longest line denote?
A) 1/8 inch B) ¼ inch C) ½ inch D) one foot

5) Another way to write 4/16 is:
A) 1/8 B) ¼ C) ½ D) ¾

6) Why is the 16- inch marked in red on the folding ruler?
A) Because 16 inches equals a foot
B) Because 16 inches equals one yard
C) Because 16 inches is the space between wall studs
D) Because 16 inches is the length of a standard 2 x 4 board

Now, let's do some basic fraction and measurement conversions (solving for X):

7) 3/2 = 1 and X/2

8) 6/16 = X/8

9) 4/16 = X/4

10) 24/16 = X/2

11) 1 foot, 11 inches = X inches

12) 1 foot = X x 1/4 inches

Next, let's take what you've learned to a construction site:

13) You are putting in an on/off switch in a factory and need a short length of wire of 10 and 6/16 inches in length. What is a simpler way to write the fraction part?

14) Your boss tells you she needs a pipe at least 28 inches long for a bathroom sink in a stadium you are building. You find one that measures 2 feet 2 inches in length. Is it long enough? If not, how much shorter or longer is it than what she needs?

15) You need a conduit, or wiring tube, 18 inches in length for the lighting fixtures in a new office building. You measure one that runs to 2 feet, 4 inches in length. How much do you have to cut off to make it fit?

16) You are laying tile in a new house's kitchen. Each tile is 2 and ½ inches wide. How many eighths of an inch is each tile in total?

17) Your supervisor gives you a board that is 5/16 inches thick and tells you to sand it down so that it is ¼ inch thick. How much do you have to sand it down?

18) You are building a deck in someone's backyard. The surface planks are ¾ inch thick. The screws to hold them in place on the joist, or underlying beam, are 1 and 3/16 inches long. How much of the screw will go through the plank and into the joist? (Hint: when trying to convert different fractions, always use the larger denominator, or number on the bottom; to convert 1/4 inch measures to 16th inch measures, you will have to multiply the denominator by 4.)

You can check your answers on the last page!

Finally, here are some exercises to try on your own:

Measure your phone. How tall is it in inches, ½ inches, ¼ inches, 1/8 inches, 1/16 inches?

Measure how wide the door to your room is: in feet and inches, plus the fraction of an inch if there is one? Then measure how tall the door is in total inches, plus the fraction of an inch if there is one?

Measure the area of a table in square inches: (remember, to find the total area, multiply the length and width together).

Answer key to questions 1 - 18:

1) T

2)C

3)two

4)C

5)B

6)C

7)½

8)3/8

9)¼

10) 3/2

11) 23 inches

12) 48

13) 3/8

14) No, it is 2 inches short

15) 10 inches

16) 20 eighths

17) 1/16 inch

18) 7/16 inch