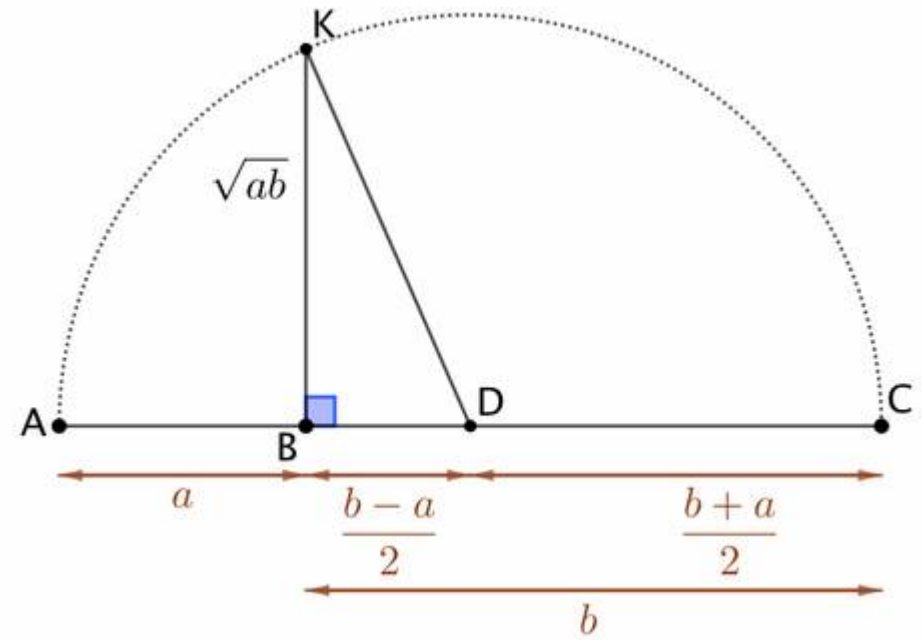
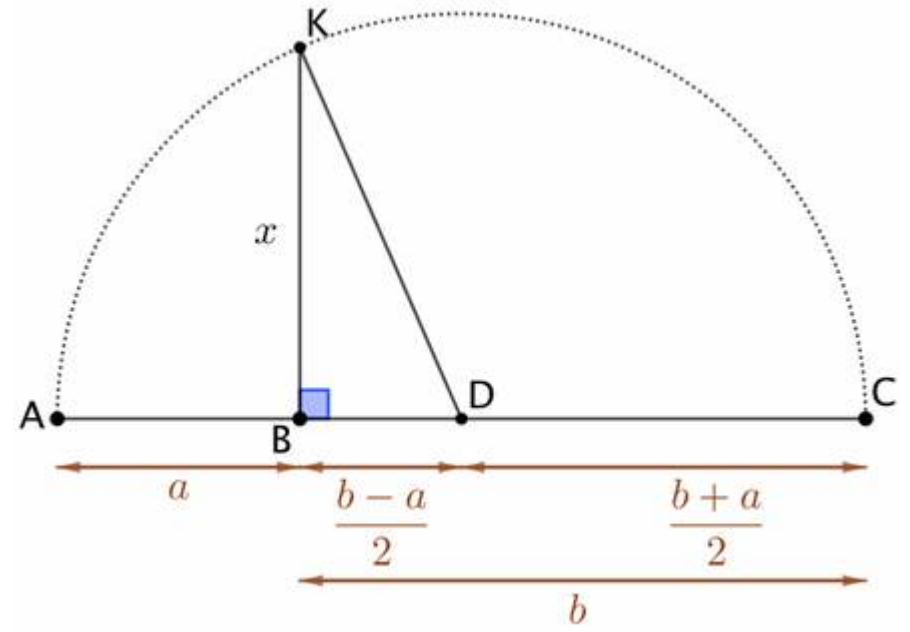
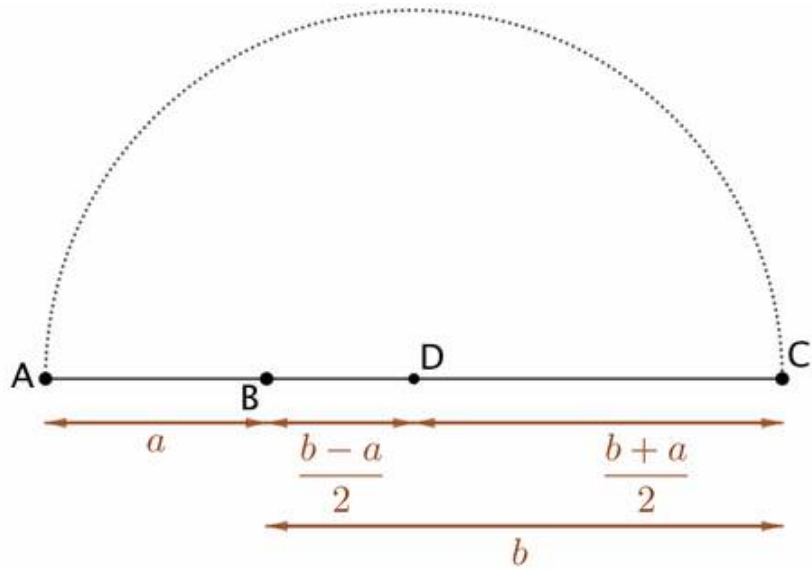
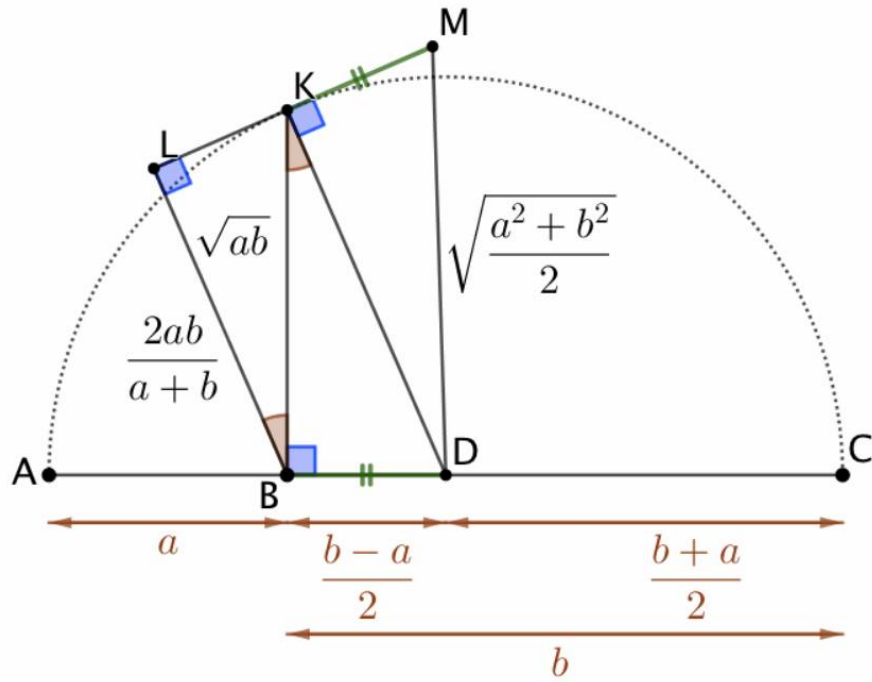
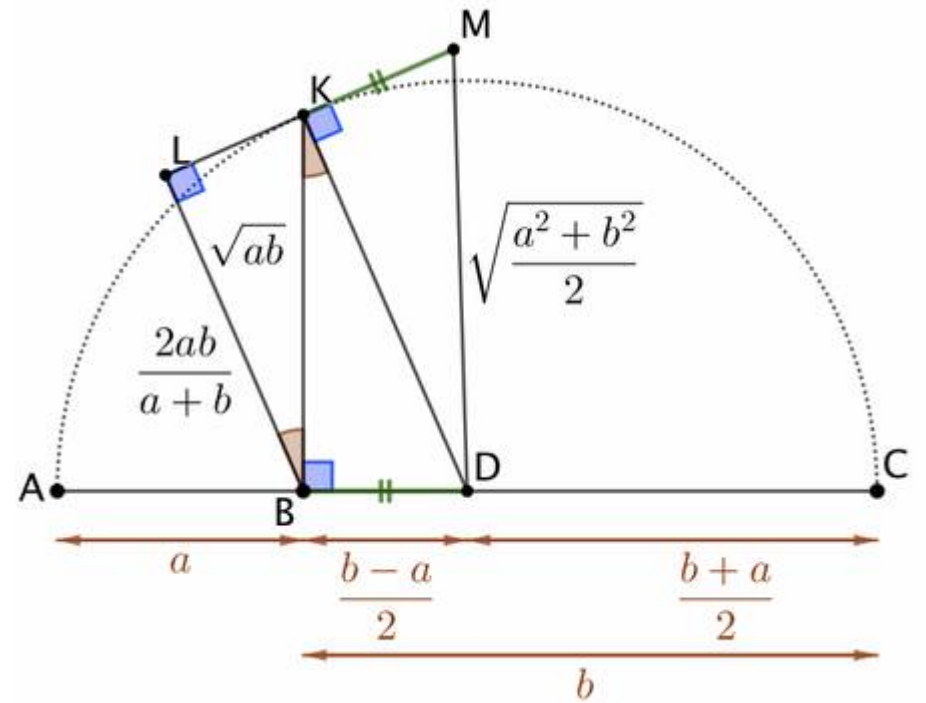
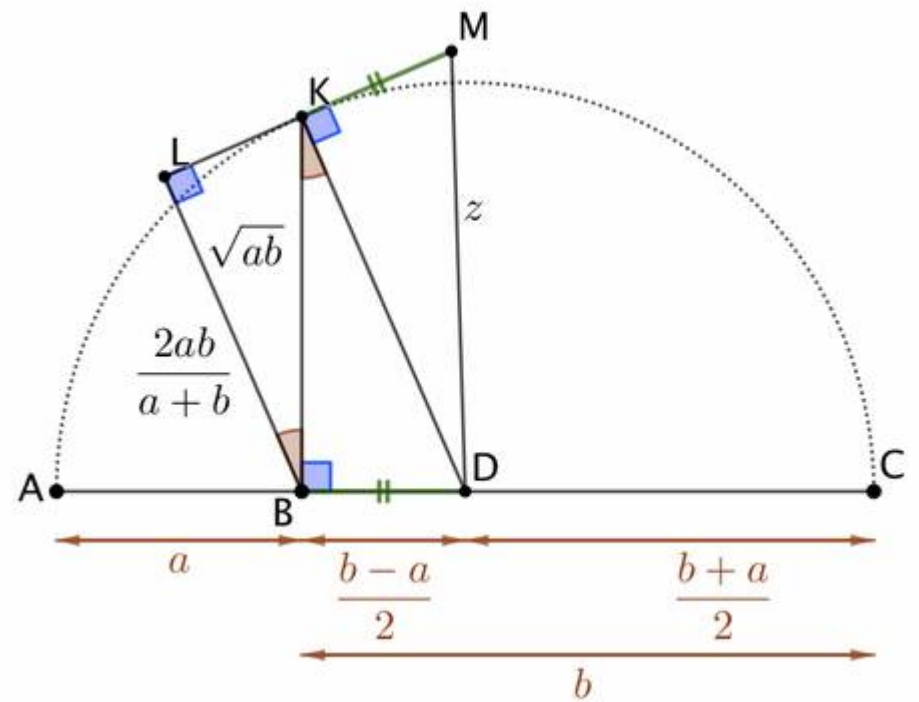
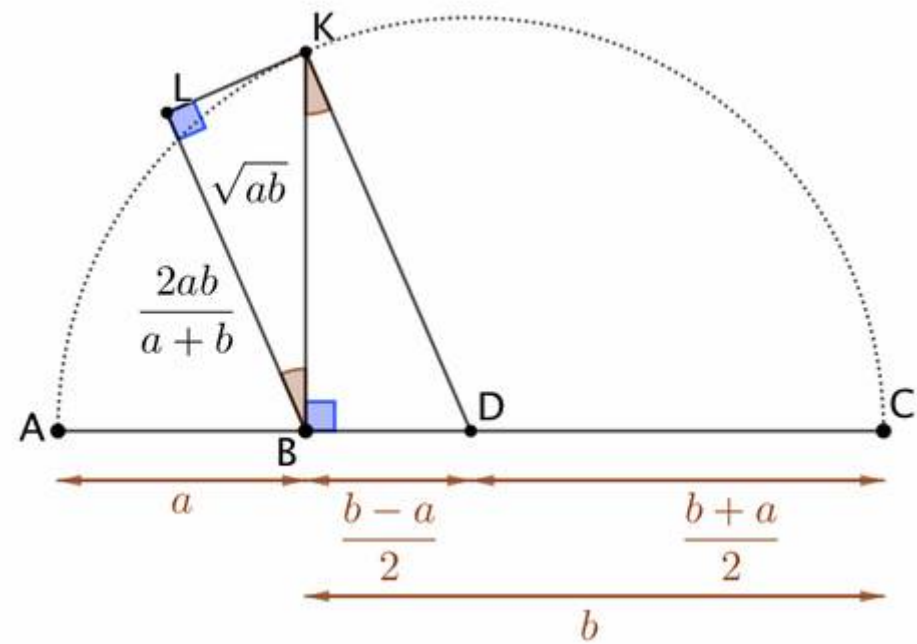
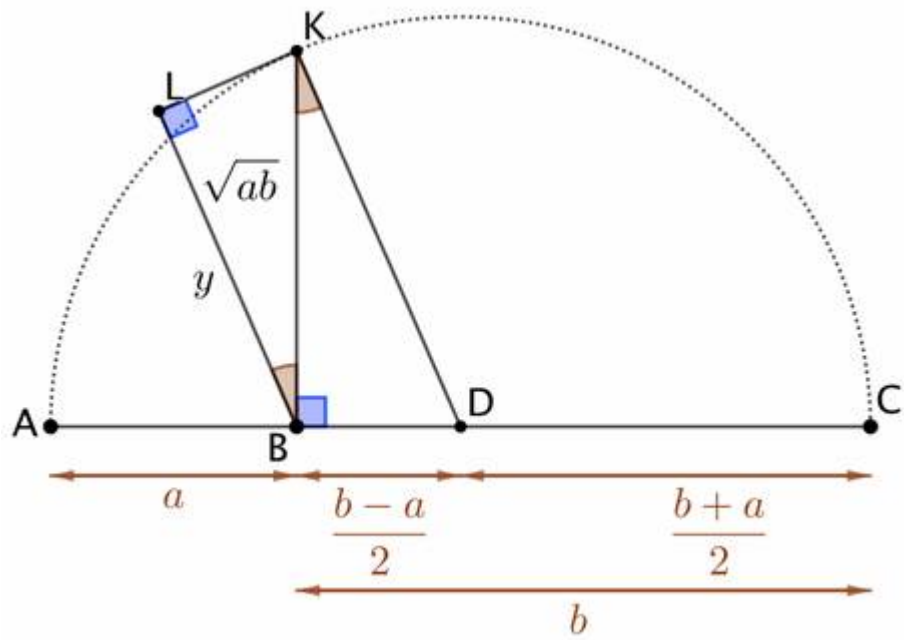


# Les 4 moyennes : arithmétique, géométrique, harmonique et quadratique





## Explications

Moyenne arithmétique :  $\frac{a+b}{2}$

$$x^2 = \left(\frac{a+b}{2}\right)^2 - \left(\frac{b-a}{2}\right)^2$$

Moyenne géométrique :  $x = \sqrt{ab}$

$(BL) \parallel (DK)$  et  $(BL) \perp (LK)$

$$\widehat{KBL} = \widehat{BKD}$$

$$\frac{y}{BK} = \frac{BK}{DK} \implies y = \frac{BK^2}{DK}$$

Moyenne harmonique :  $y = \frac{2ab}{a+b}$

$KM = BD$  et  $(KM) \perp (KD)$

$$z^2 = \left(\frac{a+b}{2}\right)^2 + \left(\frac{b-a}{2}\right)^2 = \frac{a^2 + b^2}{2}$$

Moyenne quadratique :  $z = \sqrt{\frac{a^2 + b^2}{2}}$

## Conclusion

On observe que  $DM \geq DK \geq BK \geq BL$ . Donc les moyennes classées dans l'ordre décroissant sont :

- la moyenne quadratique
- la moyenne arithmétique
- la moyenne géométrique
- la moyenne harmonique

