

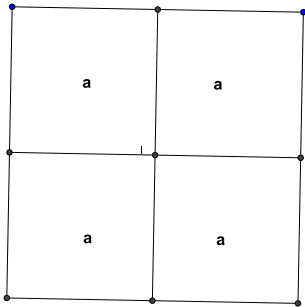
MT 453 Elements Day 18

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Scribes: Rebecca Wentzel, Kerry Fitzmaurice

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Definition V.1

A lesser magnitude a is part of a greater magnitude b if a measures b .
magnitude: length, area, volume, angle, positive integer (number)
to measure: to divide



Definition V.2

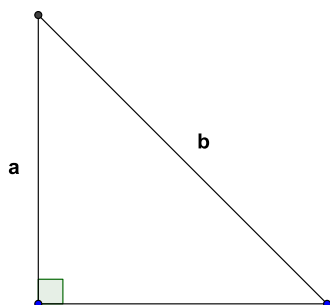
If a is a part of b (as in def. V.1), we say b is a multiple of a .

Definition V.3

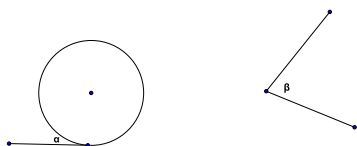
A ratio is a sort of relation between two magnitudes a, b of the same kind, denoted $a : b$ or $\frac{a}{b}$.

Definition V.4

To have a ratio, a sufficiently large multiple of a must exceed b , and vice versa (i.e. neither a nor b can be infinitely large or small).



Examples:



Definition V.5

$a : b = c : d$ if for all positive integers n, m , $na > mb$ implies $nc > md$, $na = mb$ implies $nc = md$, and $na < mb$ implies $nc < md$.

Definition V.6

When two ratios are equal, this equality is called a proportion.

Definition V.7

If there exists positive integers n, m so that $na > mb$ but $nc \leq md$, then we say $a : b > c : d$.