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# TEXTILE MATHEMATICS—II

## CHAPTER I

### RATIO, PROPORTION, AND VARIATION

RATIO.—In many textile calculations, and, indeed, in calculations generally, it is of importance to know the relation between two or more quantities. This relation is commonly expressed in the form of a fraction. For example, the relation between 1 yd. of cotton yarn and 1 hank (840 yd.) of cotton yarn is

$$\frac{1 \text{ yd.}}{840 \text{ yd.}} = \frac{1}{840}$$

Again, the relation between 1 hank of cotton yarn and 1 yd. of cotton yarn is

$$\frac{840 \text{ yd.}}{1 \text{ yd.}} = \frac{840}{1}$$

In each case the relative value of the numerator to the denominator is termed the ratio. The ratio between 1 yd. and 1 hank is  $\frac{1}{840}$ ; while the ratio of 1 hank to 1 yard is  $\frac{840}{1}$ , or simply 840. The first result implies that 1 yd. is the  $\frac{1}{840}$ th part of 1 hank,