







Reading: Euclid's Elements

BK 5 Prop 15 Magnitudes have the same ratio to one another as their equimultiples have.

Let  and  be two magnitudes;

then,  :  :: M'  : M' .

For

$$\begin{aligned} \text{red circle} : \text{yellow square} &= \text{red circle} : \text{yellow square} \\ &= \text{red circle} : \text{yellow square} \\ &= \text{red circle} : \text{yellow square} \end{aligned}$$

$\therefore \text{red circle} : \text{yellow square} :: 4 \text{ red circles} : 4 \text{ yellow squares}$ (Book 5 Proposition 12).

And as the same reasoning is generally applicable we have:

$$\text{red circle} : \text{yellow square} :: M' \text{ red circles} : M' \text{ yellow squares}$$

\therefore Magnitudes have the same ratio, etc.