

184. There is a round log, all the way of a bigness ; the areas of the circular ends of it are each 3 square feet ; how many solid feet does one foot in length of this log contain ? — 2 feet in length ? — 3 feet ? — 10 feet ? A solid of this form is called a *cylinder*.

How do you find the solid content of a cylinder, when the area of one end and the length are given ?

185. What is the solid content of a round stick 20 feet long and 7 inches through, that is, the ends being 7 inches in diameter ?

Find the area of one end, as before taught, and multiply it by the length.

Ans. 5'347+ cubic feet.

If you multiply square inches by *inches in length*, what parts of a *foot* will the product be ? — if square inches by *feet in length*, what part ?

186. A Winchester bushel is 18'5 inches in diameter, and 8 inches deep ; how many cubic inches does it contain ?

Ans. 2150'4+.

It is plain, from the above, that the solid content of all bodies, which are of uniform bigness throughout, whatever may be the form of the ends, is found by *multiplying the area of one end into its height or length*.

Solids which decrease gradually from the base till they come to a point, are generally called *Pyramids*. If the base be a square, it is called a *square pyramid* ; if a triangle, a *triangular pyramid* ; if a circle, a *circular pyramid* or a *conc*. The point at the top of a pyramid is called the *vertex*, and a line, drawn from the *vertex* perpendicular to the *base*, is called the *perpendicular height* of the pyramid.

The *solid content* of any pyramid may be found by multiplying the area of the *base* by $\frac{1}{3}$ of the *perpendicular height*.

187. What is the solid content of a pyramid whose base is 4 feet square, and the perpendicular height 9 feet ?

$$4^2 \times \frac{9}{3} = 48.$$

Ans. 48 feet.

188. There is a *cone*, whose height is 27 feet, and whose base is 7 feet in diameter ; what is its content ?

Ans. 346 $\frac{1}{2}$ feet.

189. There is a cask, whose head diameter is 25 inches, bung diameter 31 inches, and whose length is 36 inches ; how many wine gallons does it contain ? — how many beer gallons ?

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