UNIT 15

Expressing Common Fractions and Mixed Numbers as Decimals

Basic Principles of Expressing Common Fractions and Mixed Numbers as Decimals

To change a fraction to a decimal, divide the numerator by the denominator.

EXAMPLE: Change ⅜ to a decimal.

$$
\begin{array}{r}
.375 \\
8\overline{)3.000} \\
\underline{24} \\
60 \\
\underline{56} \\
40 \\
\underline{40}
\end{array}
$$

Those fractions yielding a repeating decimal should be rounded off to the desired number of places.

EXAMPLE:

$$
\begin{array}{r}
.3333 \\
3\overline{)1.0000}
\end{array}
$$

⅓

⅓ = .3333

Round off to 2 places = .33

In order to express decimals as fractions, drop the decimal point and write the given number as the numerator. Write the denominator as a power of 10 (10, 100, 1,000, etc.), using as many zeros as there are decimal places in the decimal number.

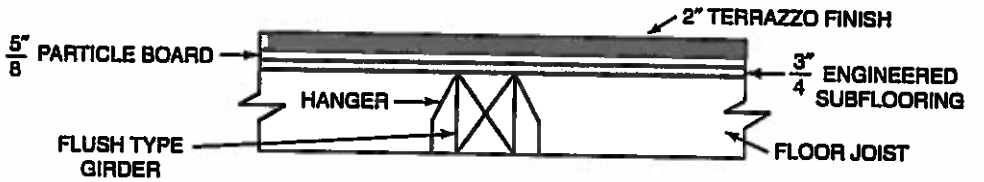
EXAMPLES: $.31 = \frac{31}{100}$ $0.25 = \frac{25}{100}$ $5.4 = 5\frac{4}{10}$ or $\frac{54}{10}$

Practical Problems

Express the common fractions as decimal fractions in problems 1 through 4, and decimal fractions as common fractions in problems 5 through 8. Refer to Table III, "Metric and Customary Decimal Equivalents for Fractional Parts of an Inch," in the Appendix.

1. 3/8 _____
2. 3/4 _____
3. 1/4 _____
4. 27/32 (round to 3 places) _____
5. 0.78125 _____
6. 0.6875 _____
7. 0.53125 _____
8. 0.546875 _____
9. Approximately 1¼ pounds of nails are needed for each 100 square feet of subflooring. Write this weight in decimal form. _____
10. The actual width of a pine board is 7¼ inches. Write the width in decimal form. _____
11. The actual thickness of a piece of OSB is 7/16 inch. What is the thickness written as a decimal fraction? _____
12. A piece of plywood is 0.625 inch thick. What is its thickness in common fraction form? _____
13. Find the approximate thickness in common fraction form of a piece of siding 0.4375 inch thick. _____
14. A floor has a concrete slab with an elevation of 113.45 feet. It is to be finished with underlayment and bamboo flooring having a total thickness of ¾ inch. What is the elevation of the finished floor?
    a. Express ¾ inch as a decimal fraction. a. _____
    b. Express the answer to part (a) as a fraction of a foot in decimal form. b. _____
    c. Find the total elevation of the finished floor in feet. c. _____

NOTE: Use this illustration for problems 15 and 16.



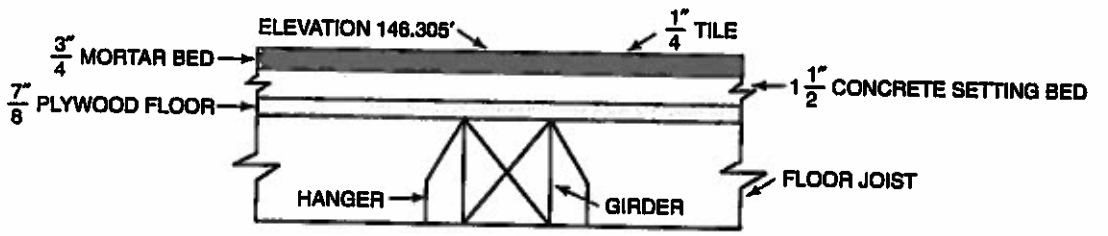
15. If the elevation to the top of the girder shown is 171.46 feet, find the elevation in feet to the top of the particle board subfloor. Proceed as follows:
    a. Express ¾ inch as a decimal. a. _____
    b. Express the result as a decimal fraction of a foot by dividing it by 12. Round to 3 decimal places. b. _____
    c. Express ⅝ inch as a decimal. c. _____
    d. Express the result as a decimal fraction of a foot by dividing it by 12. Round to 3 decimal places. d. _____
    e. Add all decimal fractions of a foot. e. _____

16. If the top of the girder is 156.92 feet in elevation, find the elevation in feet to the top of the particle board subfloor. Follow the steps used in problem 15.

NOTE: To solve problems 17–20, use a method similar to the method used in problem 16.

17. In setting form work for a sidewalk, a carpenter is asked to raise the form ¾ inch above an elevation of 141.35 feet. What is the new elevation? _____

NOTE: Use this illustration for problems 18–20.



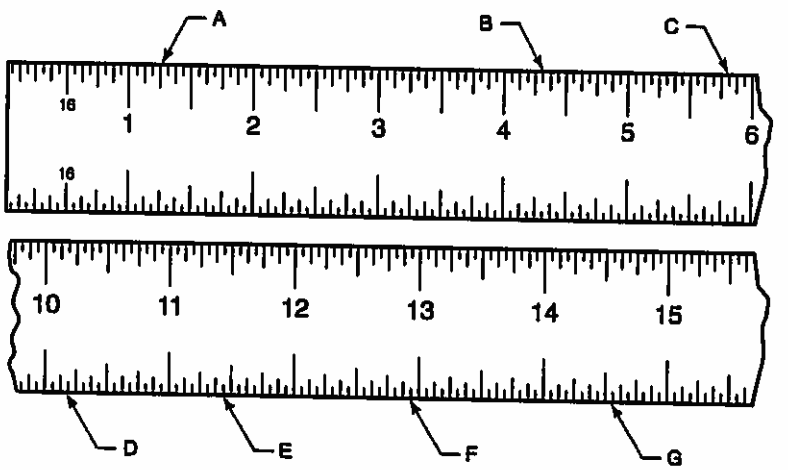
18. What is the elevation at the top of the concrete setting bed if the elevation is 146.305 feet at the top of the tile floor? _____

19. What is the elevation at the top of the ⅞-inch plywood floor in the figure? _____

20. What is the elevation at the top of the girder in the figure? _____

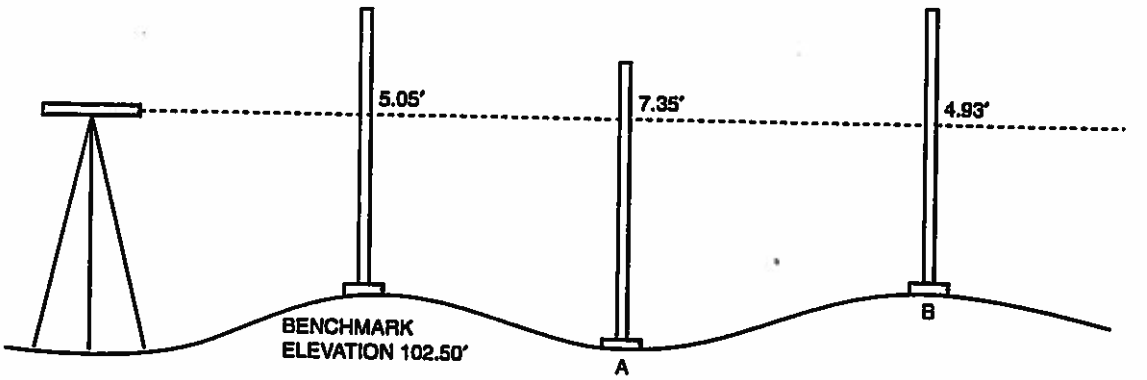
21. Express 0.625 inch as eighths of an inch.

22. The following illustrations represent segments of a tape measure. Working directly from the tape measure, at each arrow express the reading as its decimal equivalent. _____



A _____
B _____
C _____
D _____
E _____
F _____
G _____

NOTE: Builders often use an instrument called a *builder's level* to measure vertical distances. The instrument is focused on a graduated stick called a Philadelphia rod with markings divided into feet and decimal parts of a foot. The first sighting is on a measurement above a fixed reference point called a *benchmark*. The measurement above the benchmark is called the *height of instrument*.



23. What is the height of instrument? _____

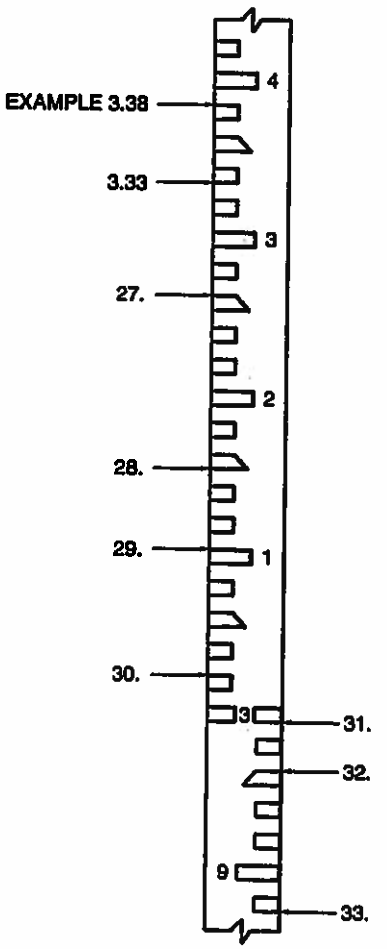
24. What is the elevation at point A? _____

25. What is the elevation at point B? _____

26. What is the difference in elevation between points A and B? _____

NOTE: The Philadelphia rod has large numbers to indicate whole feet, smaller numbers to indicate tenths of a foot, and unnumbered graduations to indicate hundredths of a foot. The markings and spaces are equal in size, so that readings are taken from the top or bottom of the marking. For problems 27 through 33, write the rod readings in whole feet and decimal parts (hundredths) of a foot.

NOTE: Use this illustration for problems 27–33.



27. _____
28. _____
29. _____
30. _____
31. _____
32. _____
33. _____