



## Euclidian Algebra and Calculation

## Medium length activity

The Ancient Greeks were skilled mathematicians who devised interesting number and algebra problems which were to be solved using only a pencil, a straight edge and a pair of compasses.

Numerical values were represented by straight lines of a given length.

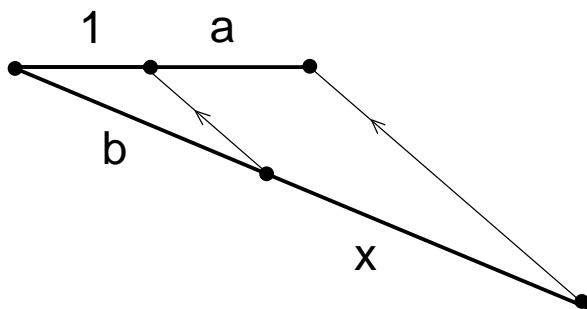
For example, if a length such as this is  said to be of length '1', then a line twice its length  would have a value of '2'.

Random lengths are used to represent unknown values e.g.

p  q 

Knowing this, can you construct a length of  $(p + q)$ ? What about  $(q - p)$ ?

Can you work out what the length of the following unknown value 'x' is in terms of a and b?



Using a similar idea and using lengths 1,  $x$ ,  $a$  and  $b$  as appropriate, sketch diagrams and then construct them so that:

$$x = a^2$$

$$x = a \div b$$

$$x = a^2 \div b$$

What other algebraic combinations is it possible to construct using this type of diagram?

Are there any which it is not possible to construct using this type of diagram?

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