

# 1.6 POLYGONES

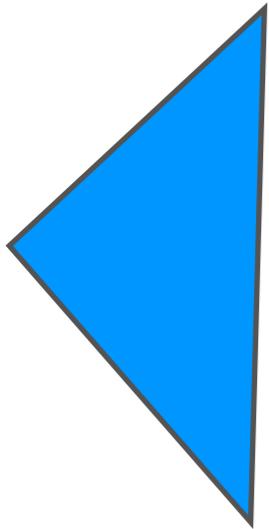
cours 6

# Polygone

Un polygone est une figure géométrique plane formée d'une suite cyclique de segments de droite.

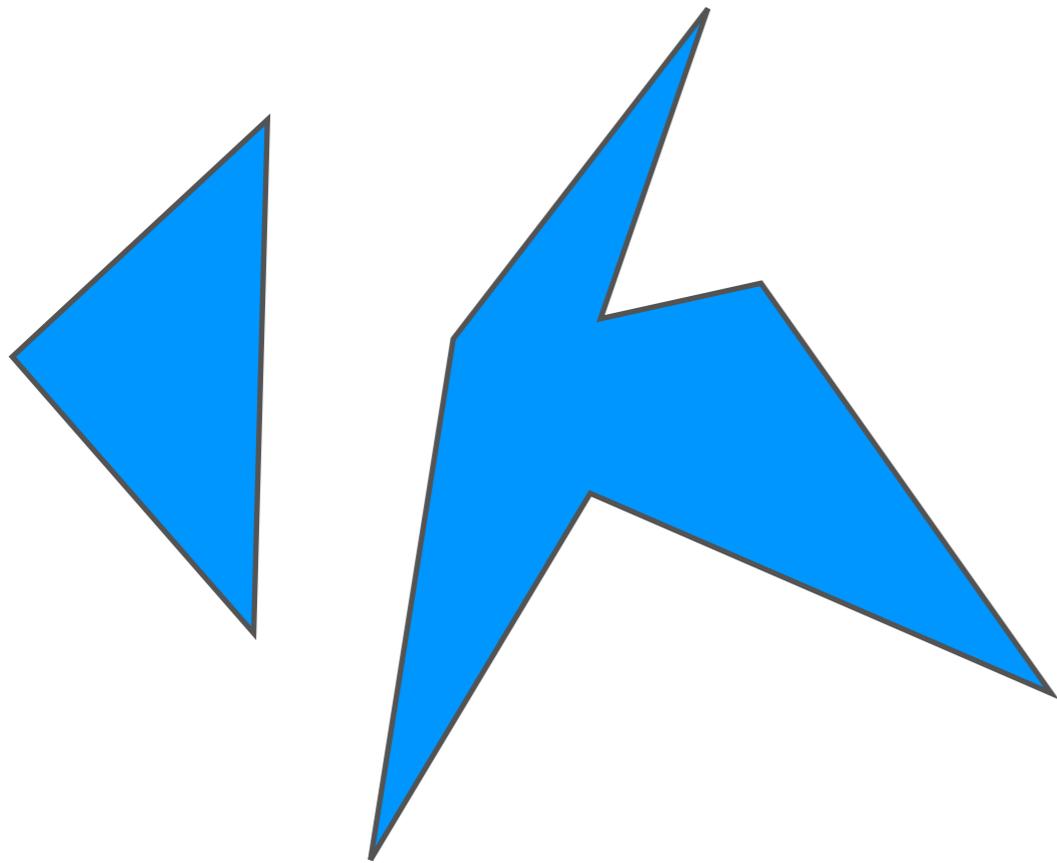
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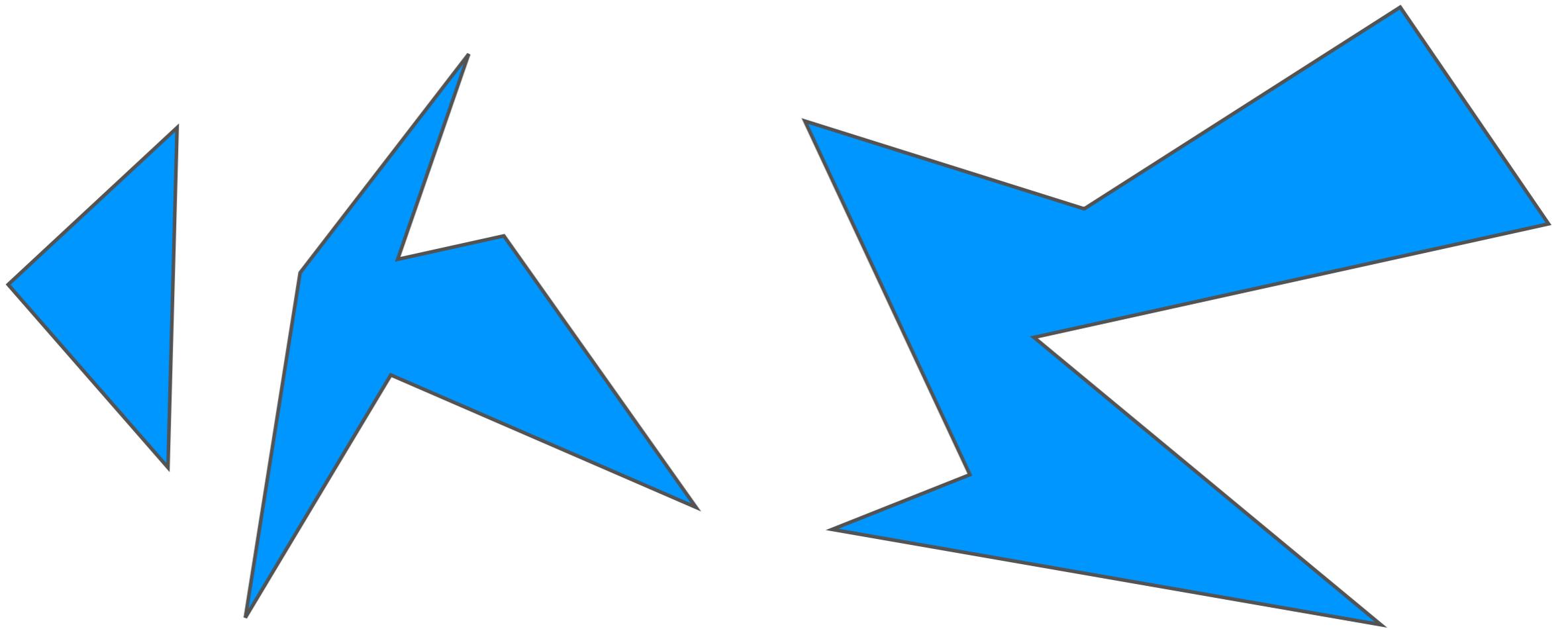
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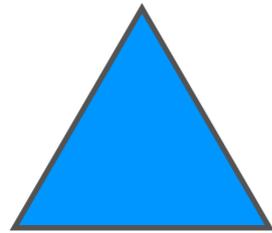


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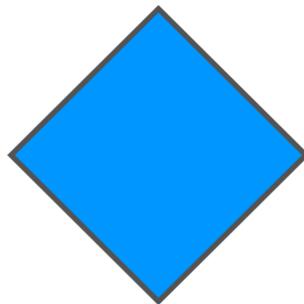
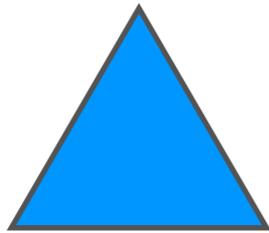
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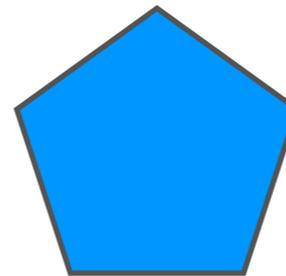
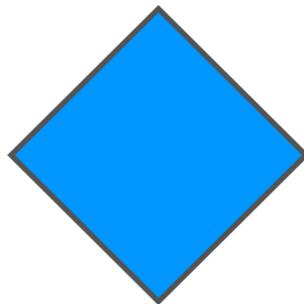
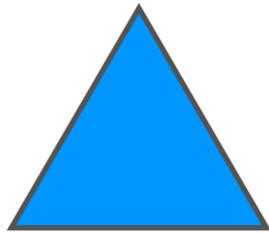
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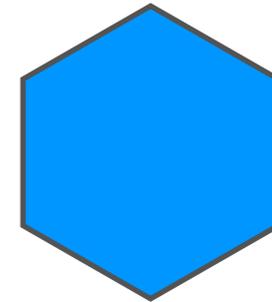
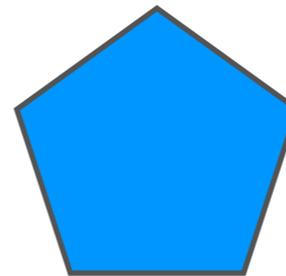
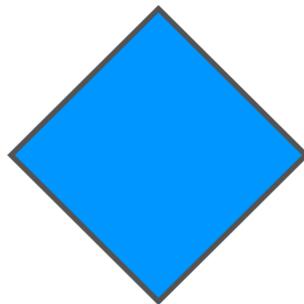
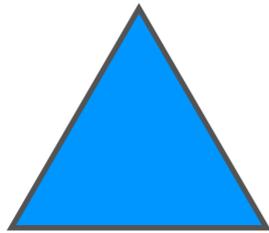
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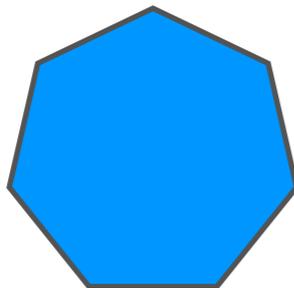
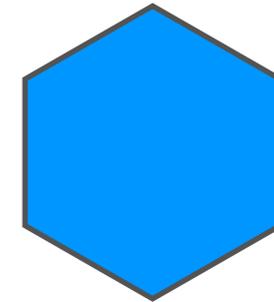
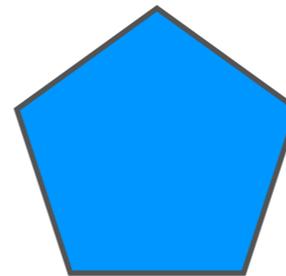
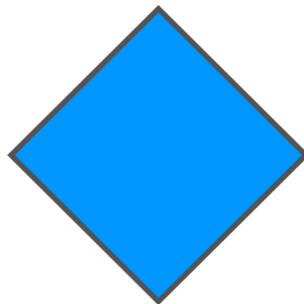
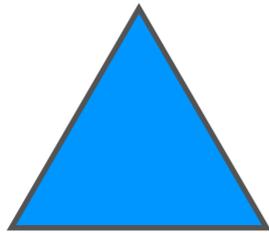
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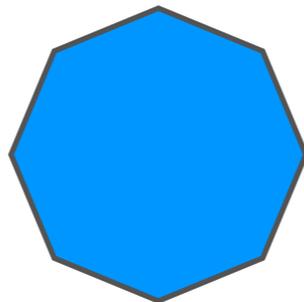
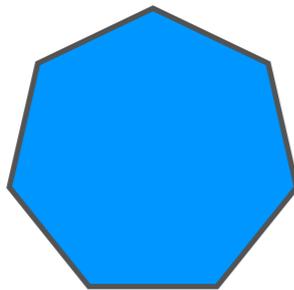
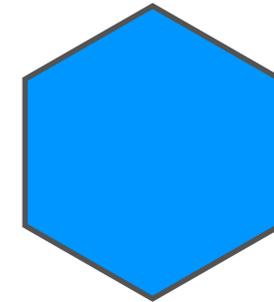
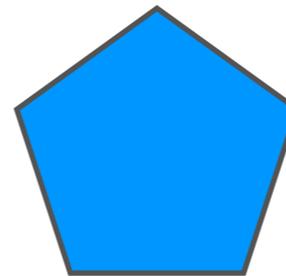
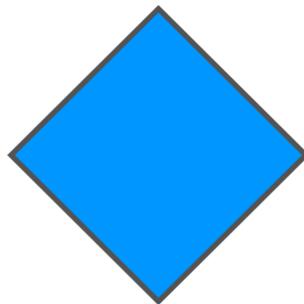
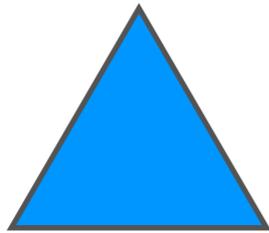
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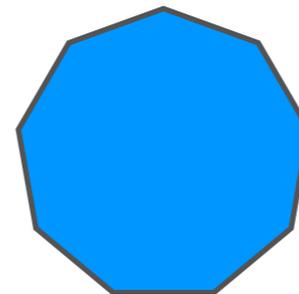
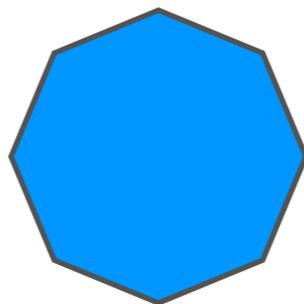
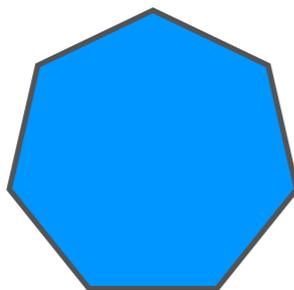
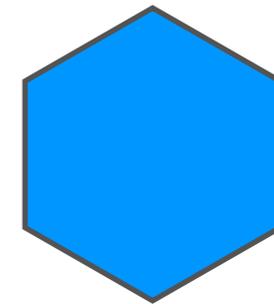
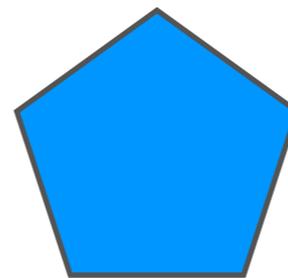
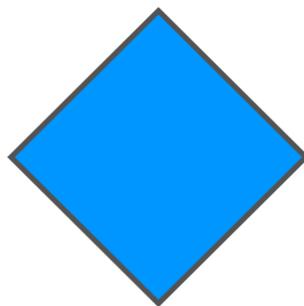
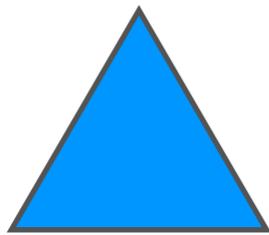
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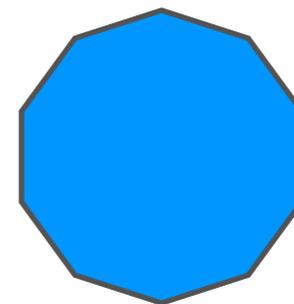
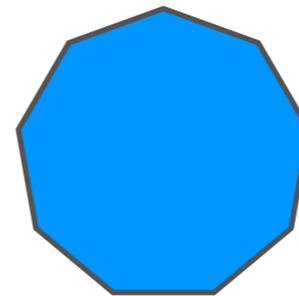
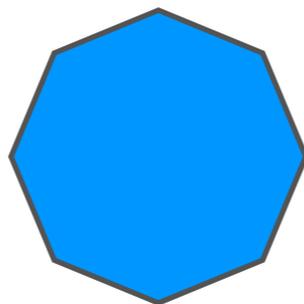
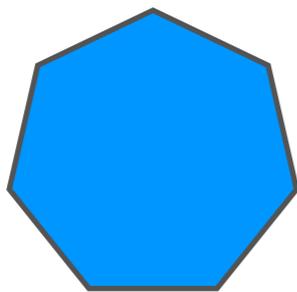
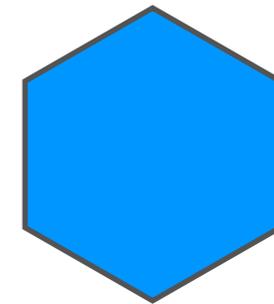
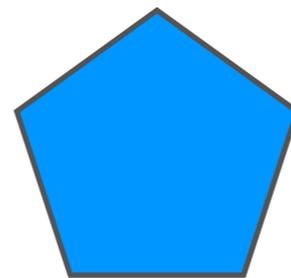
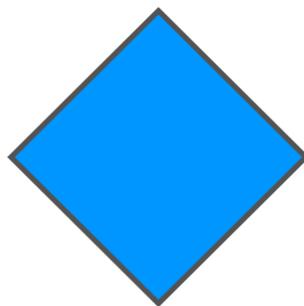
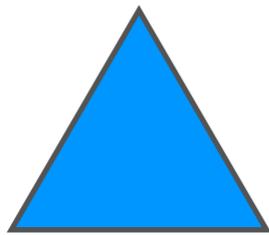
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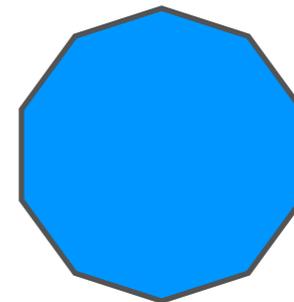
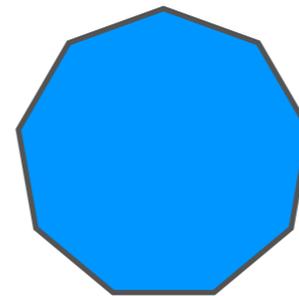
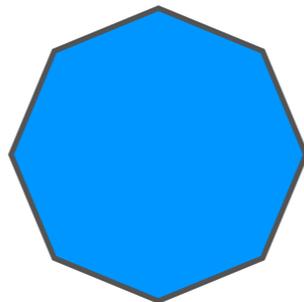
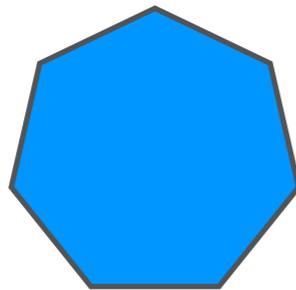
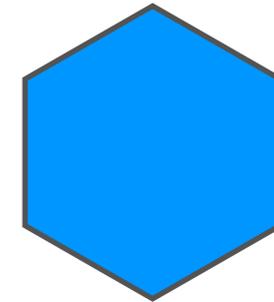
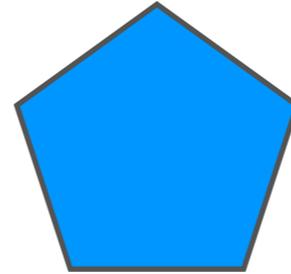
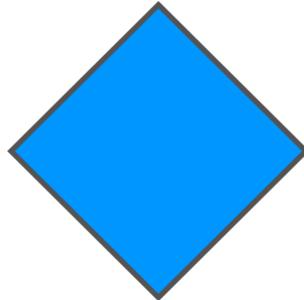
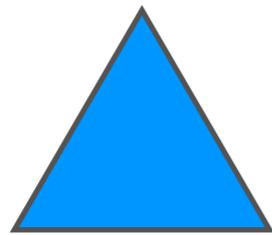
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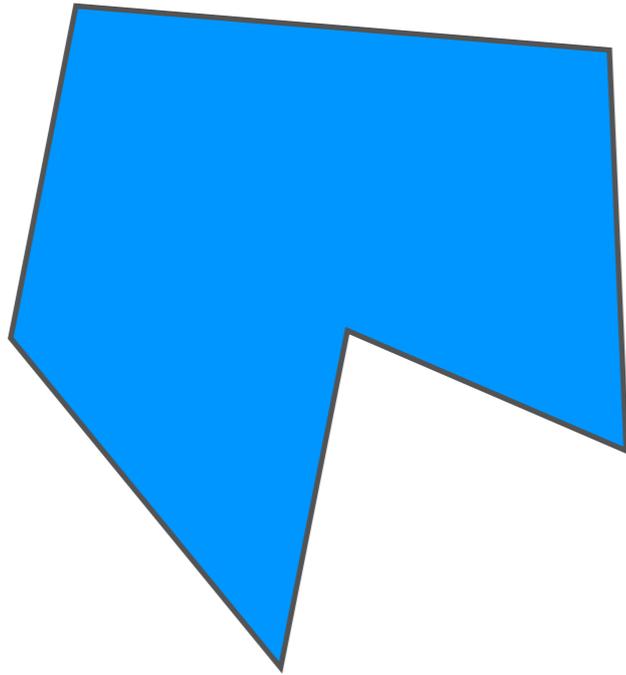
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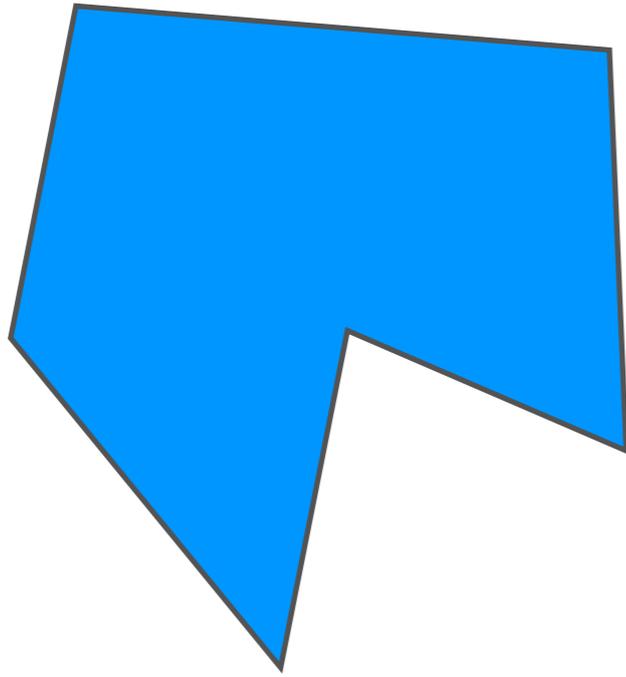
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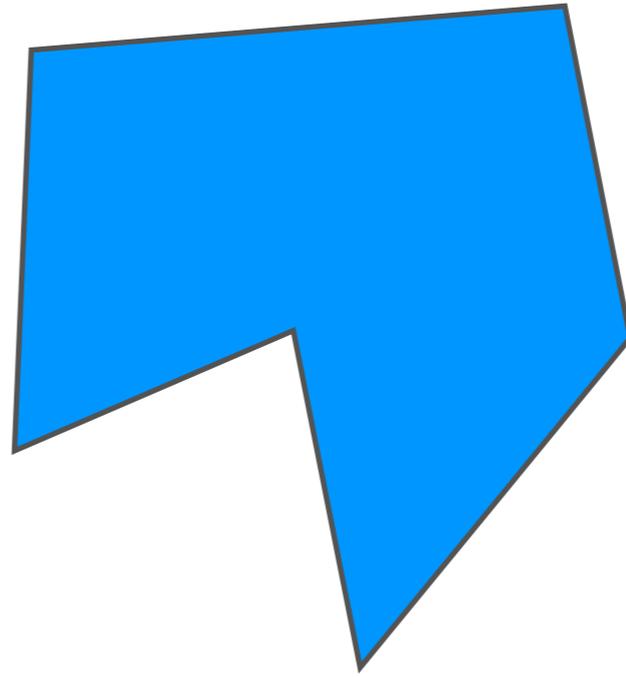
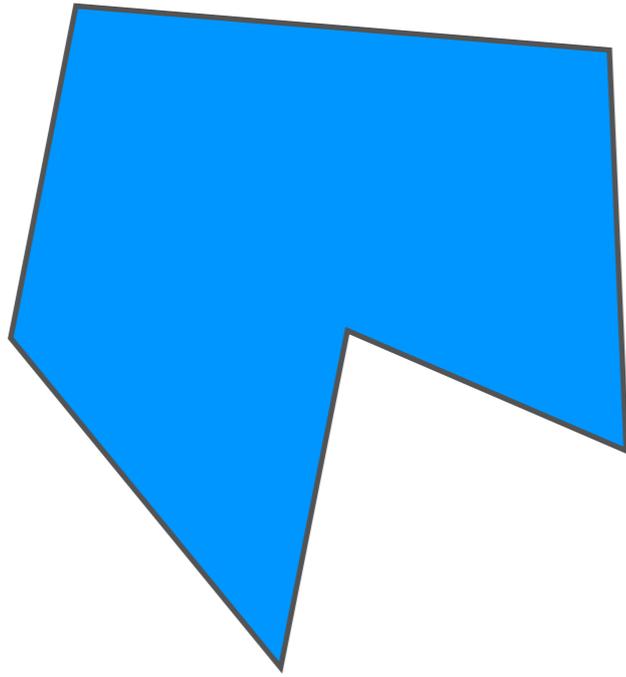
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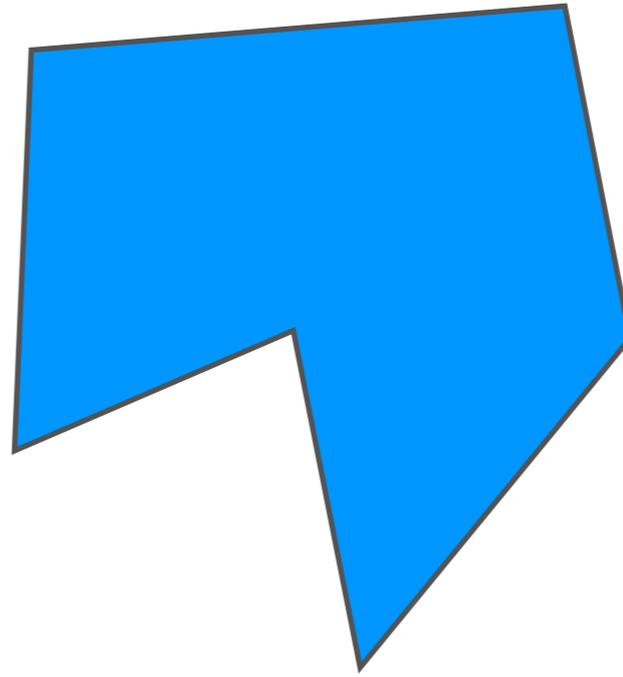
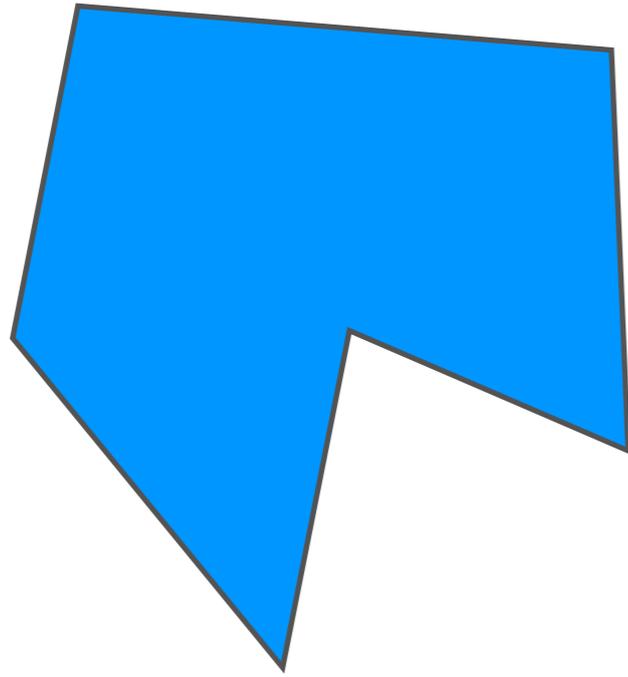
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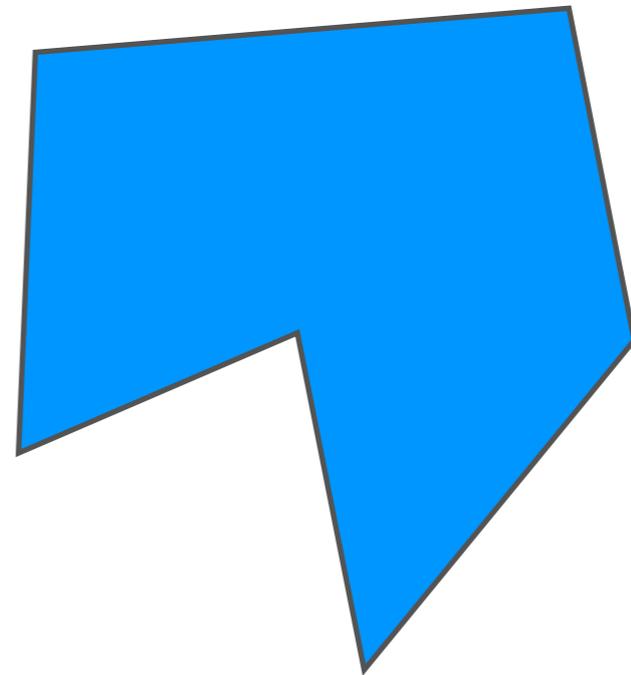
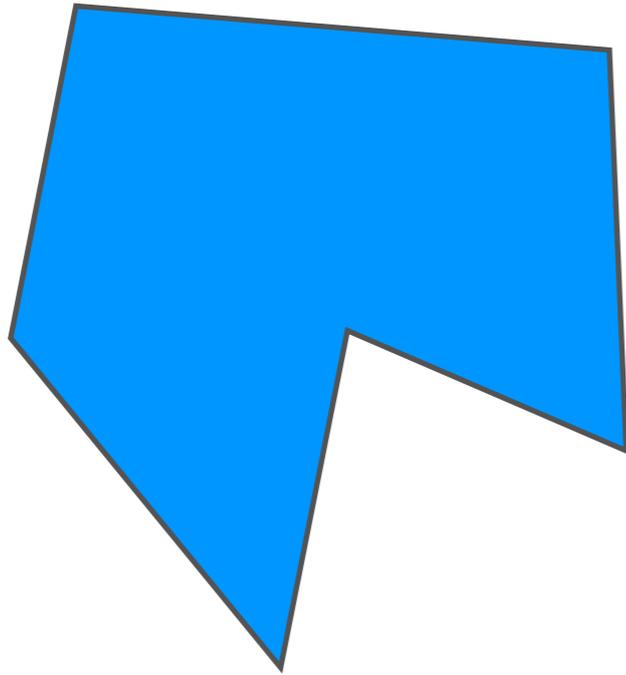
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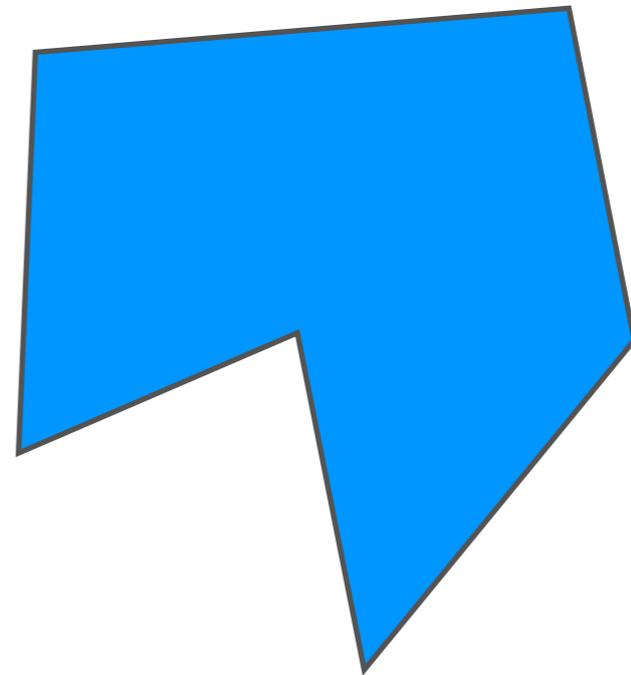
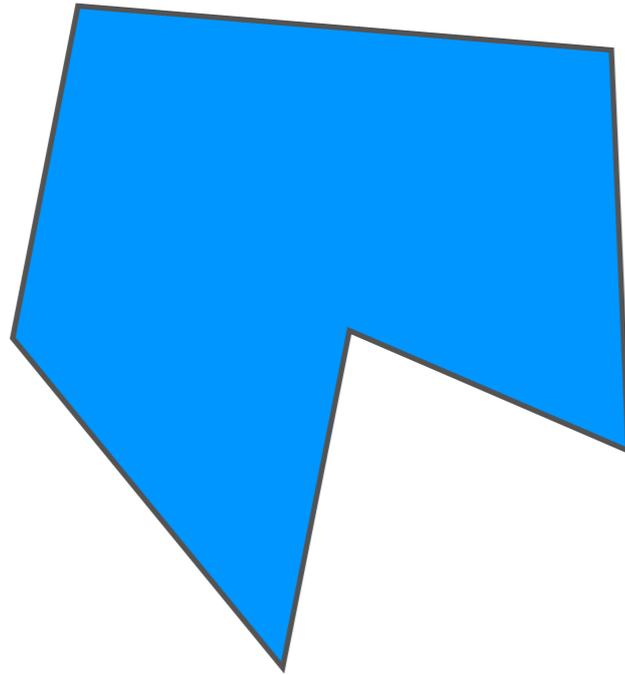
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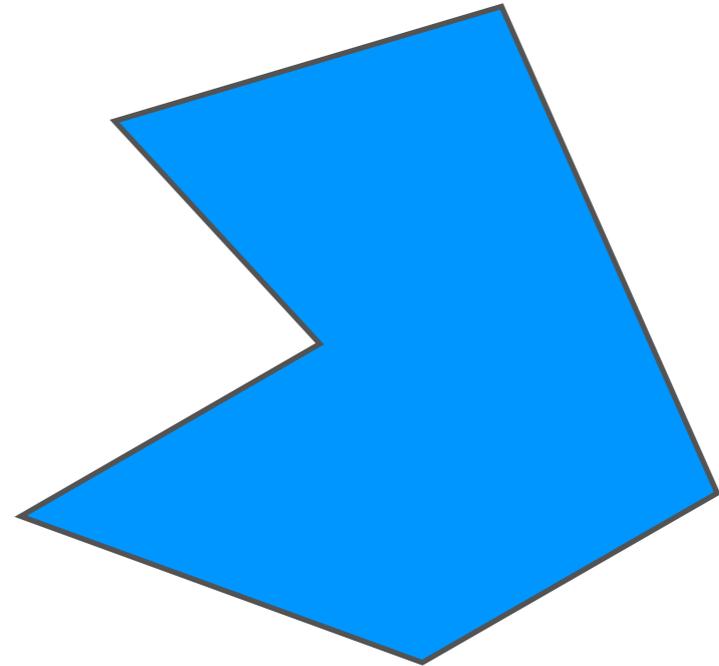
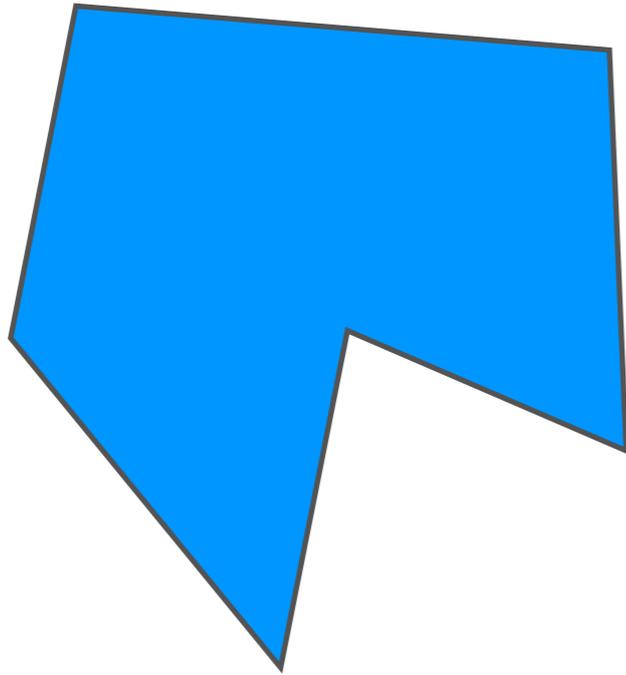
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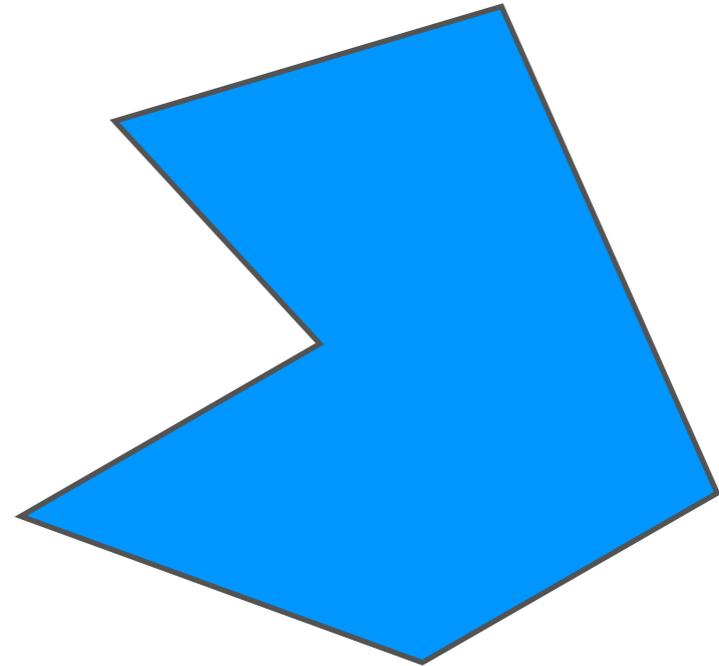
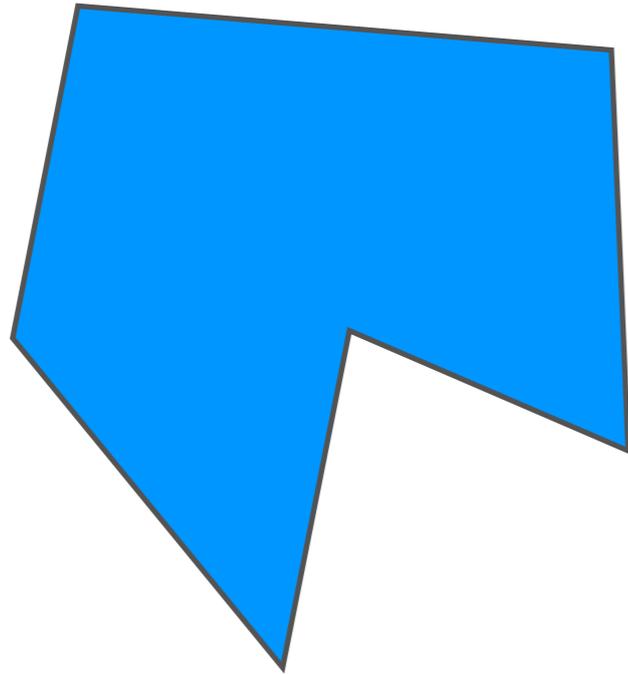
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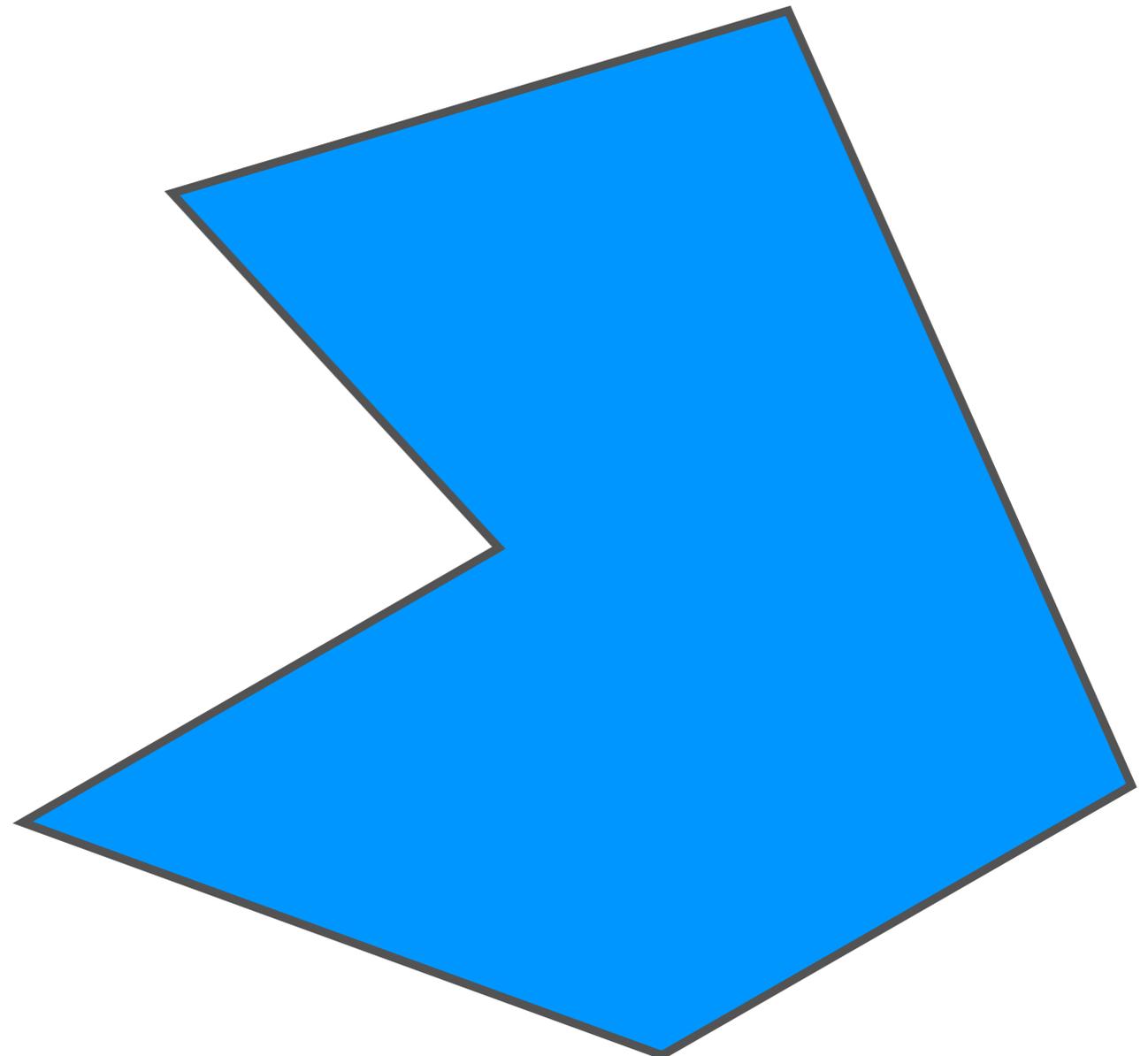
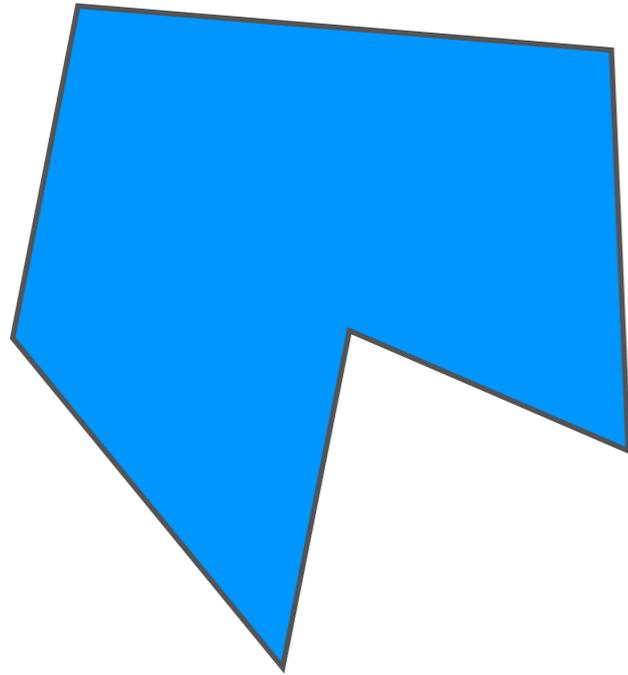
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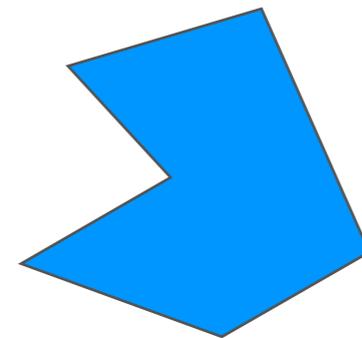
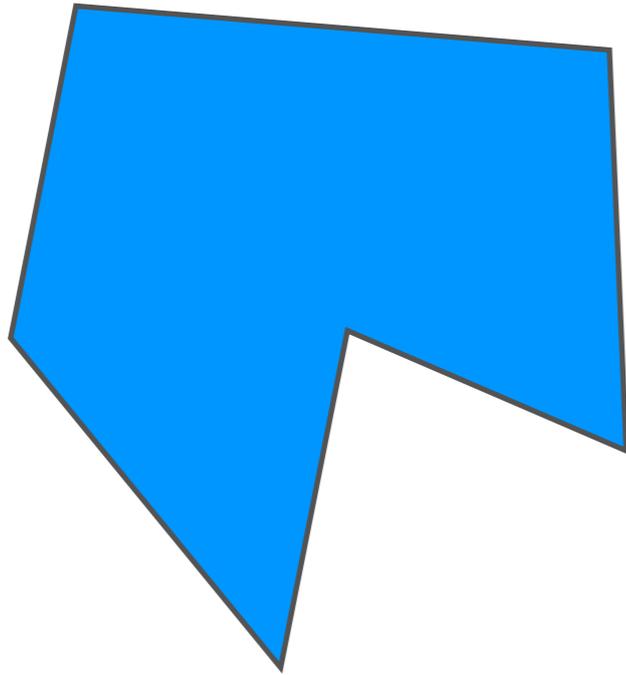
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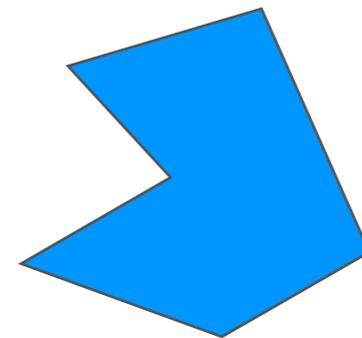
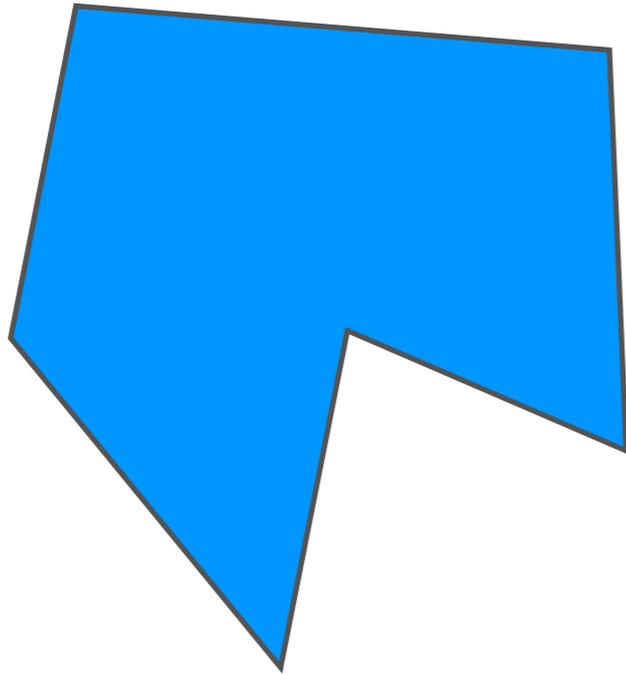
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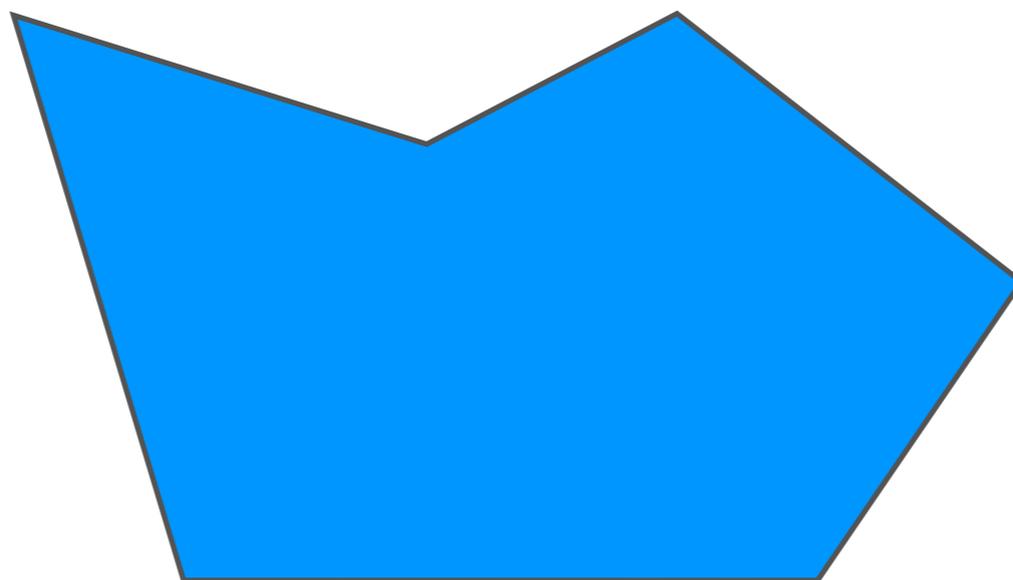
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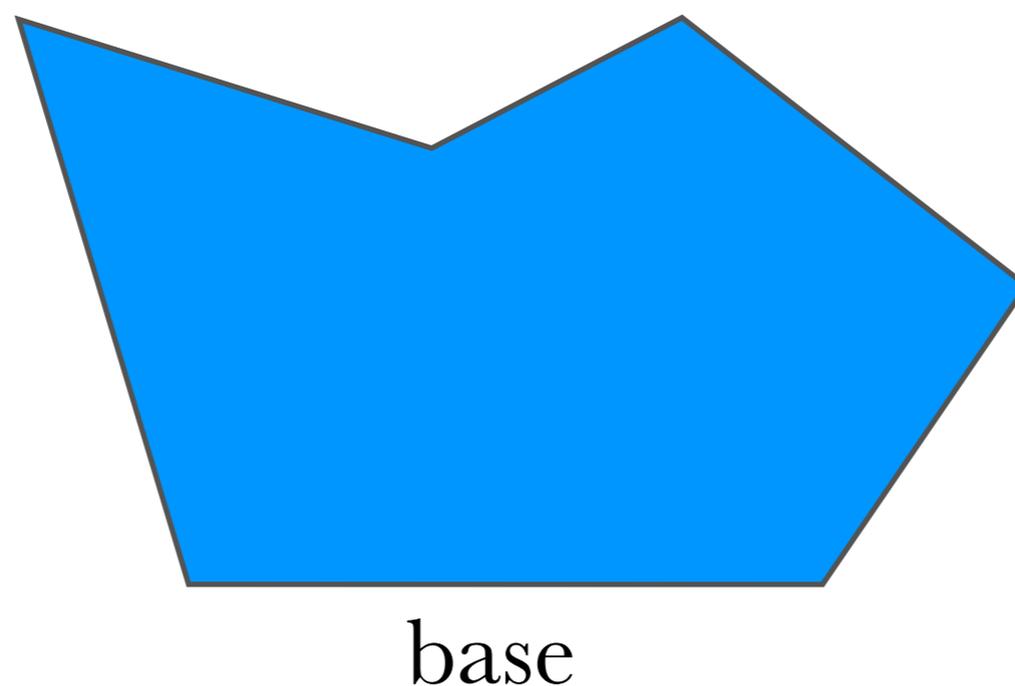
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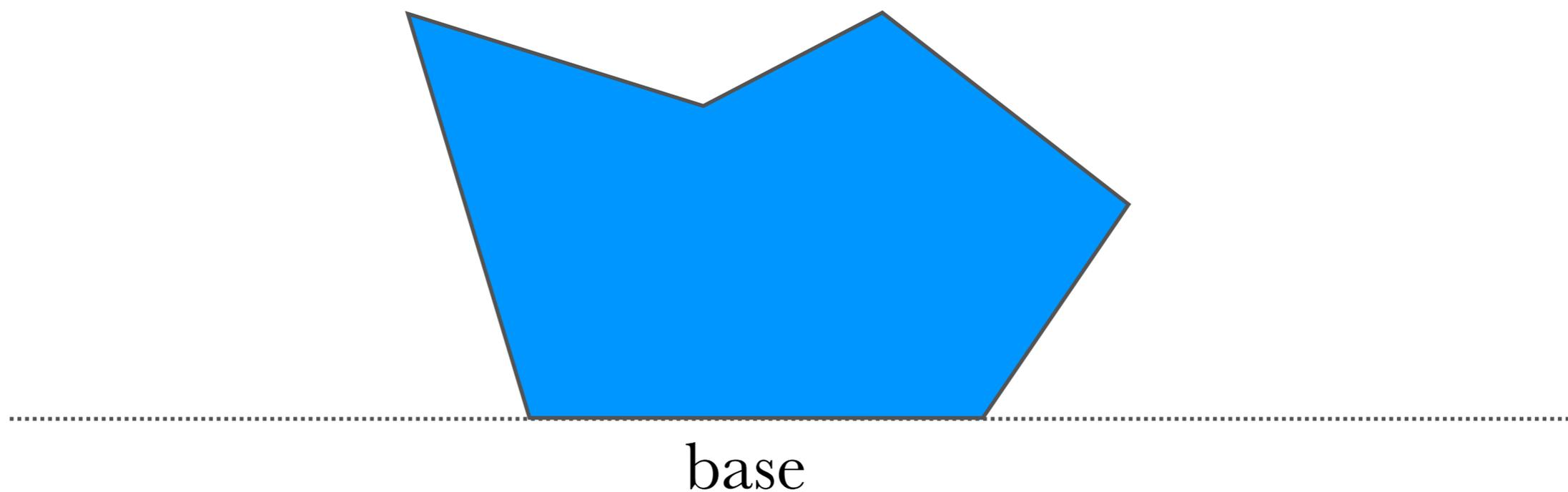
Une hauteur d'un polygone est un segment de droite perpendiculaire à une base et rejoignant un sommet



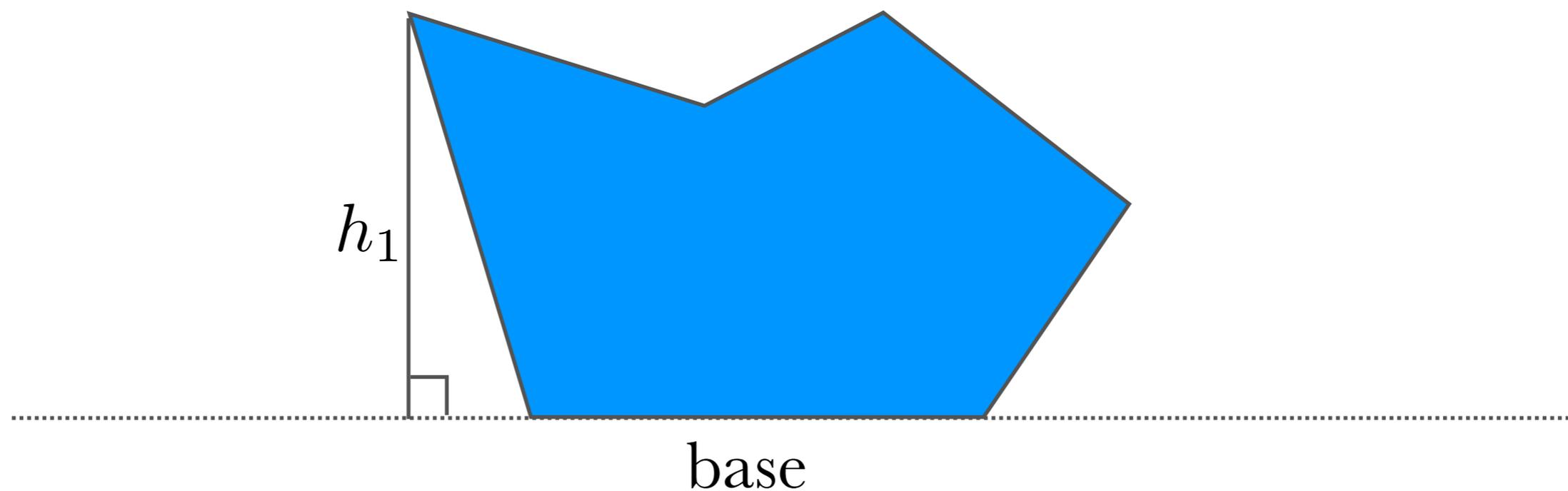
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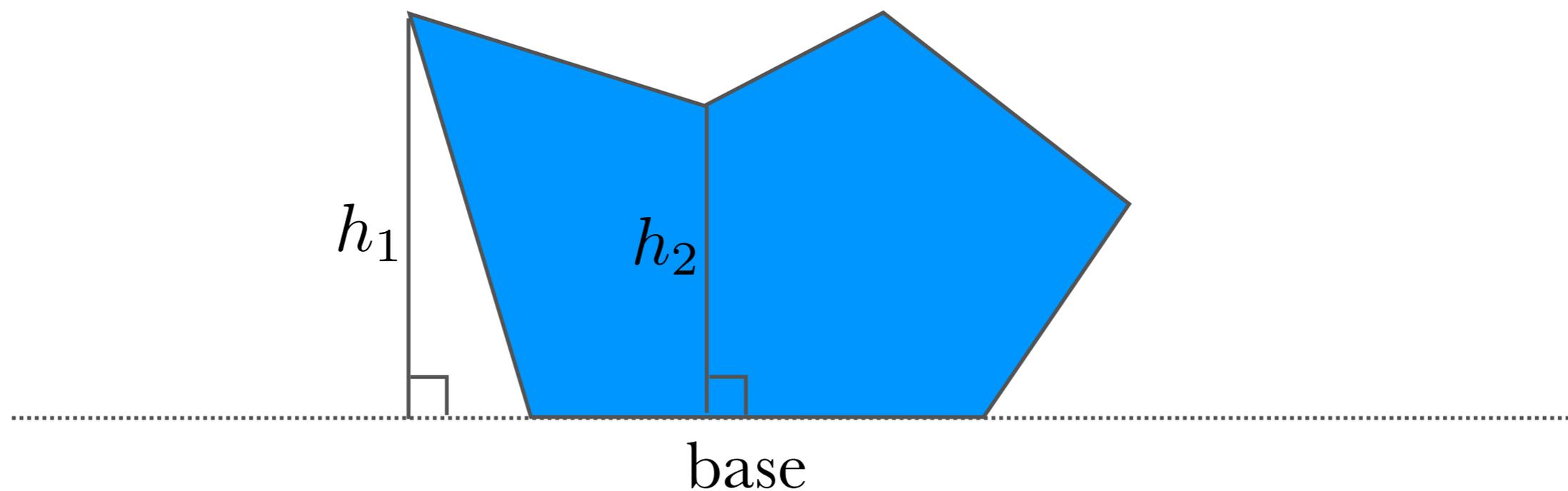
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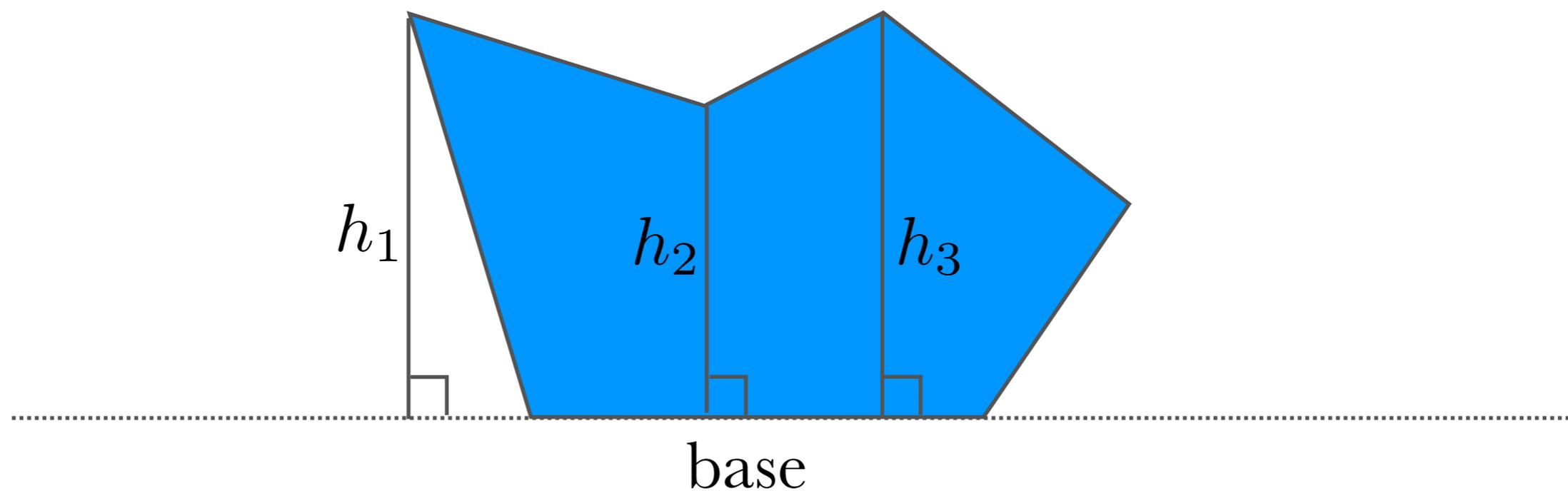
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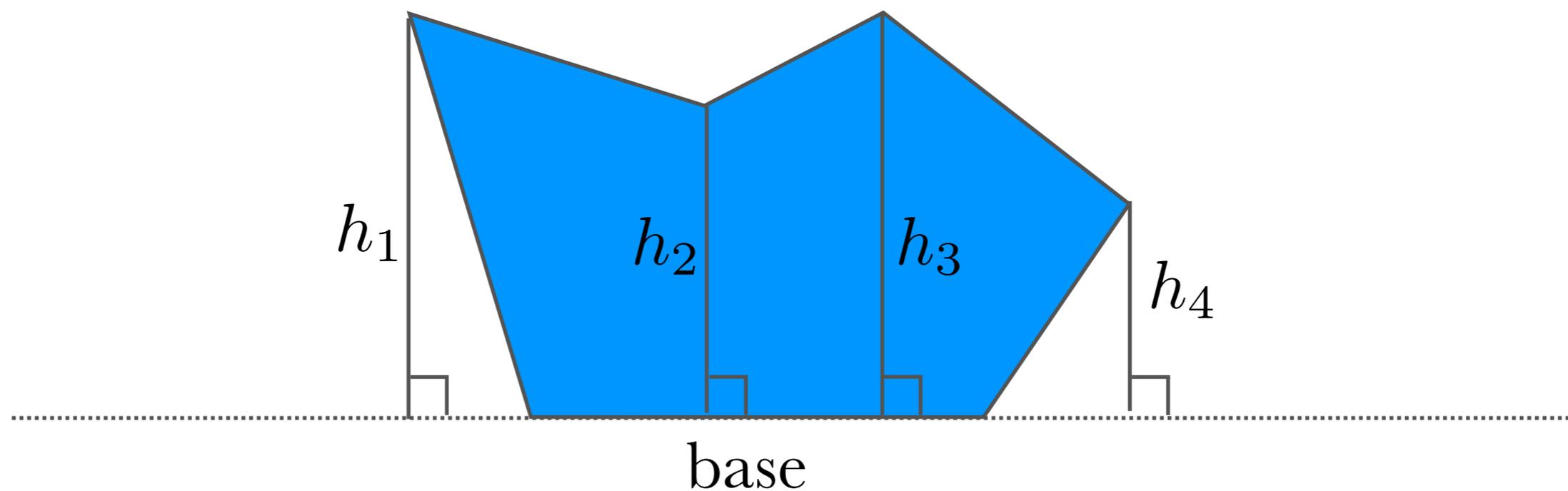
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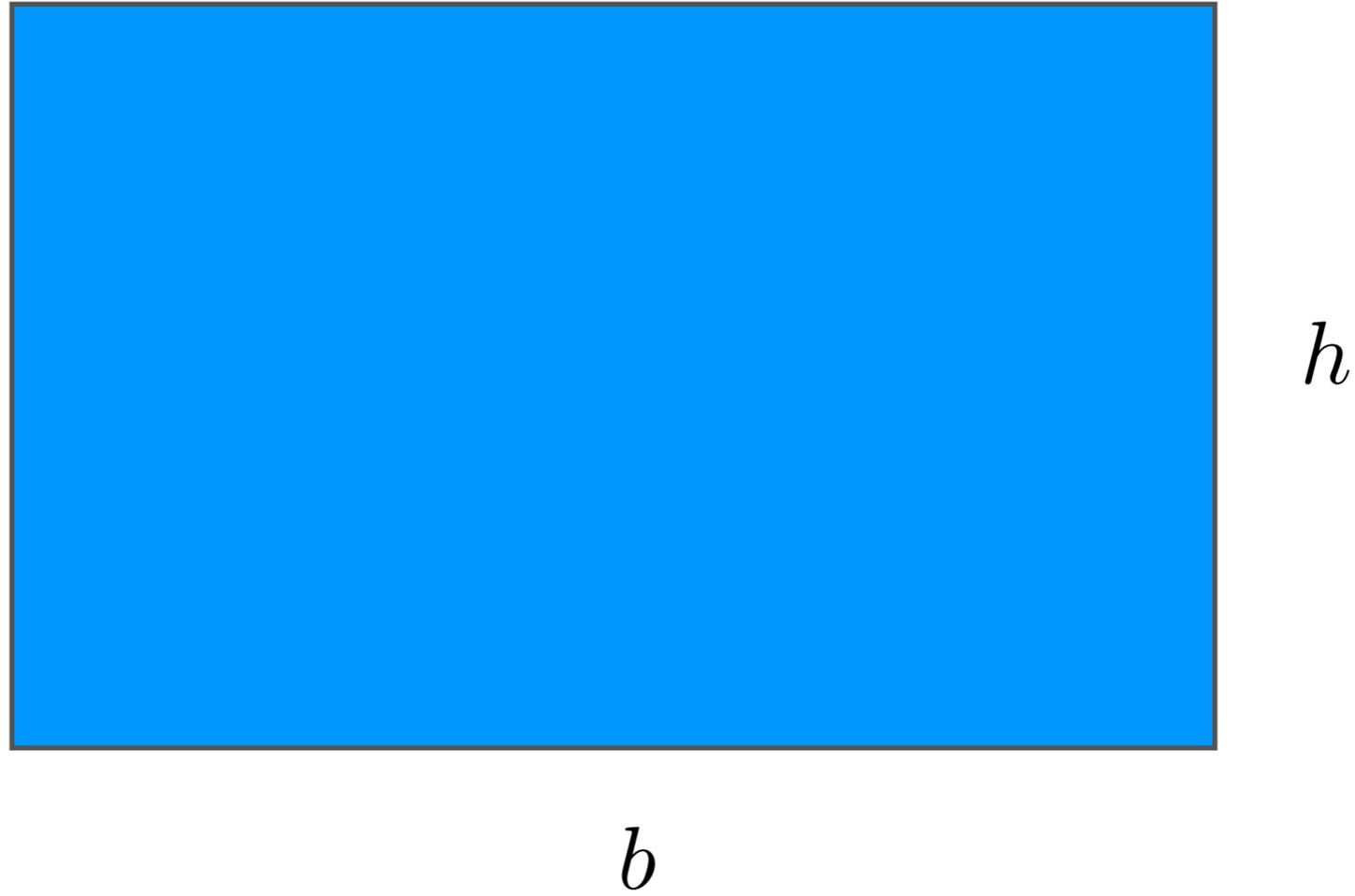


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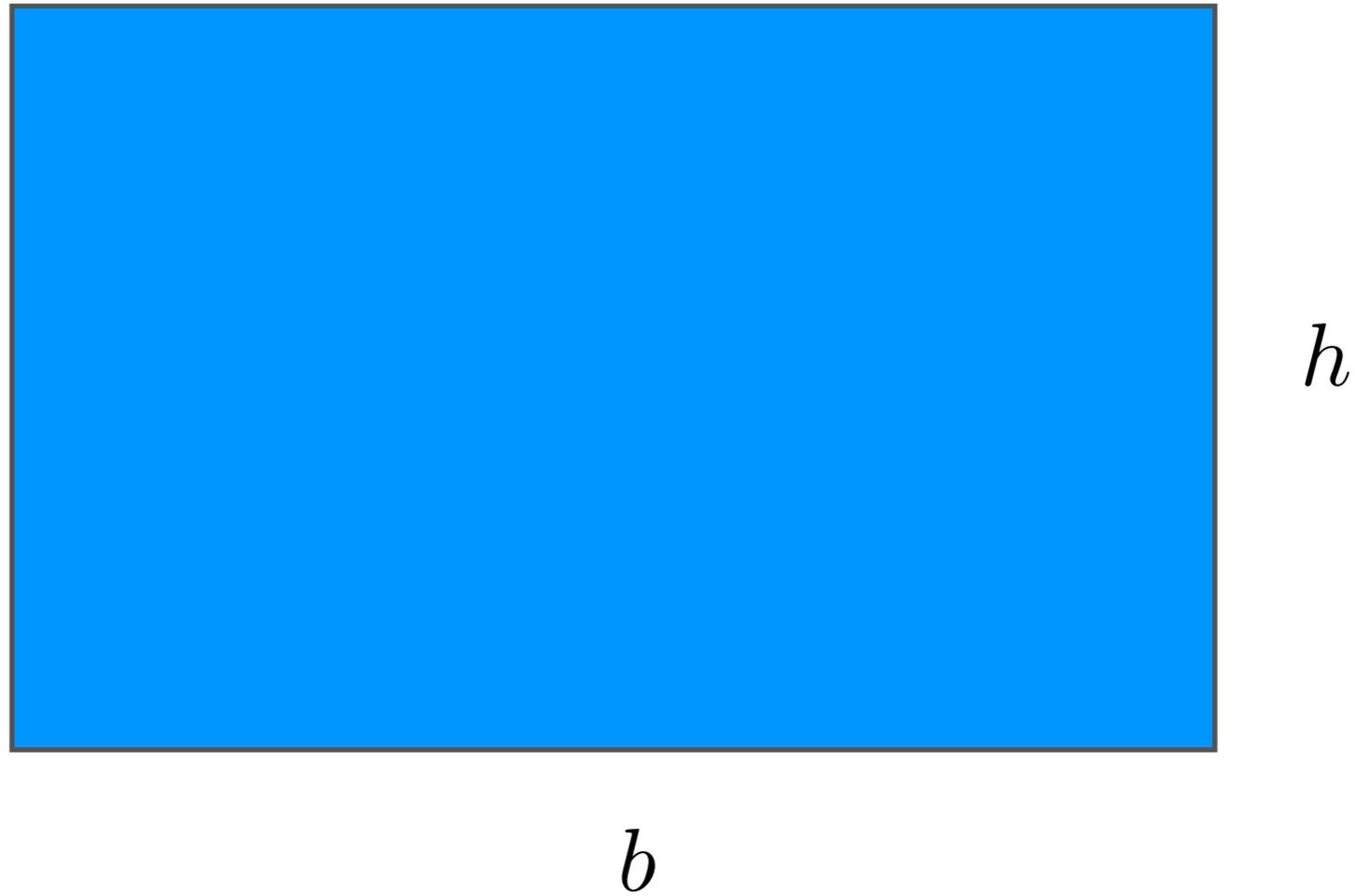


$b$

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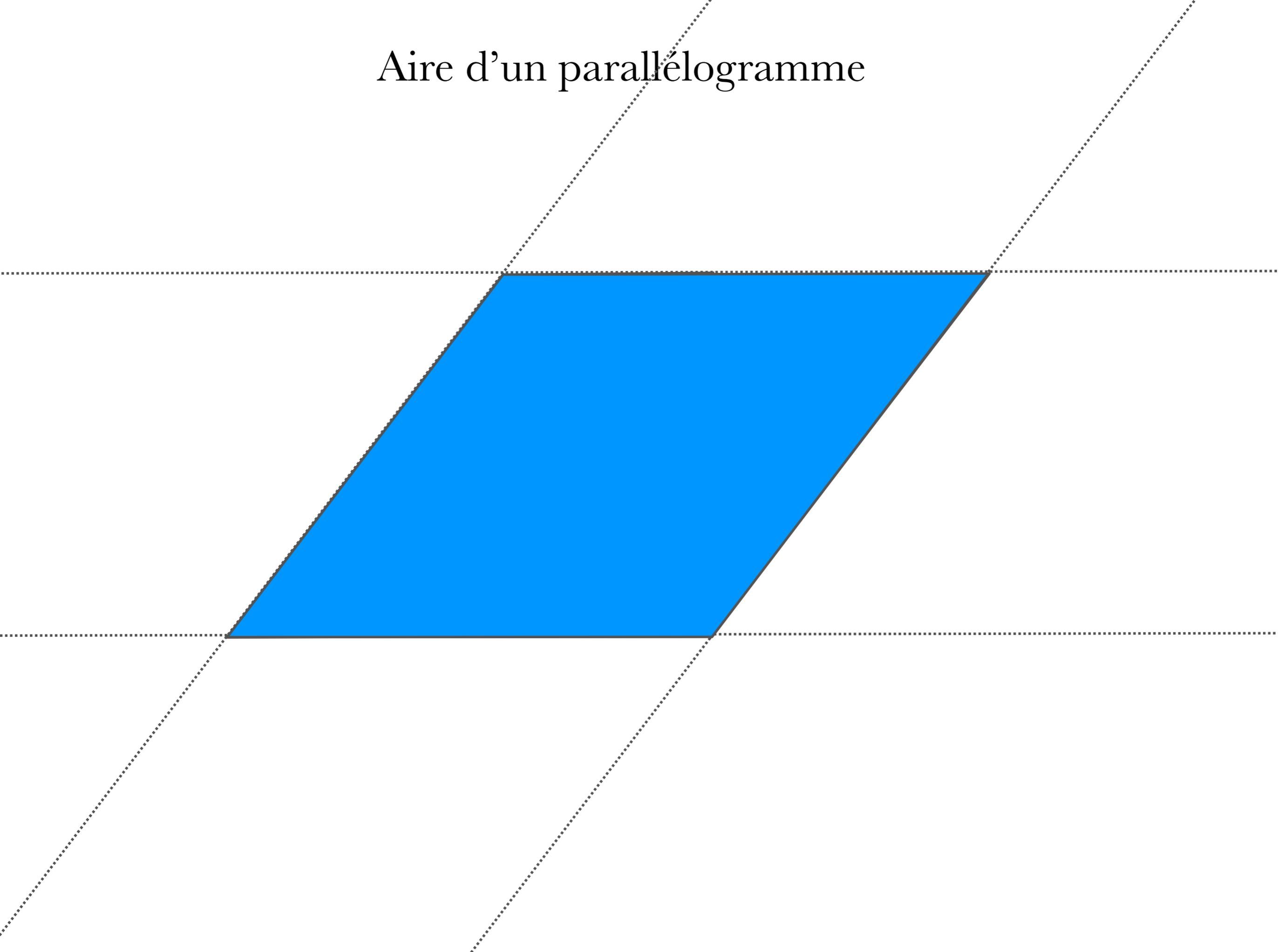


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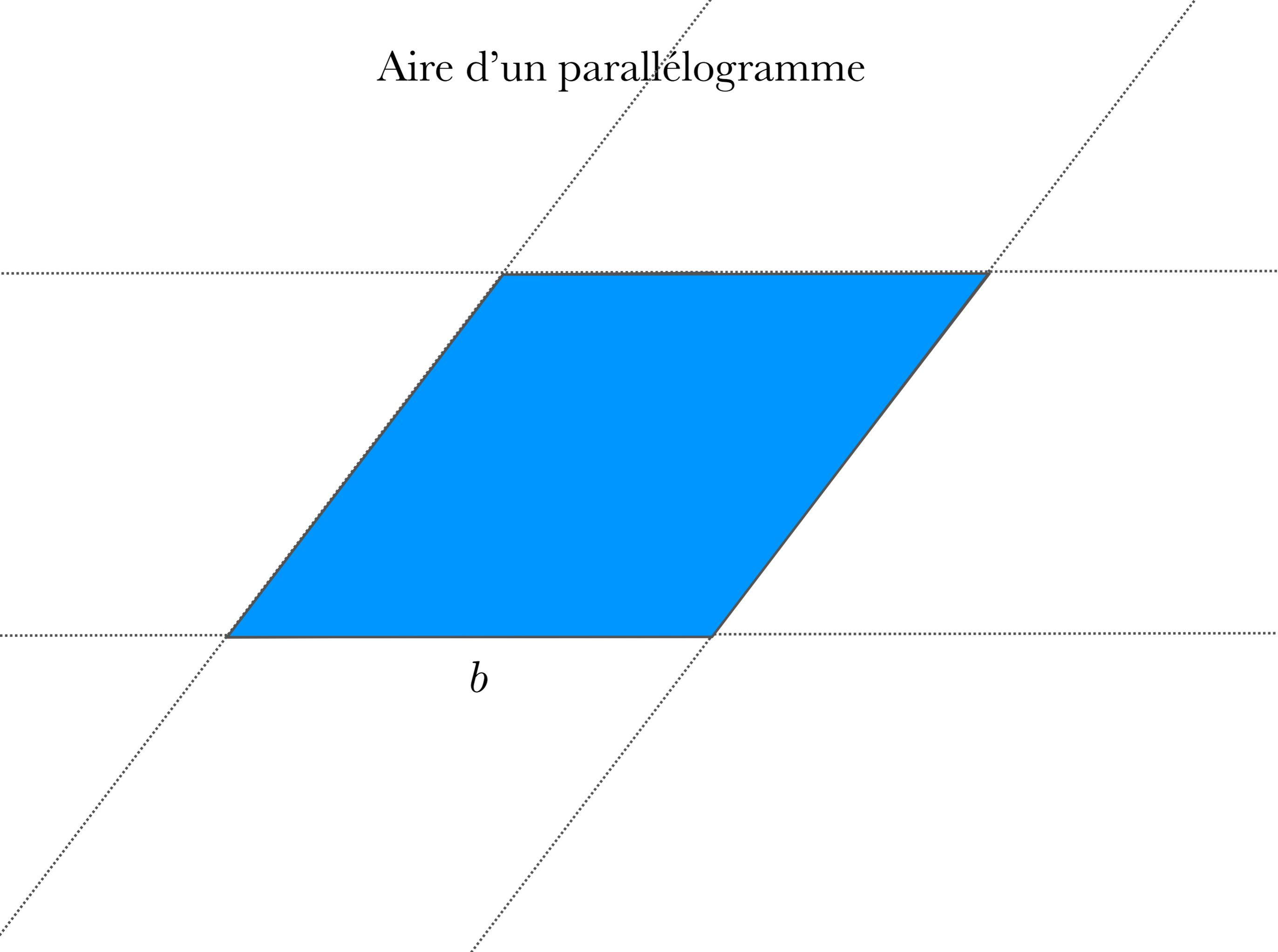


$$\text{Aire}_{\text{rect}} = b \times h$$

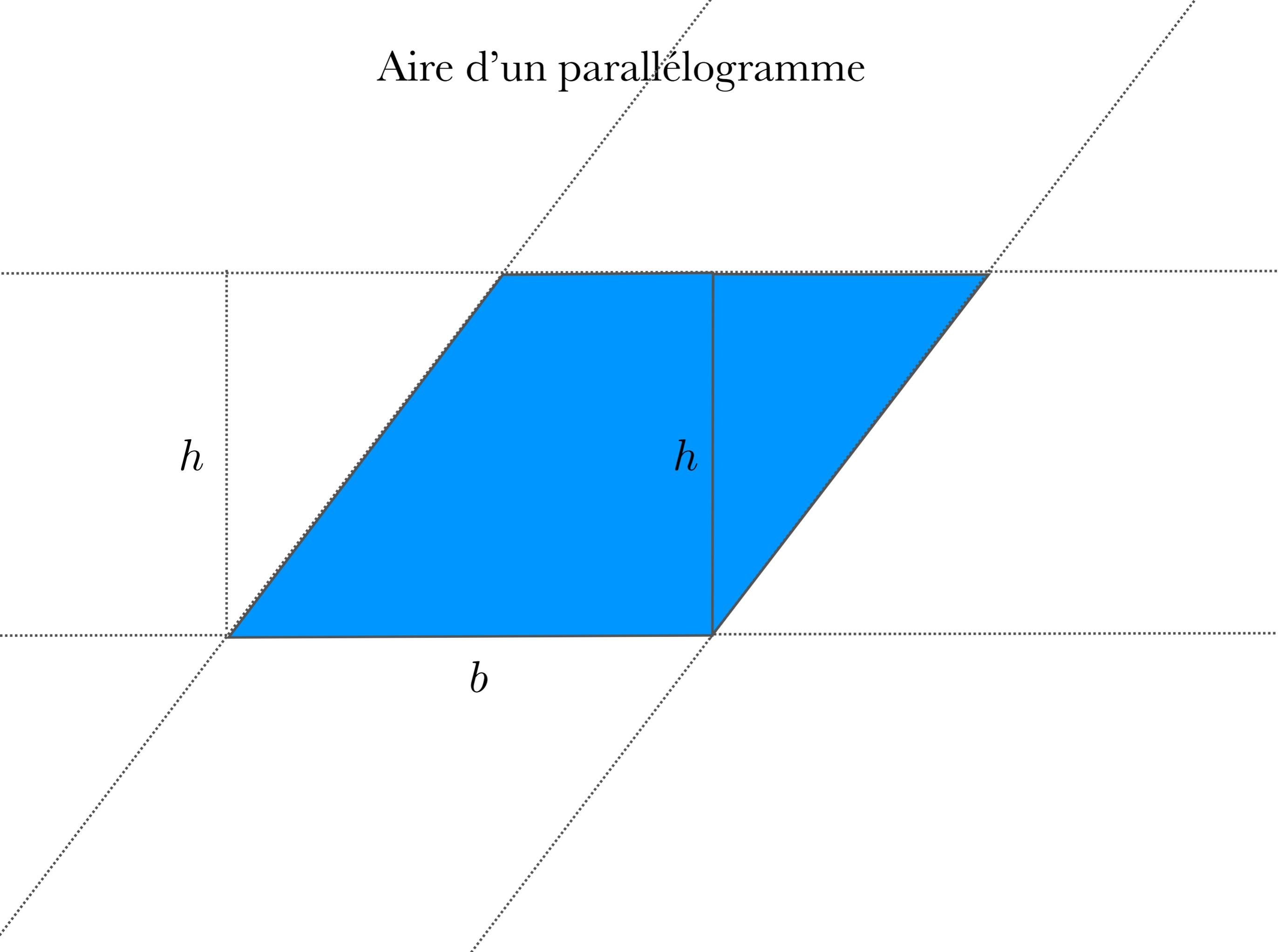
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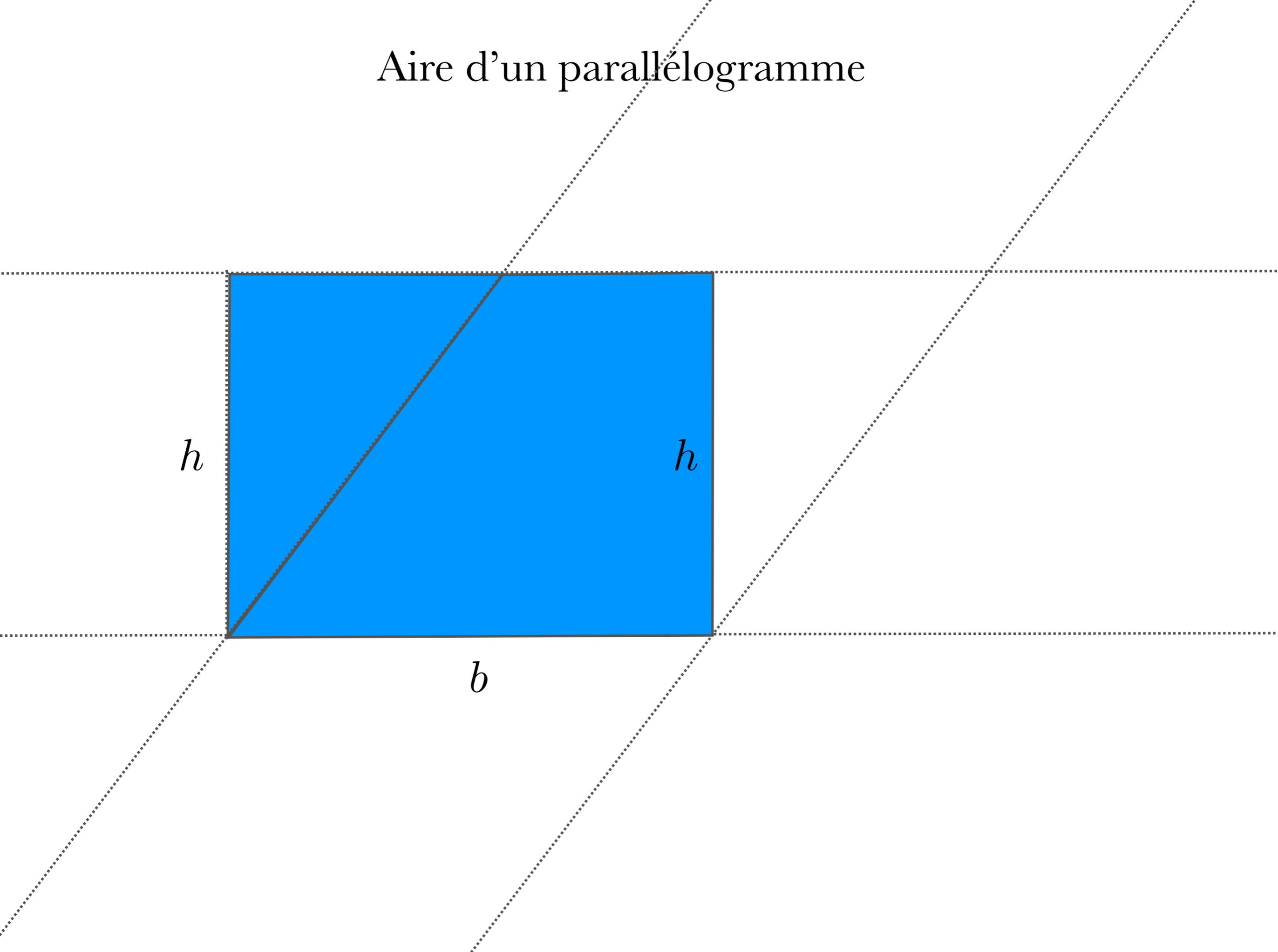
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# Aire d'un parallélogramme



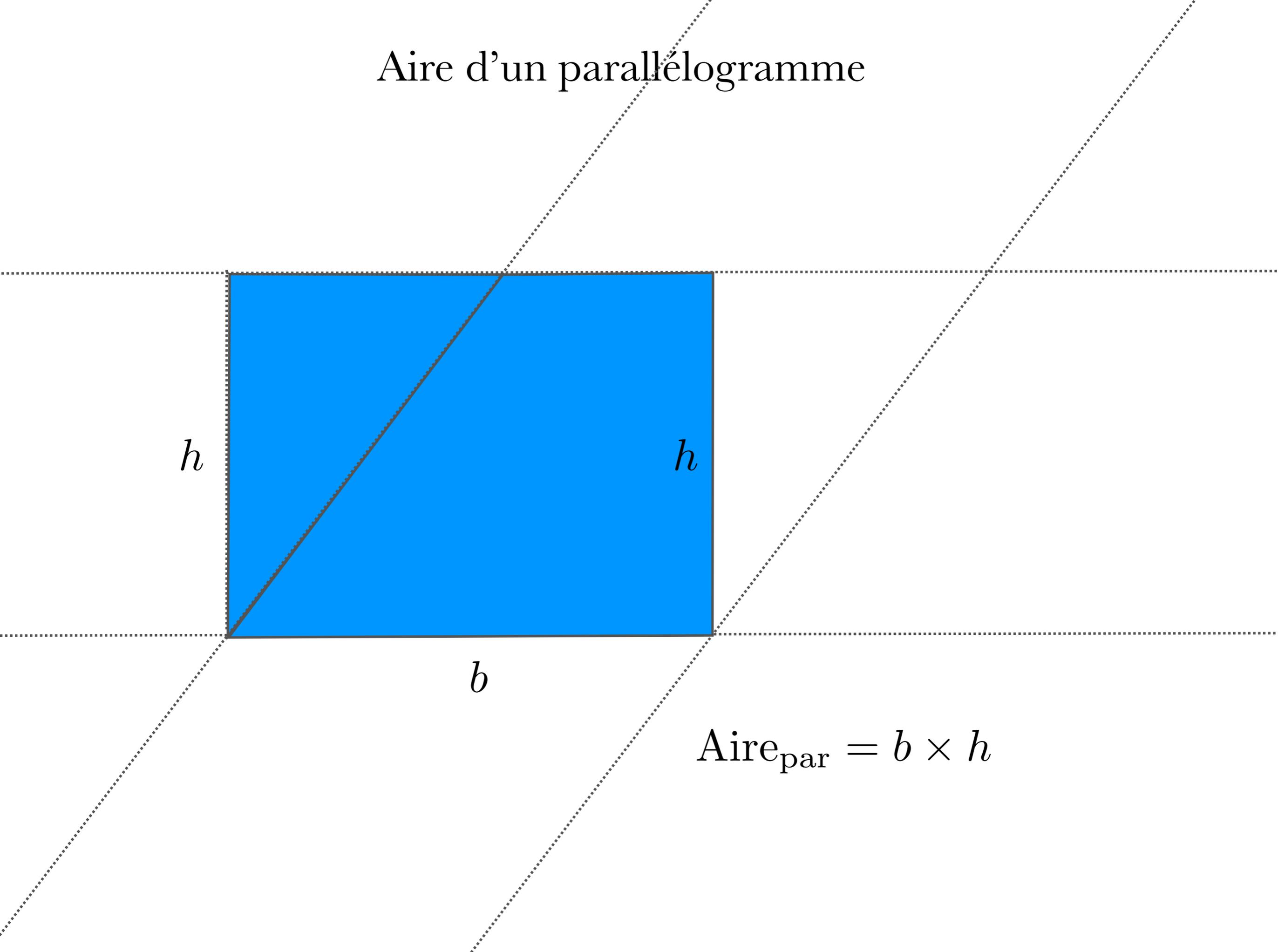
# Aire d'un parallélogramme

$h$

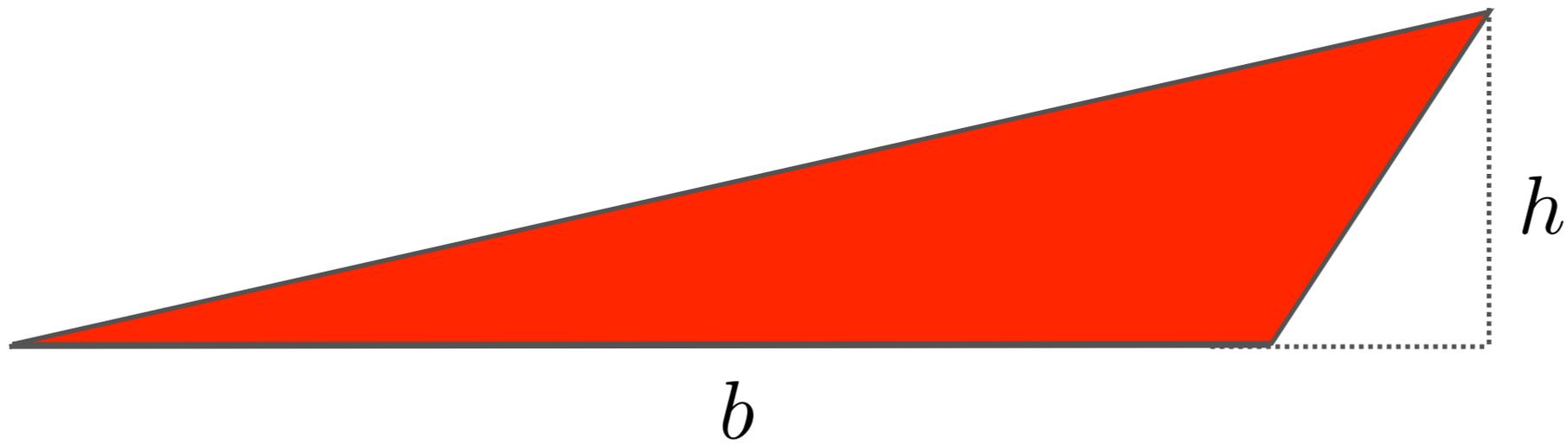
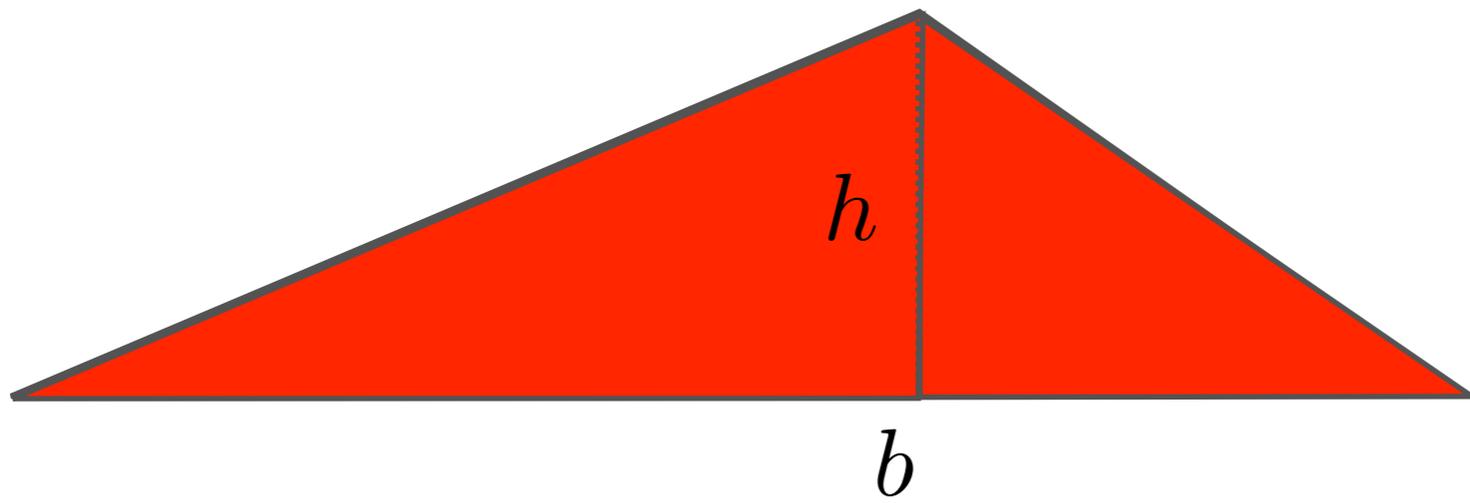
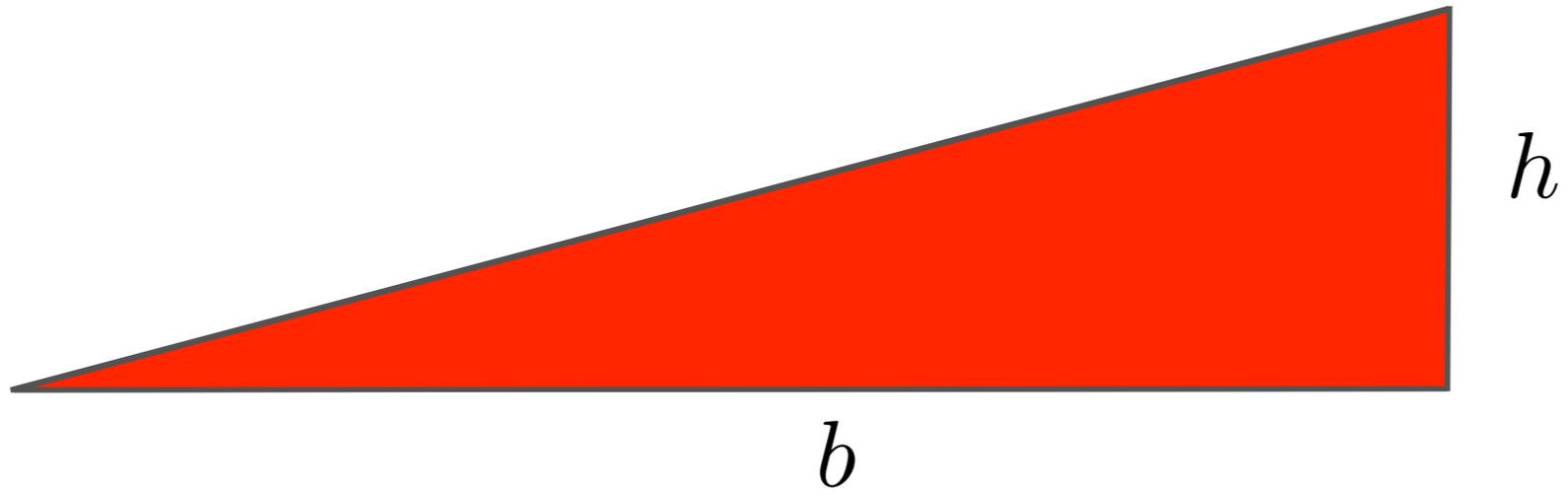
$h$

$b$

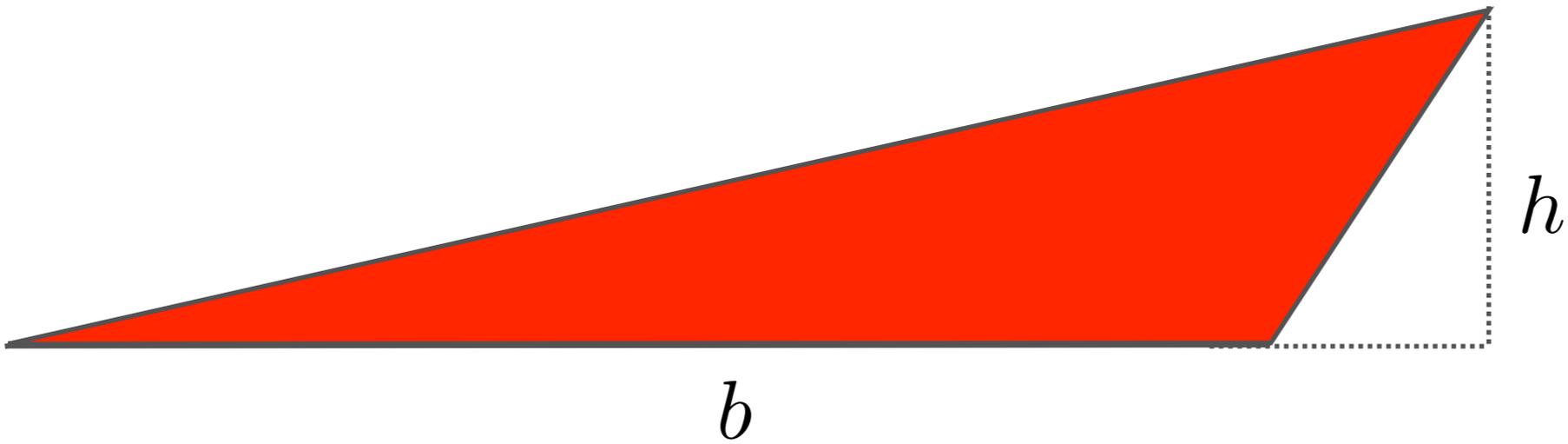
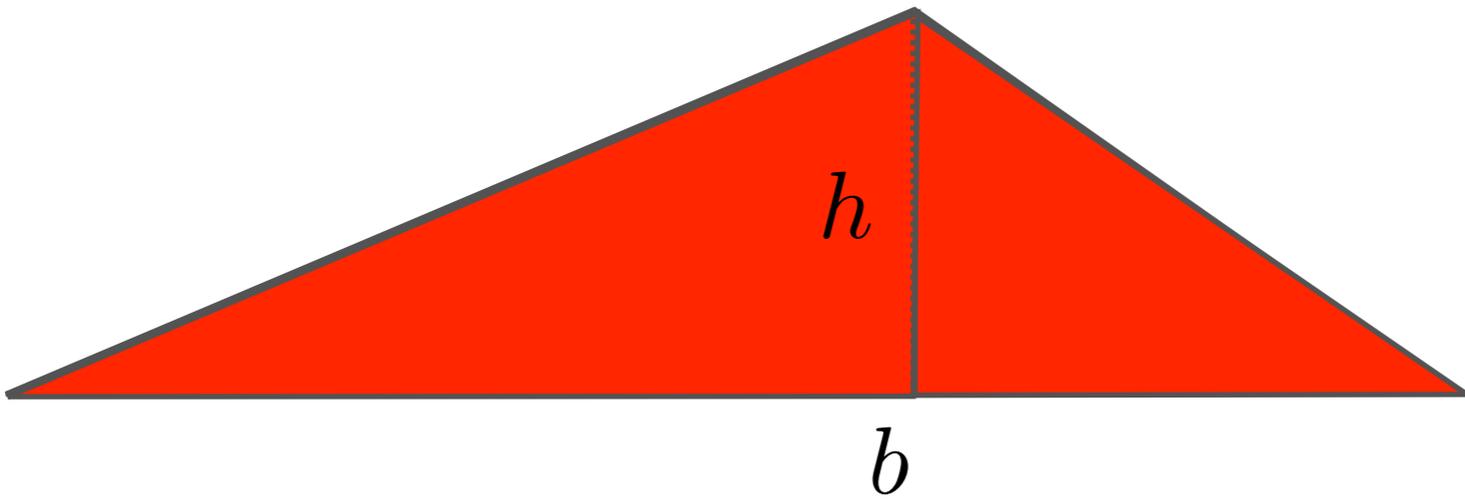
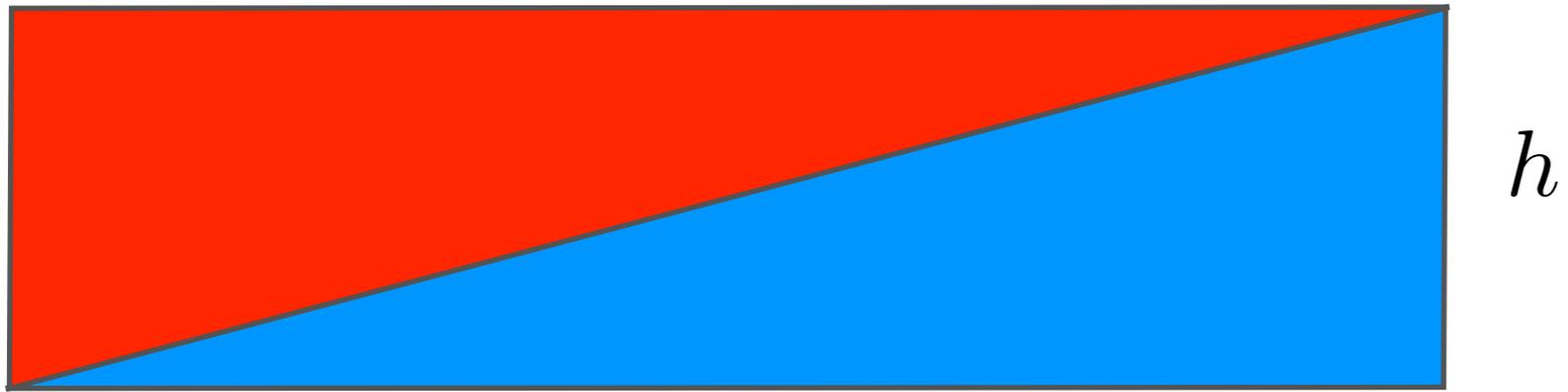
$$\text{Aire}_{\text{par}} = b \times h$$



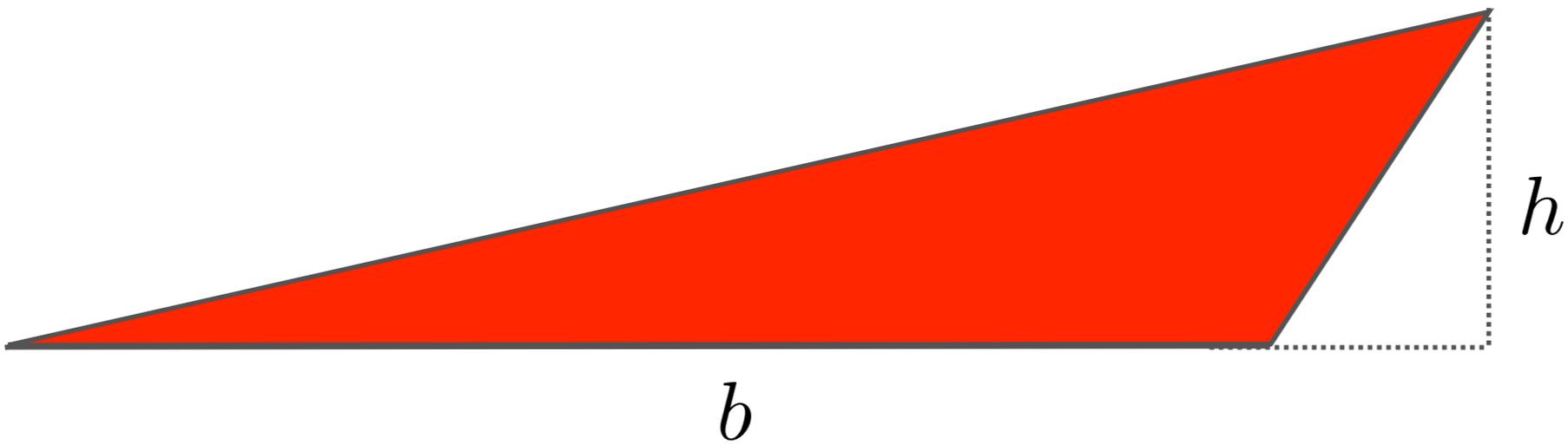
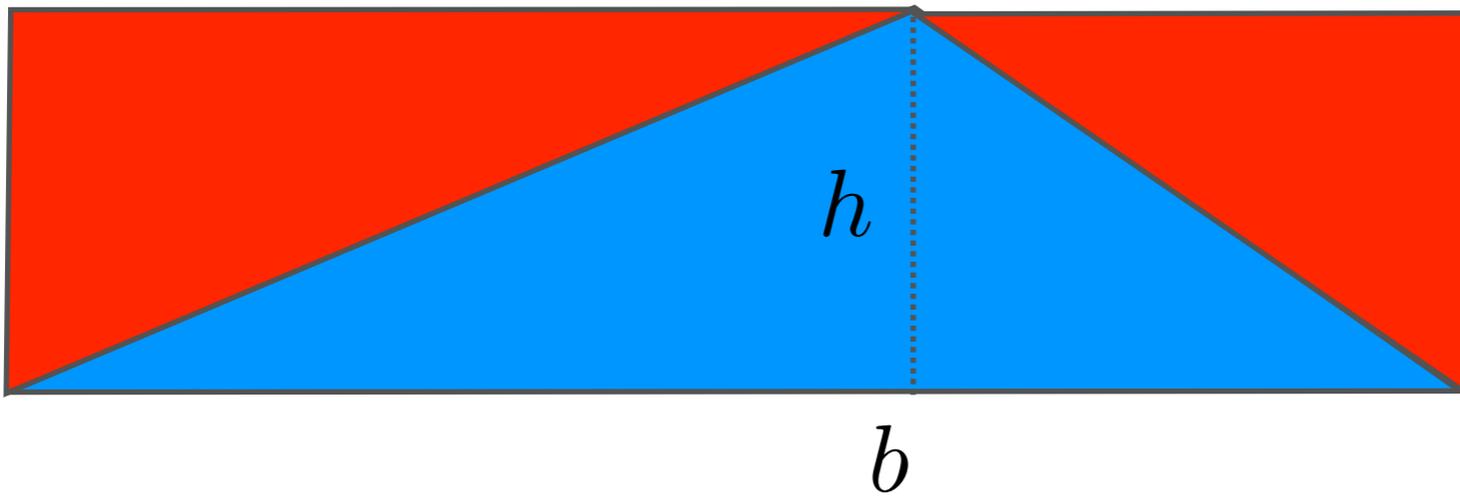
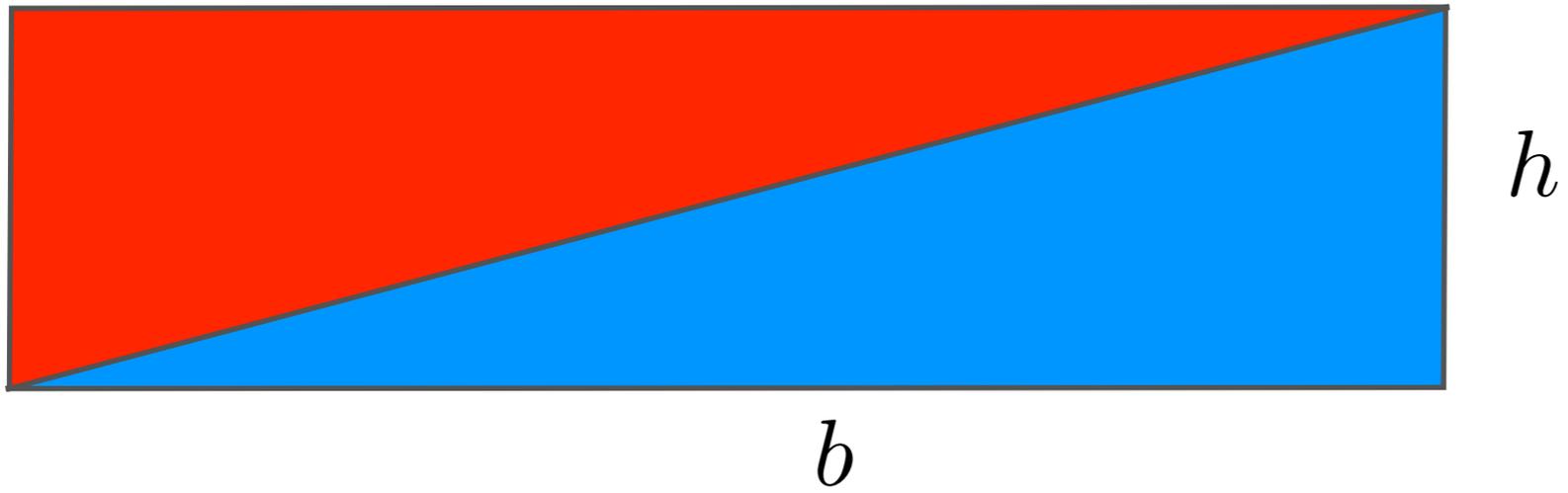
# Aire d'un triangle



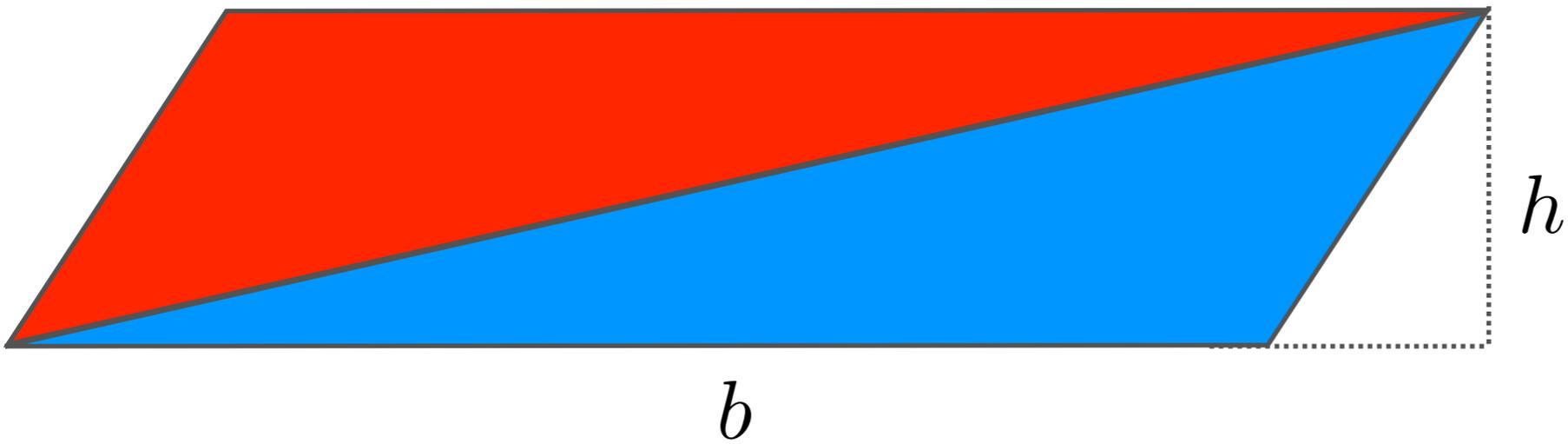
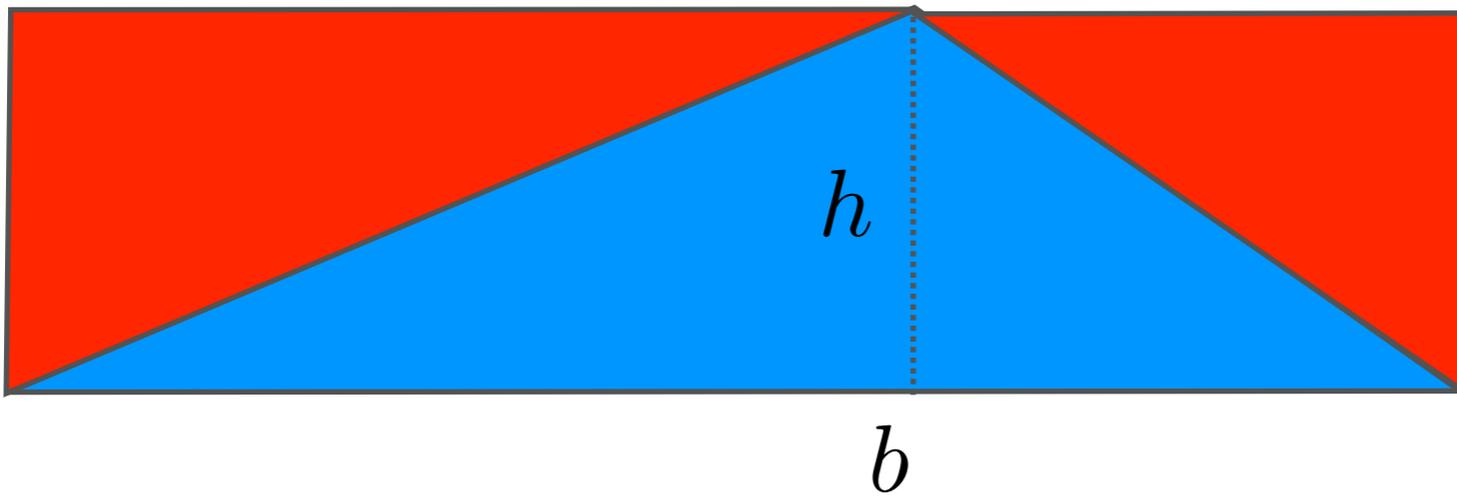
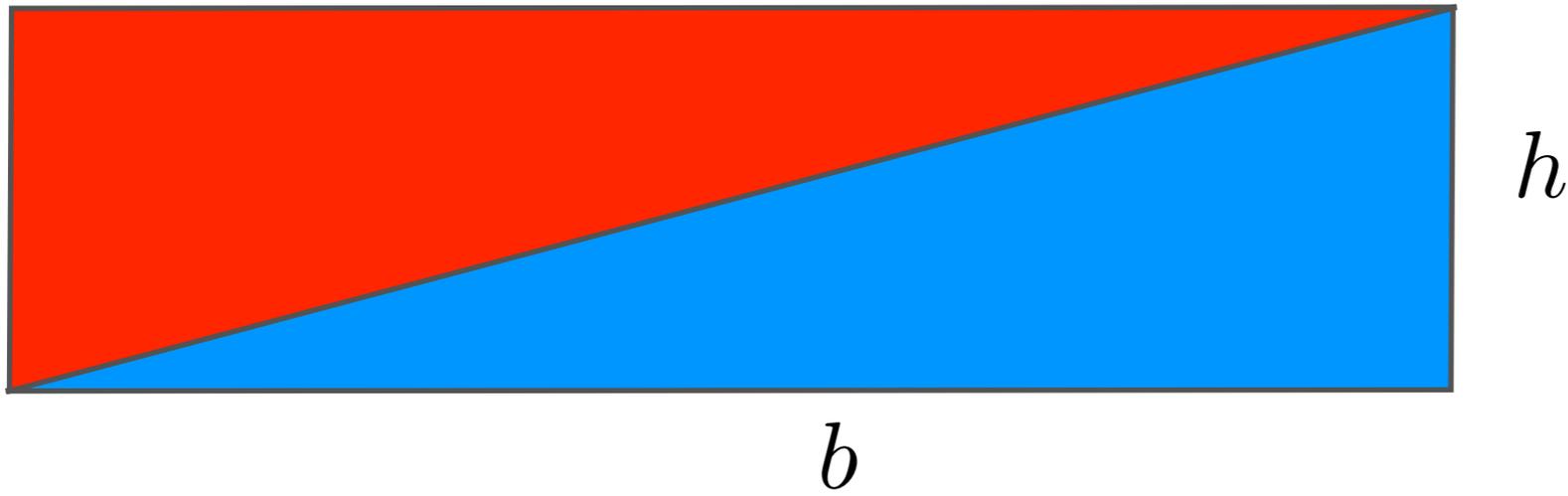
# Aire d'un triangle



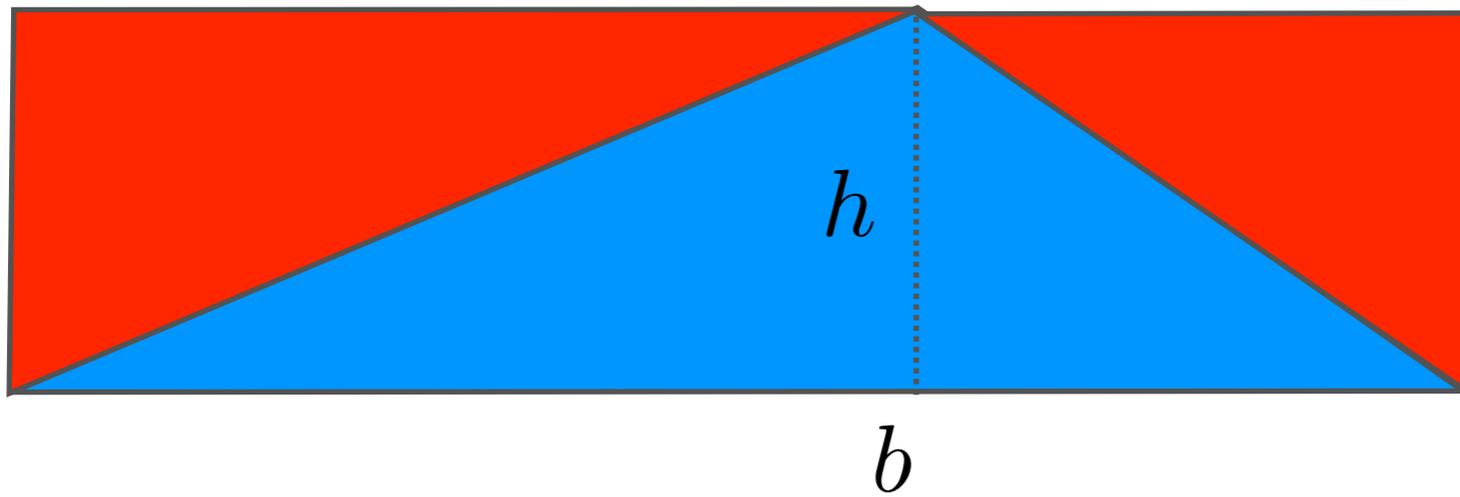
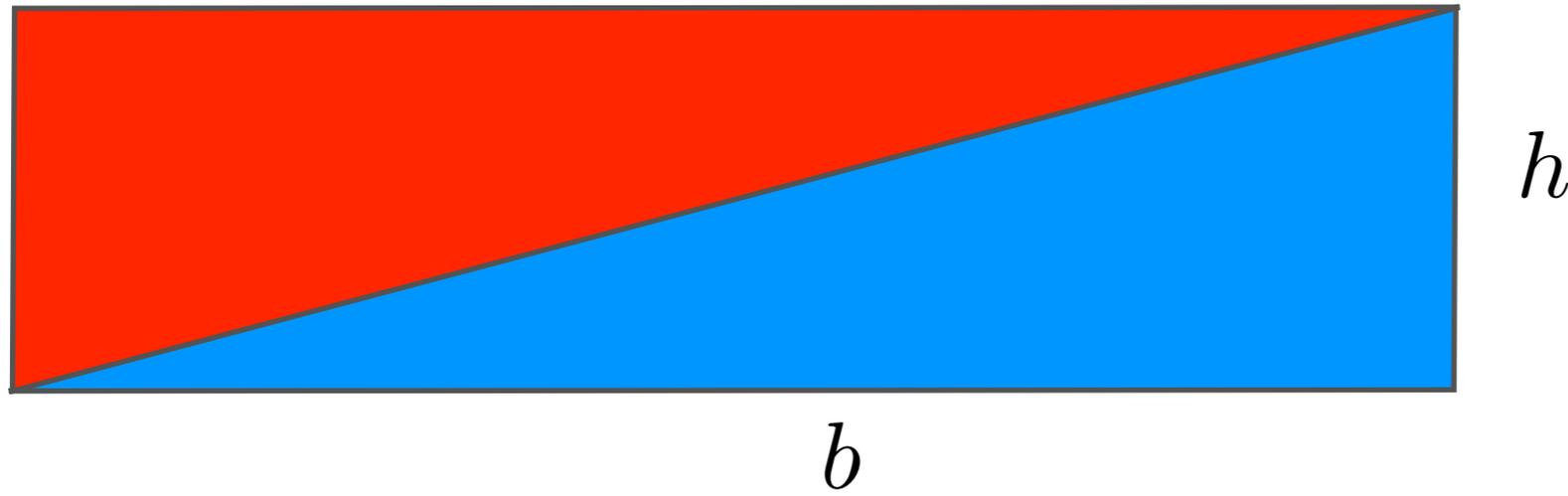
# Aire d'un triangle



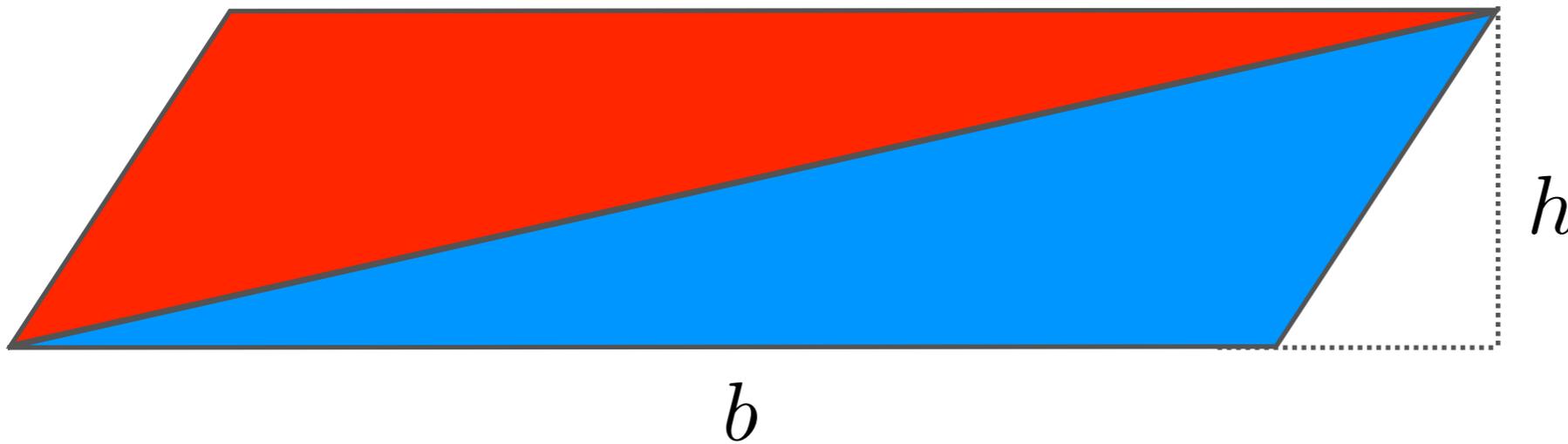
# Aire d'un triangle



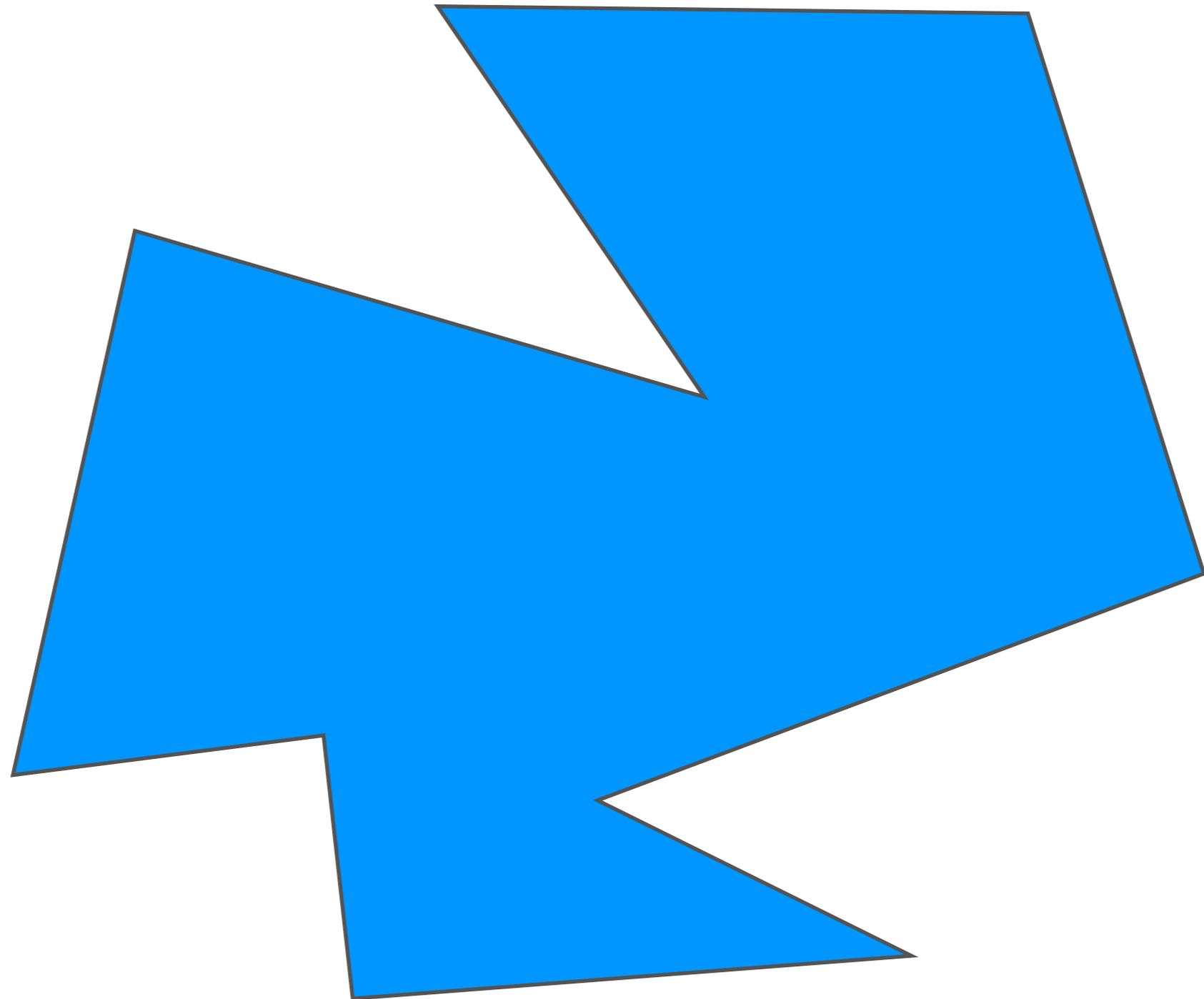
# Aire d'un triangle



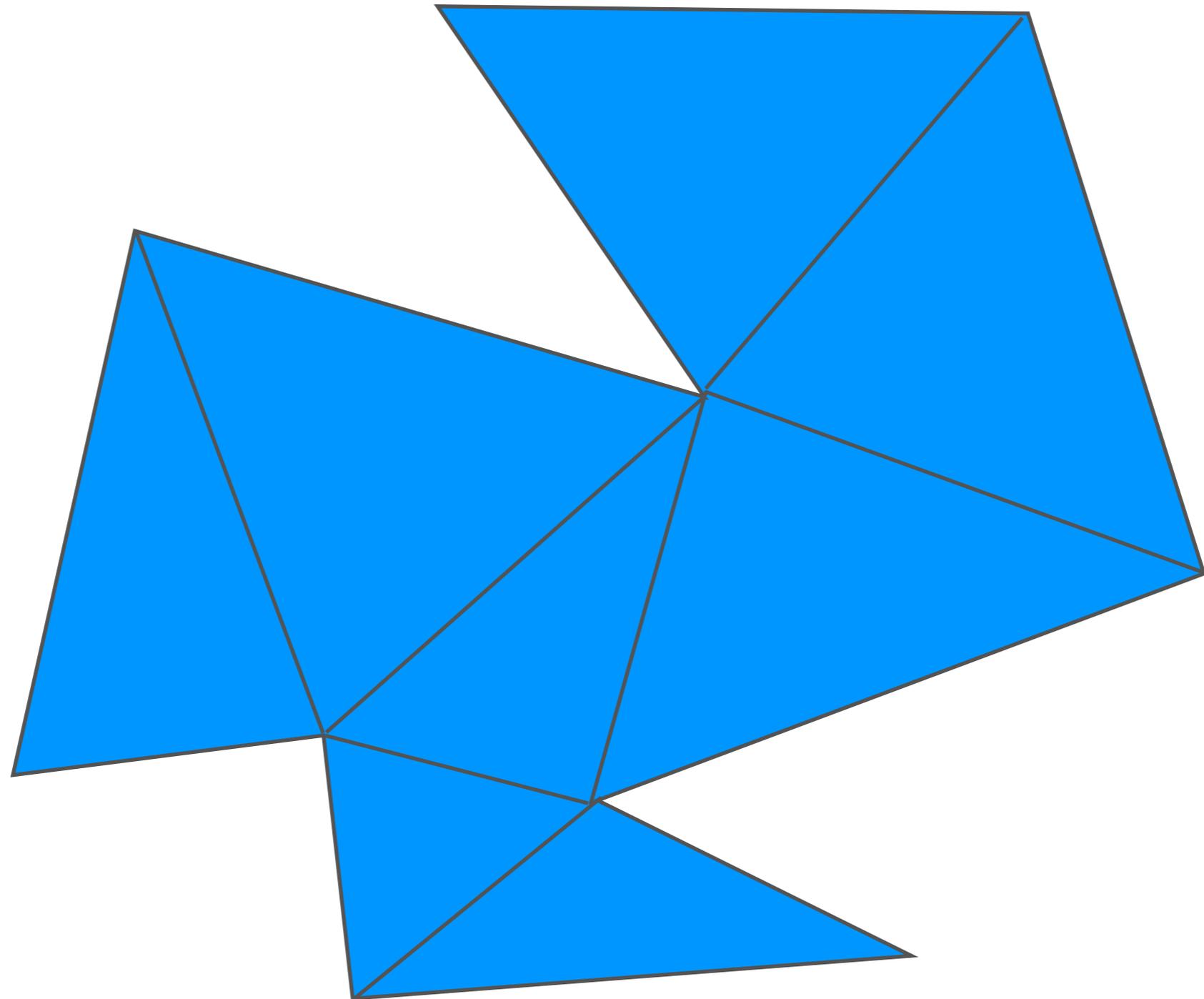
$$\text{Aire}_{\triangle} = \frac{b \times h}{2}$$



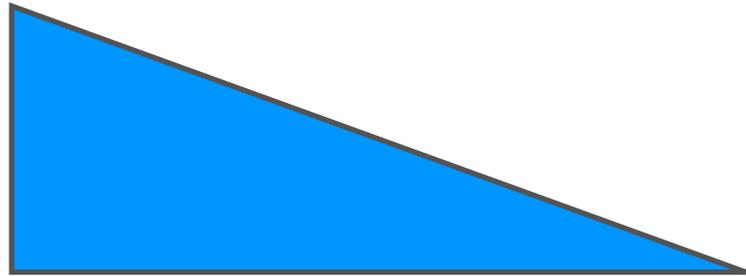
Lorsqu'on travaille avec un polygone quelconque, il est souvent utile d'en faire une triangulation.



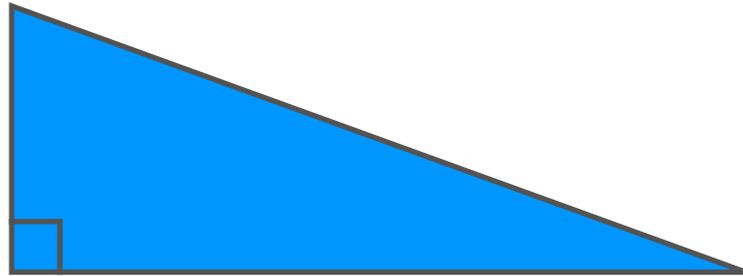
Lorsqu'on travaille avec un polygone quelconque, il est souvent utile d'en faire une triangulation.



Triangle rectangle

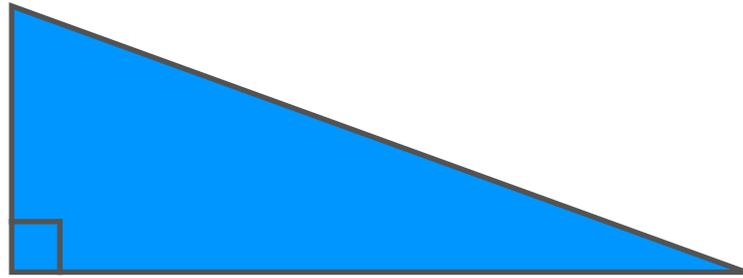


Triangle rectangle



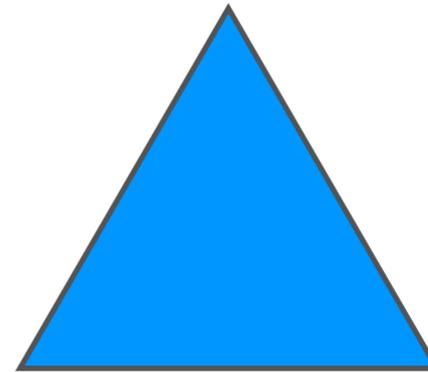
Un angle droit

Triangle rectangle

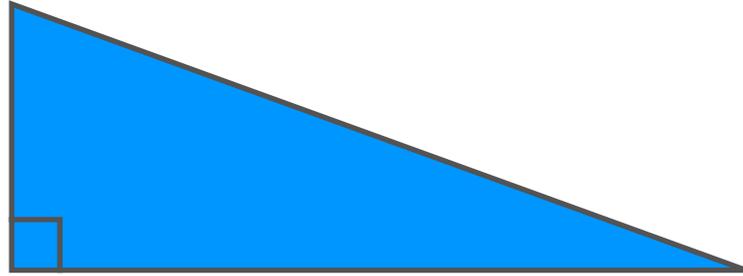


Un angle droit

Triangle équilatéral

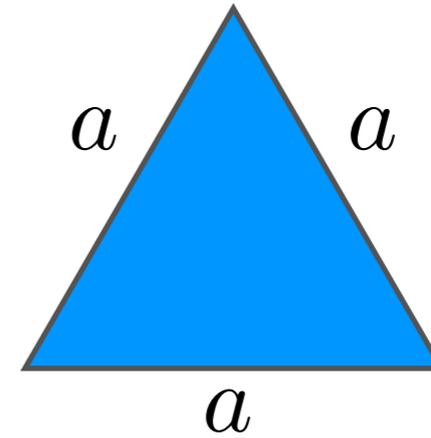


Triangle rectangle



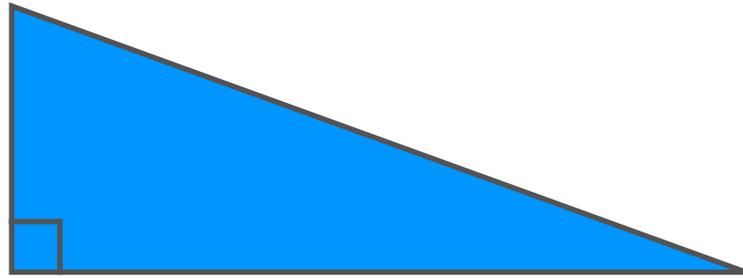
Un angle droit

Triangle équilatéral



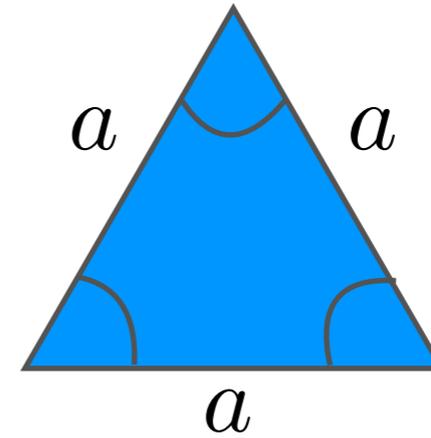
Trois côtés égaux

Triangle rectangle



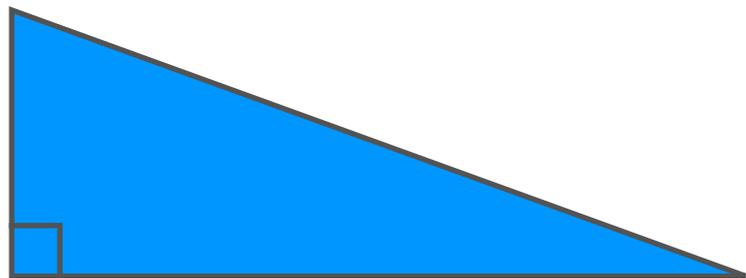
Un angle droit

Triangle équilatéral



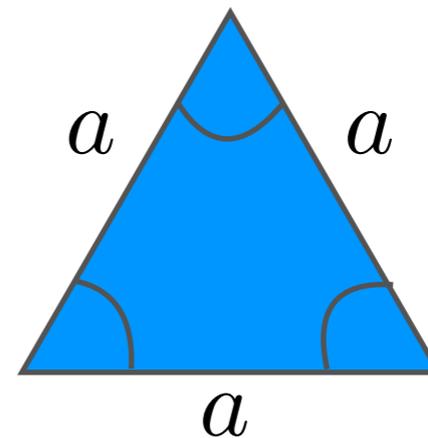
Trois côtés égaux  
Trois angles égaux

Triangle rectangle



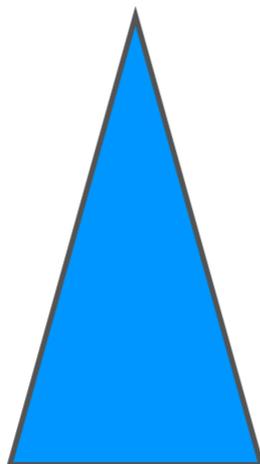
Un angle droit

Triangle équilatéral

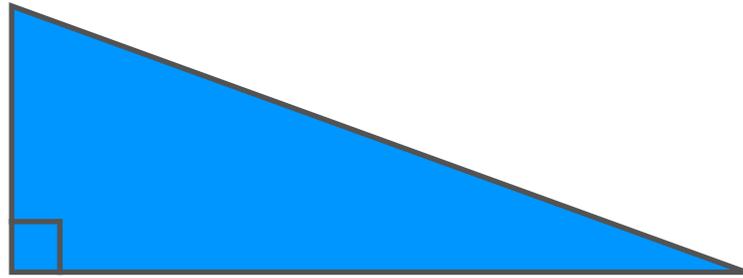


Trois côtés égaux  
Trois angles égaux

Triangle isocèle

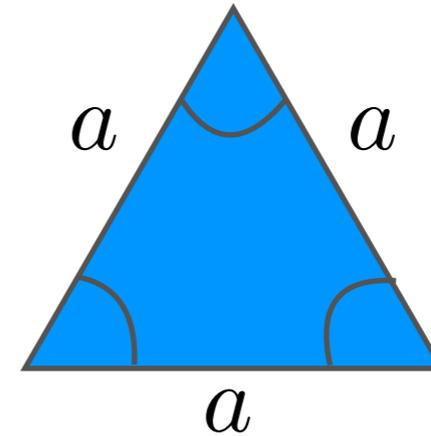


Triangle rectangle



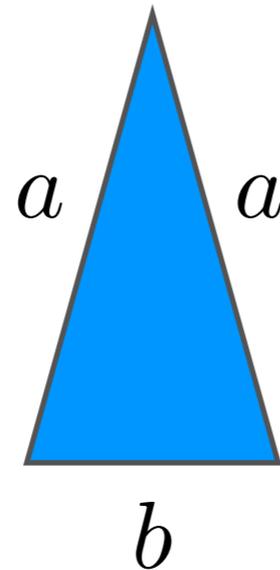
Un angle droit

Triangle équilatéral



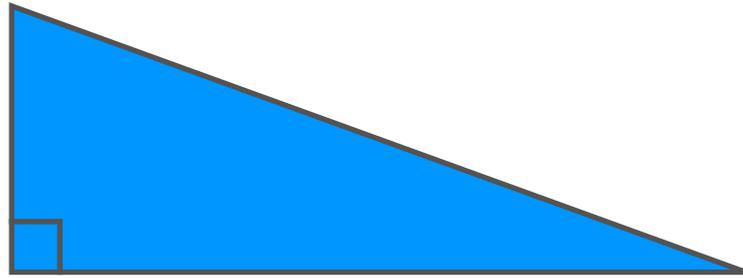
Trois côtés égaux  
Trois angles égaux

Triangle isocèle



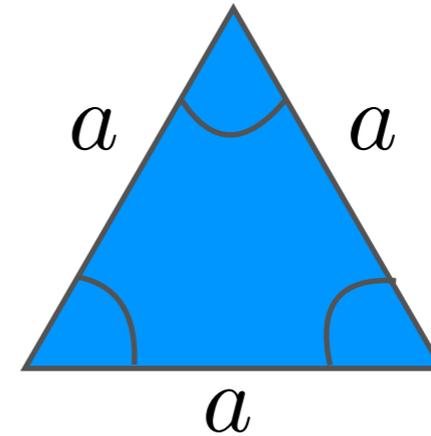
Deux côté égaux

Triangle rectangle



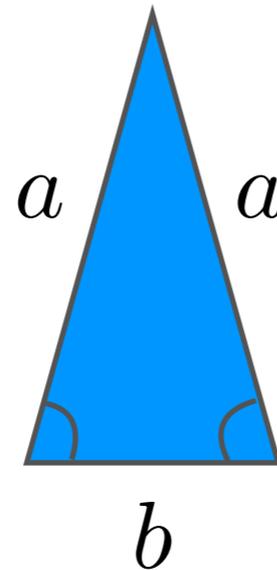
Un angle droit

Triangle équilatéral



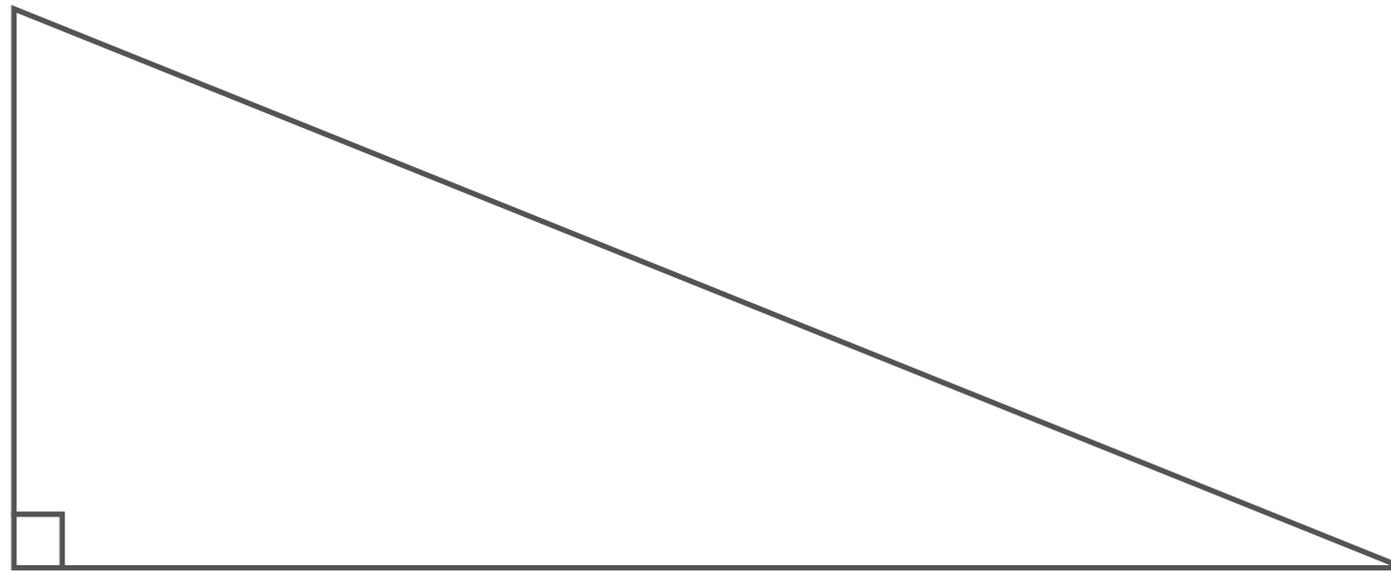
Trois côtés égaux  
Trois angles égaux

Triangle isocèle

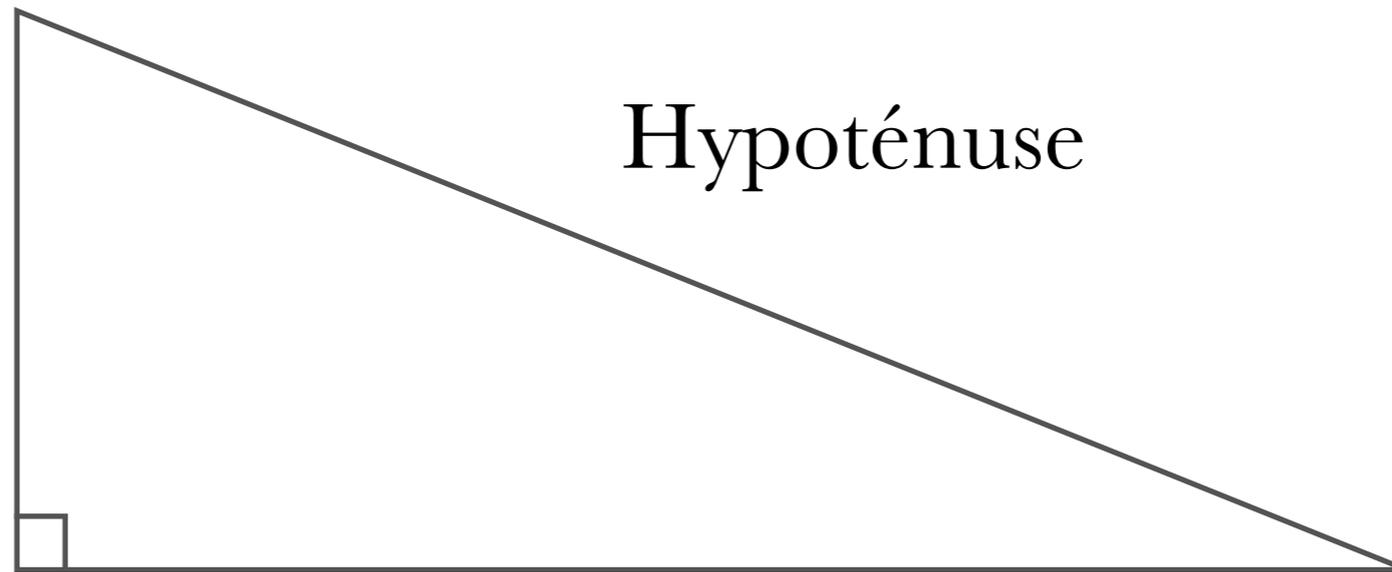


Deux côté égaux  
Deux angles égaux

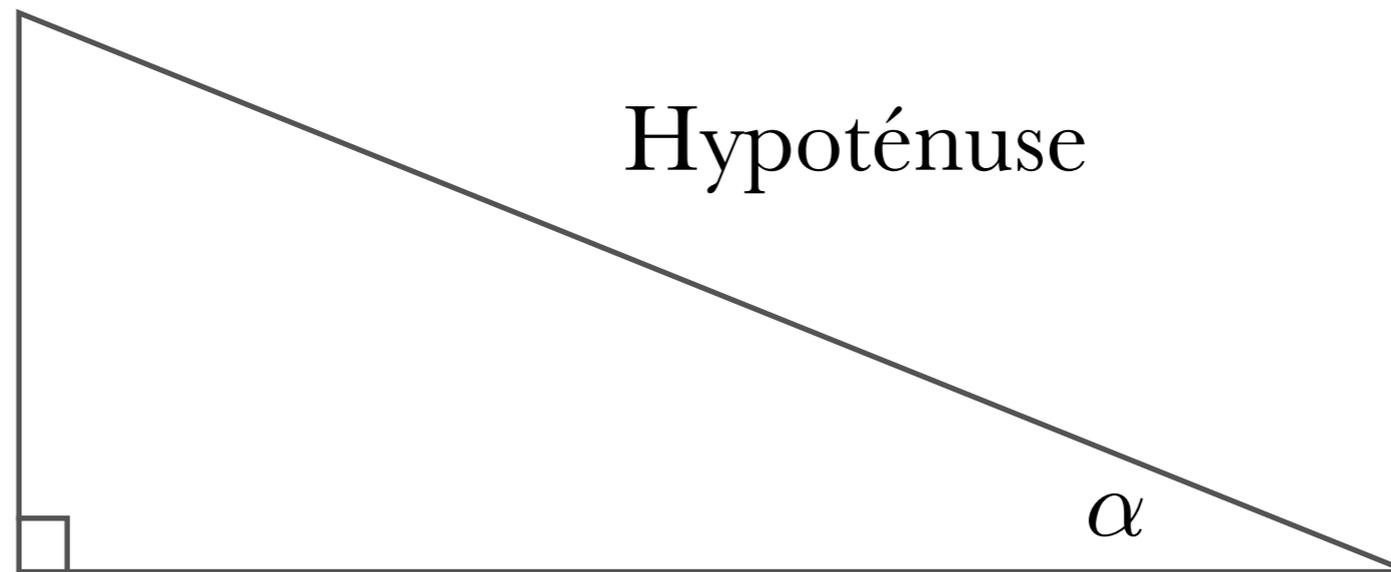
Dans un triangle rectangle



Dans un triangle rectangle

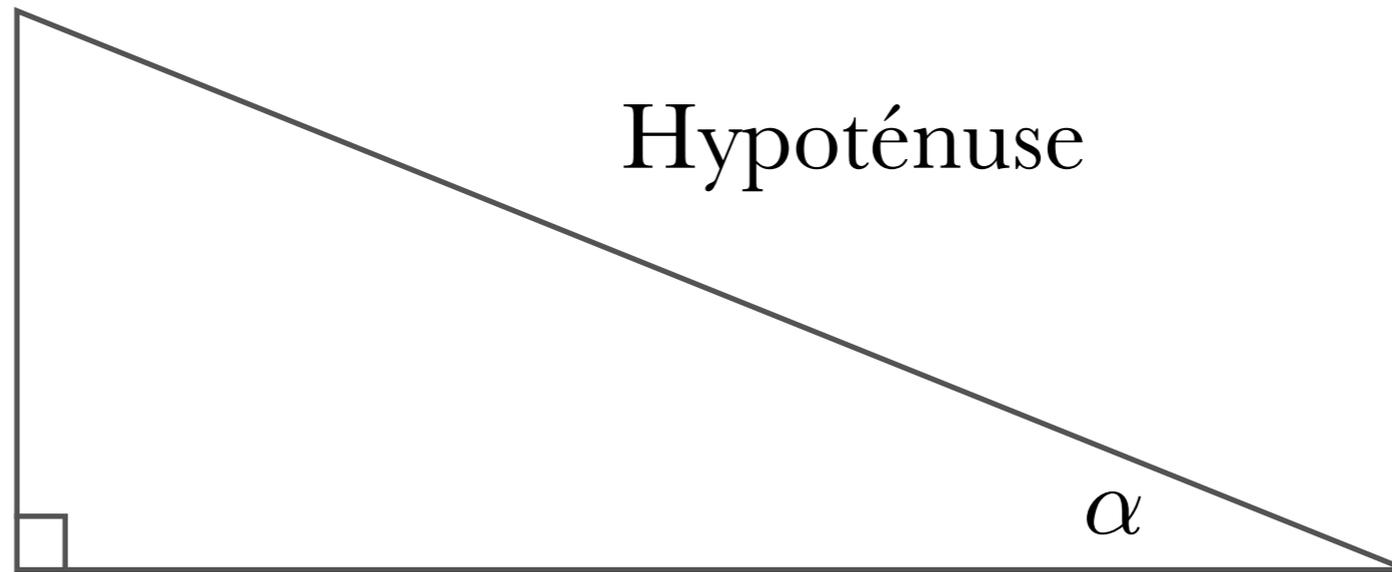


Dans un triangle rectangle



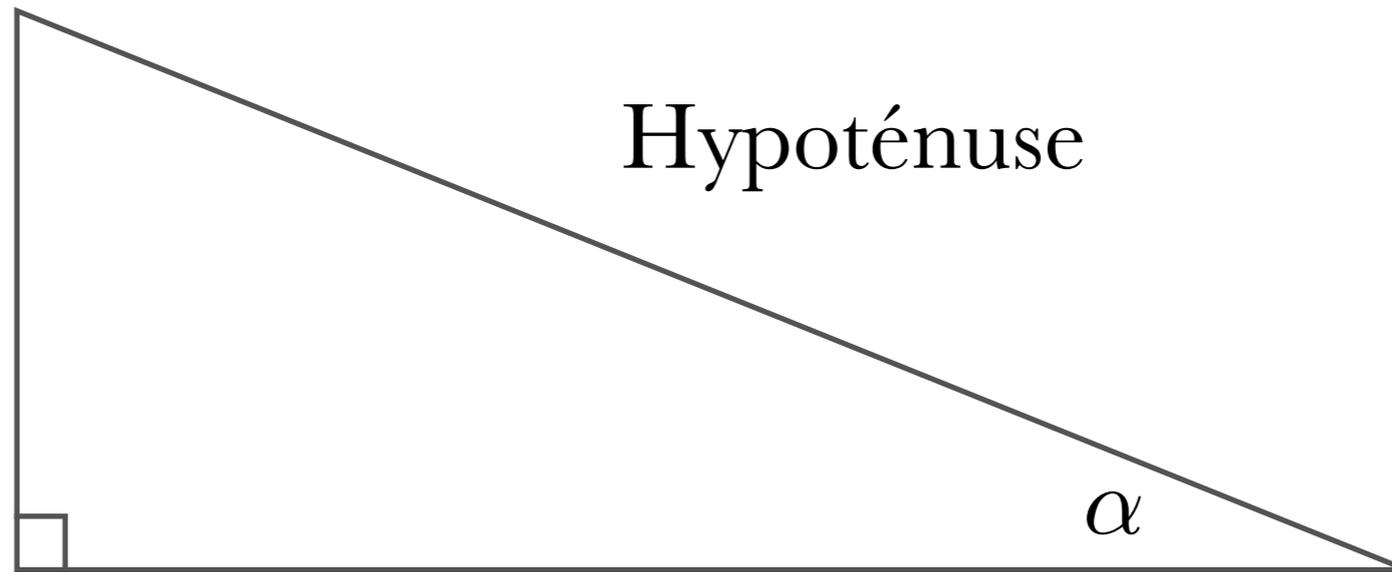
Dans un triangle rectangle

Opposé à  $\alpha$



Dans un triangle rectangle

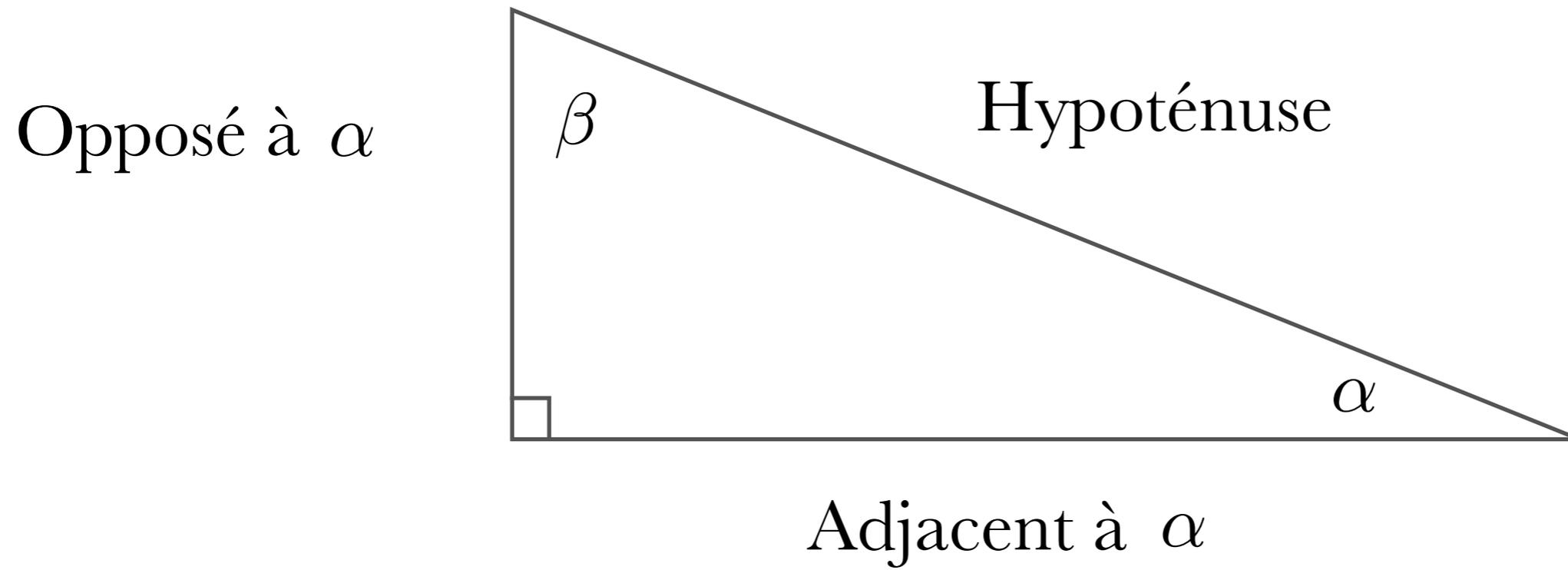
Opposé à  $\alpha$



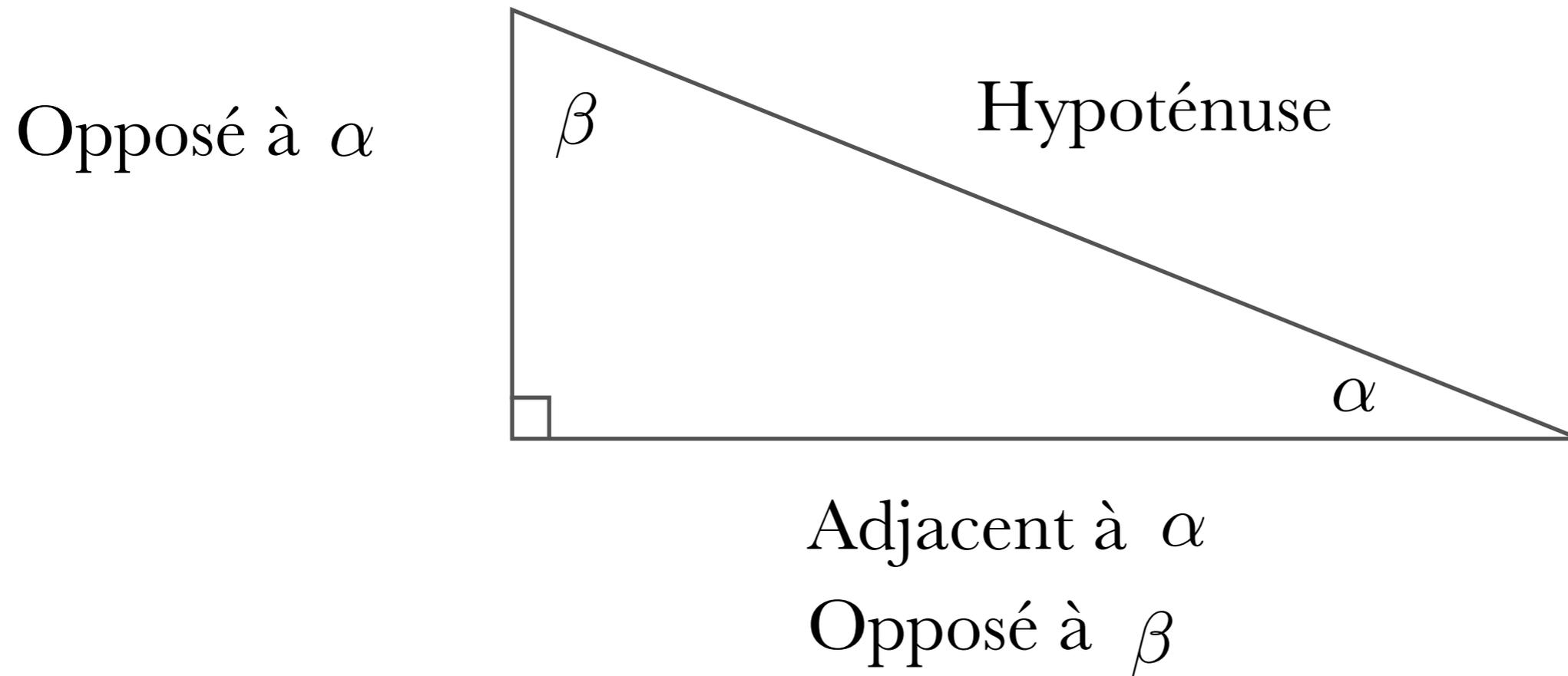
Adjacent à  $\alpha$

$\alpha$

Dans un triangle rectangle



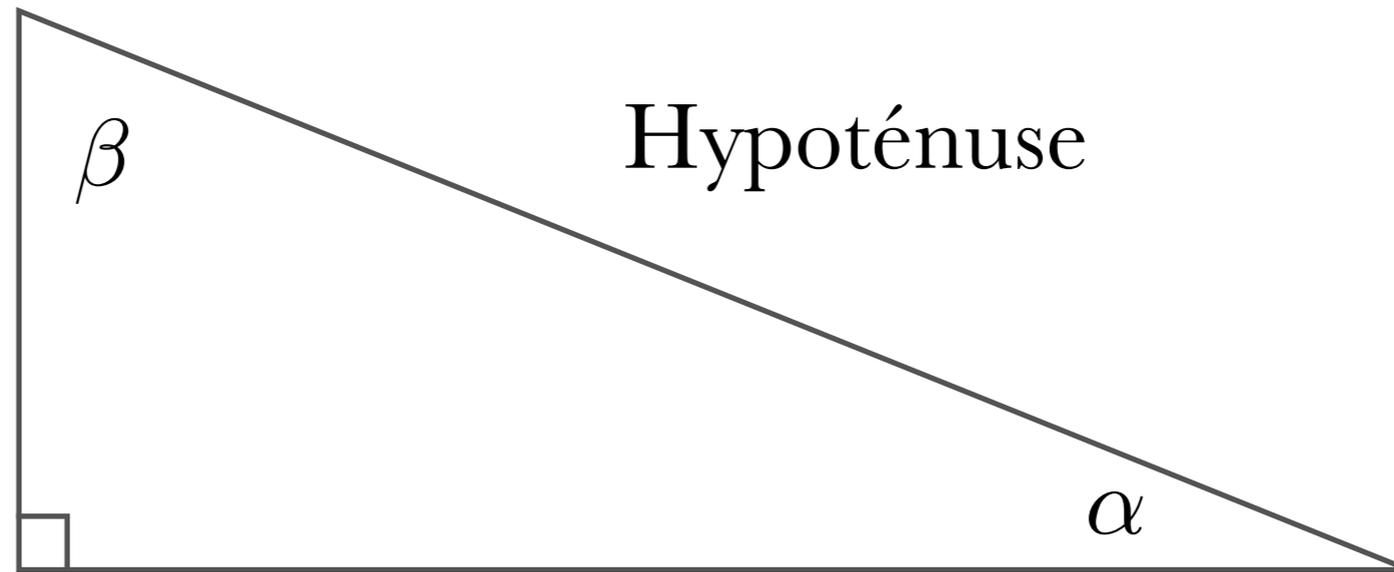
Dans un triangle rectangle



# Dans un triangle rectangle

Opposé à  $\alpha$

Adjacent à  $\beta$



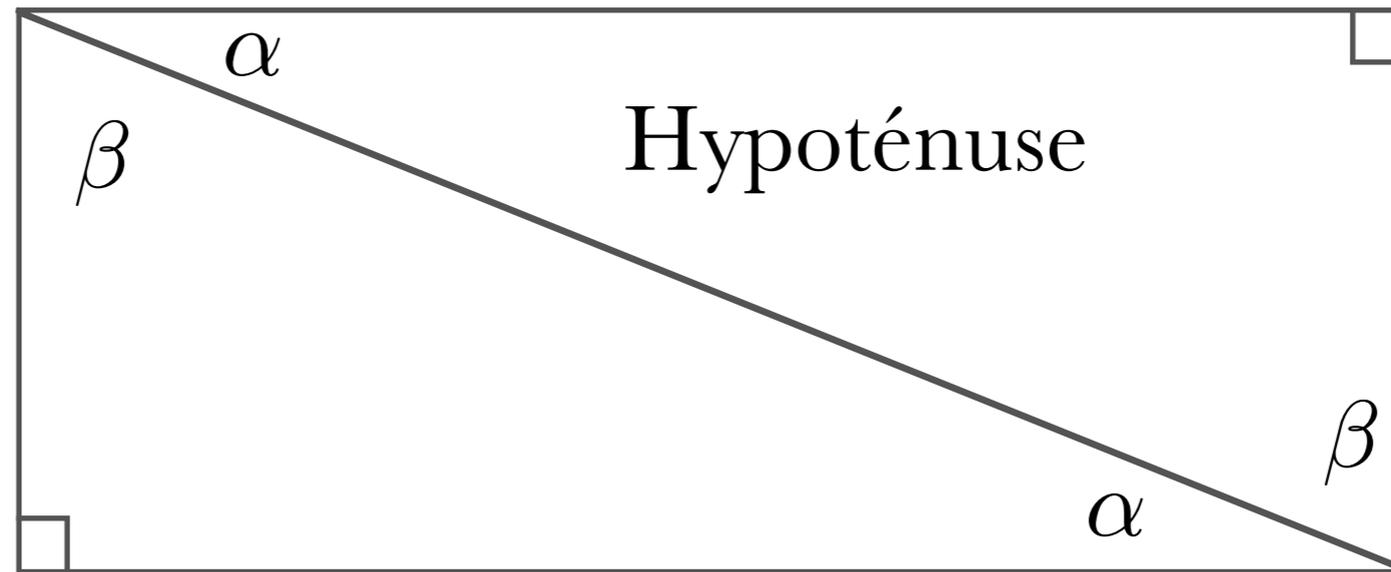
Adjacent à  $\alpha$

Opposé à  $\beta$

# Dans un triangle rectangle

Opposé à  $\alpha$

Adjacent à  $\beta$



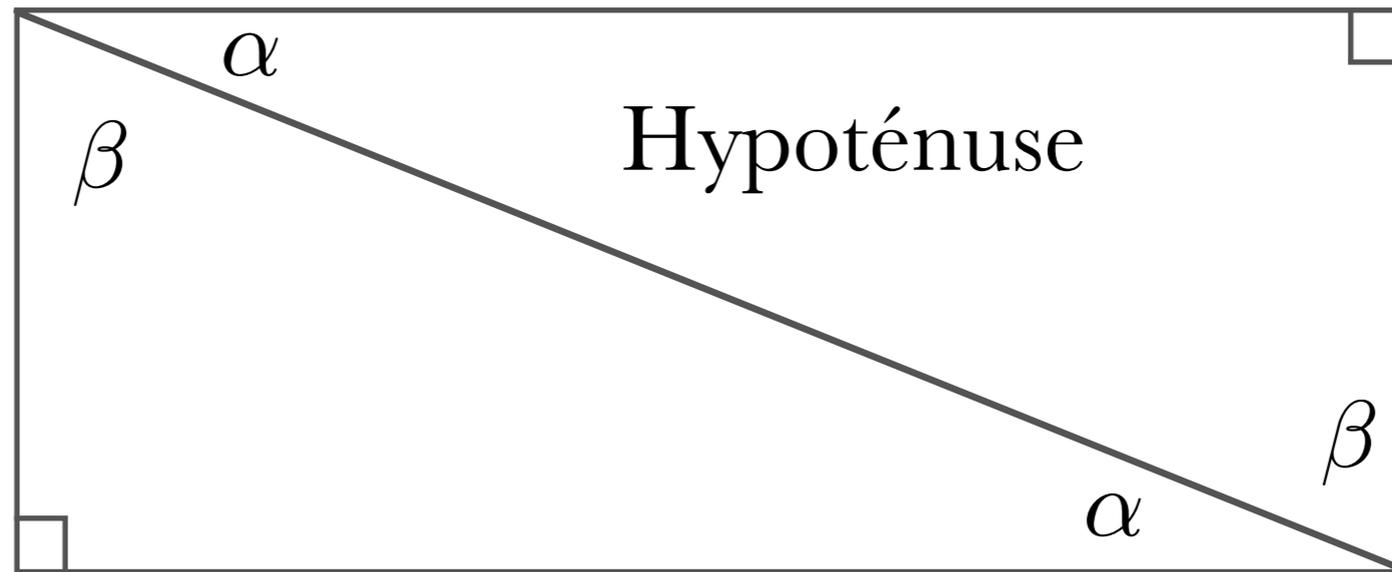
Adjacent à  $\alpha$

Opposé à  $\beta$

Dans un triangle rectangle

Opposé à  $\alpha$

Adjacent à  $\beta$

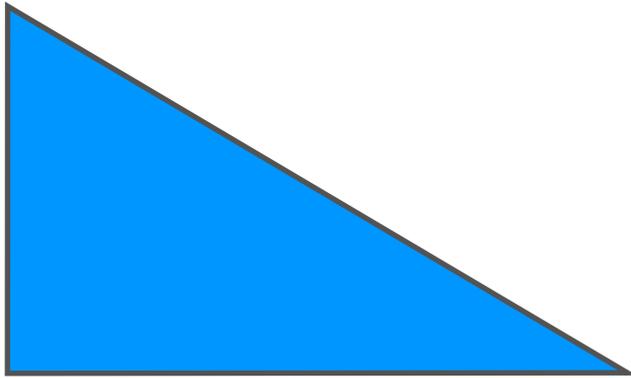


Adjacent à  $\alpha$

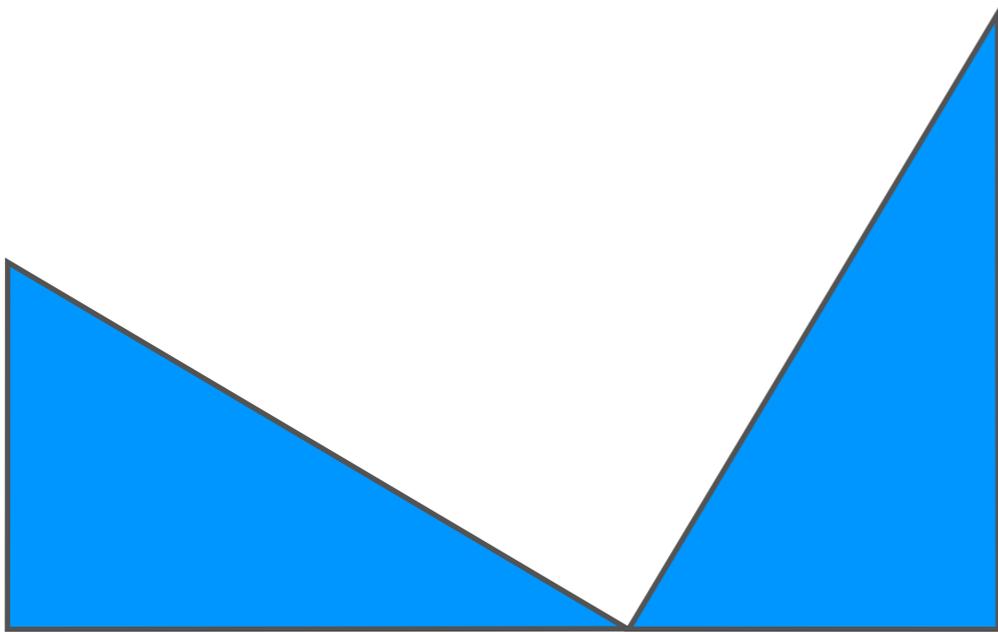
Opposé à  $\beta$

$\alpha$  et  $\beta$  sont complémentaires

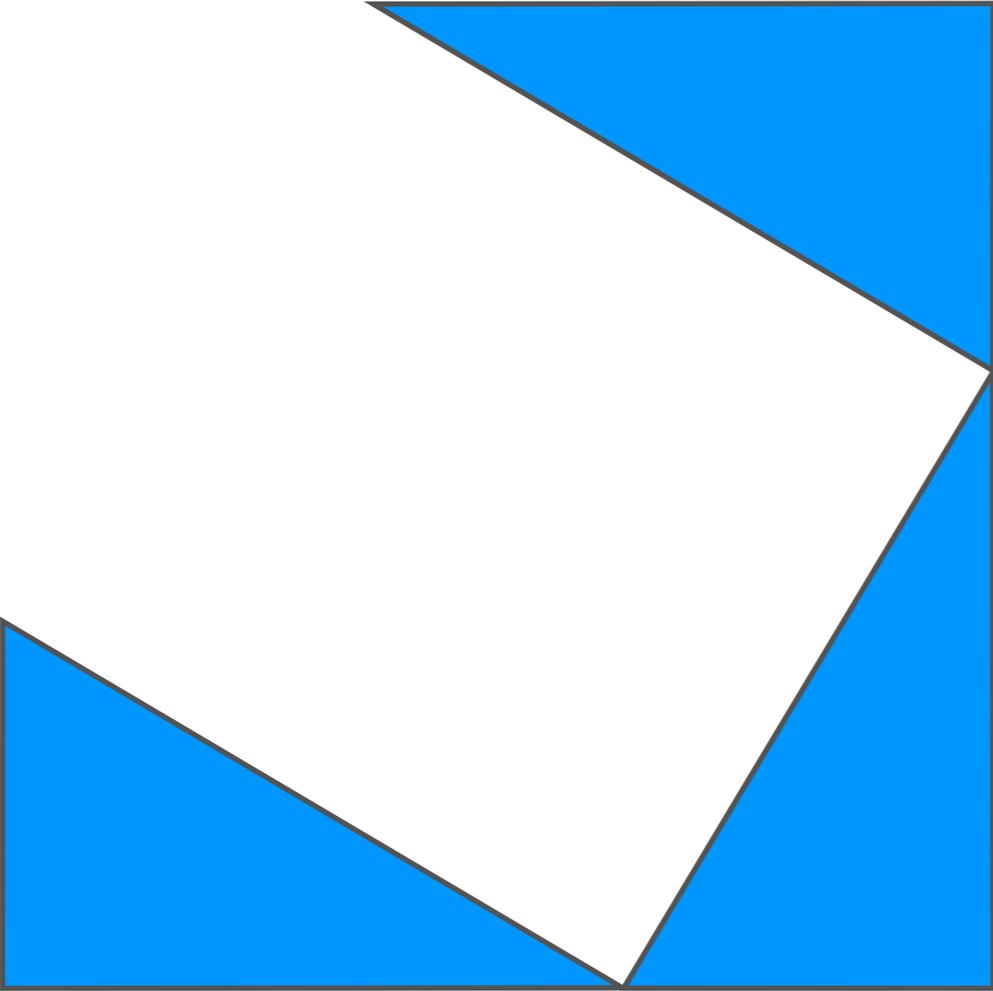
# Théorème de Pythagore



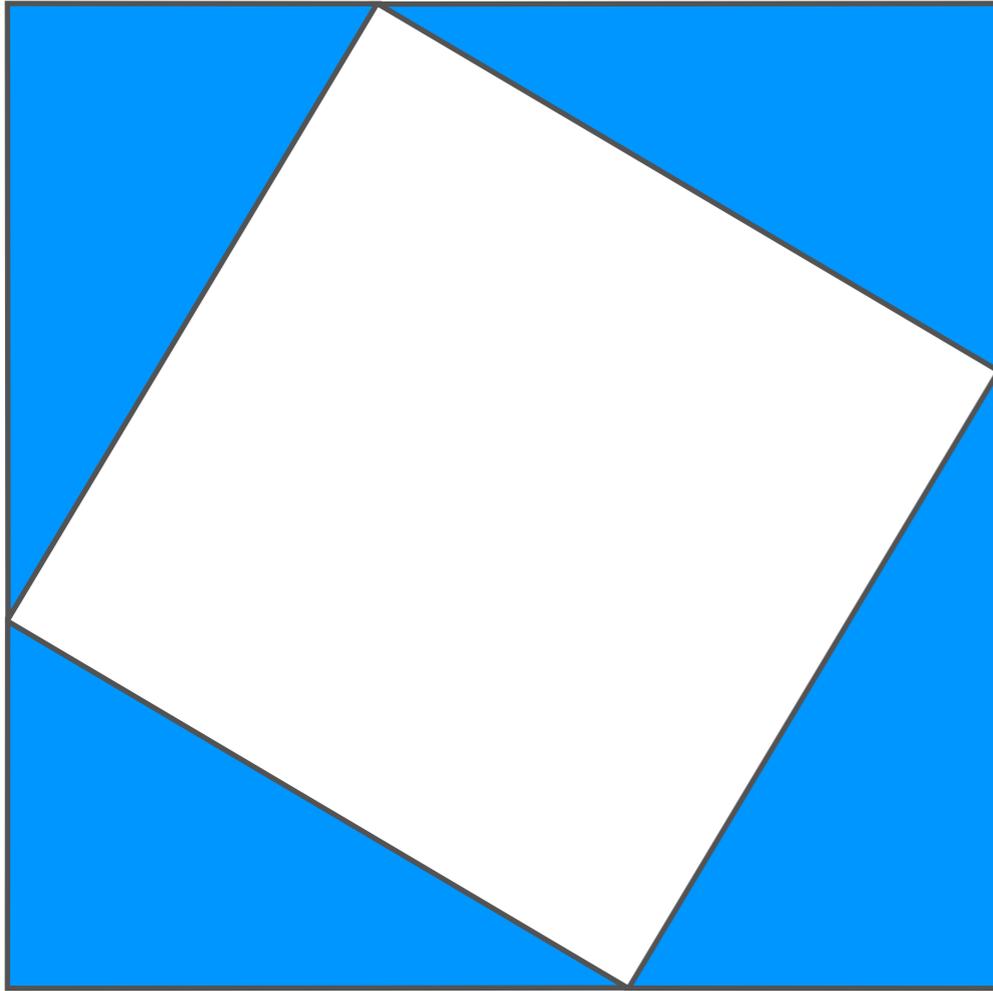
# Théorème de Pythagore



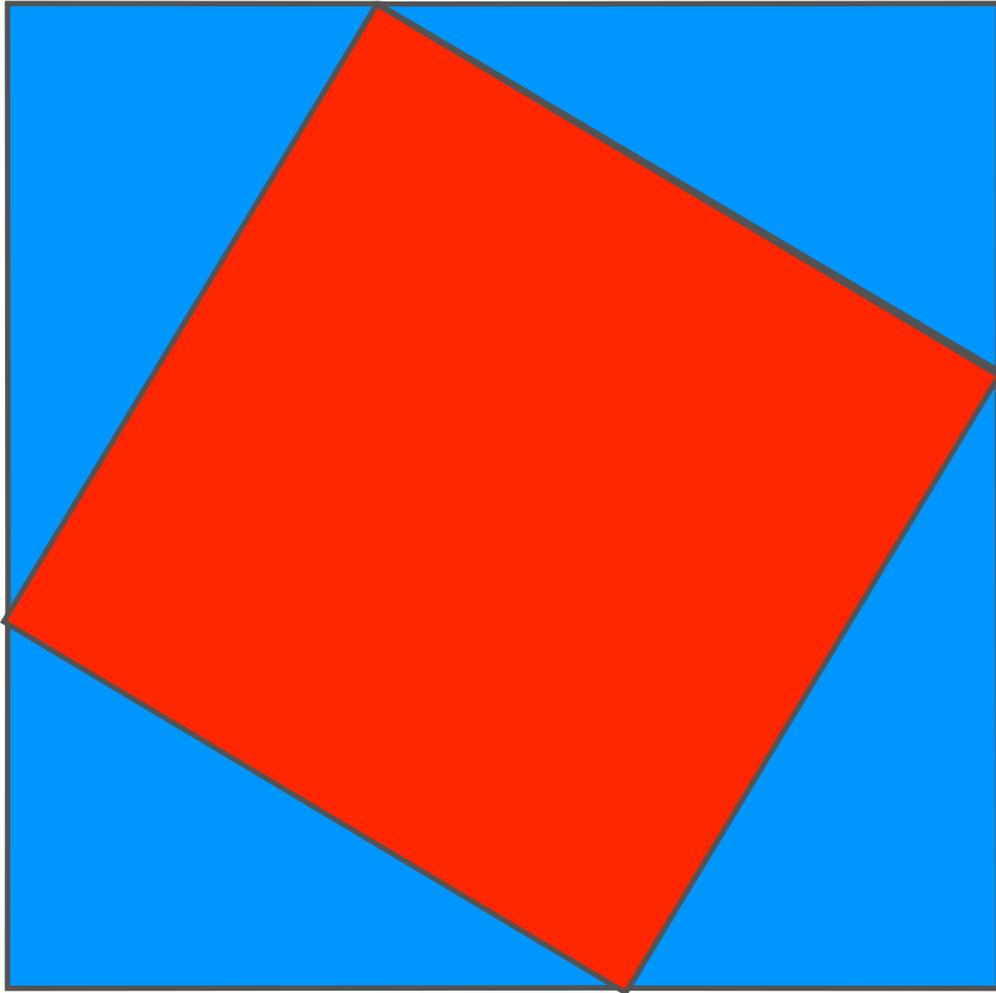
# Théorème de Pythagore



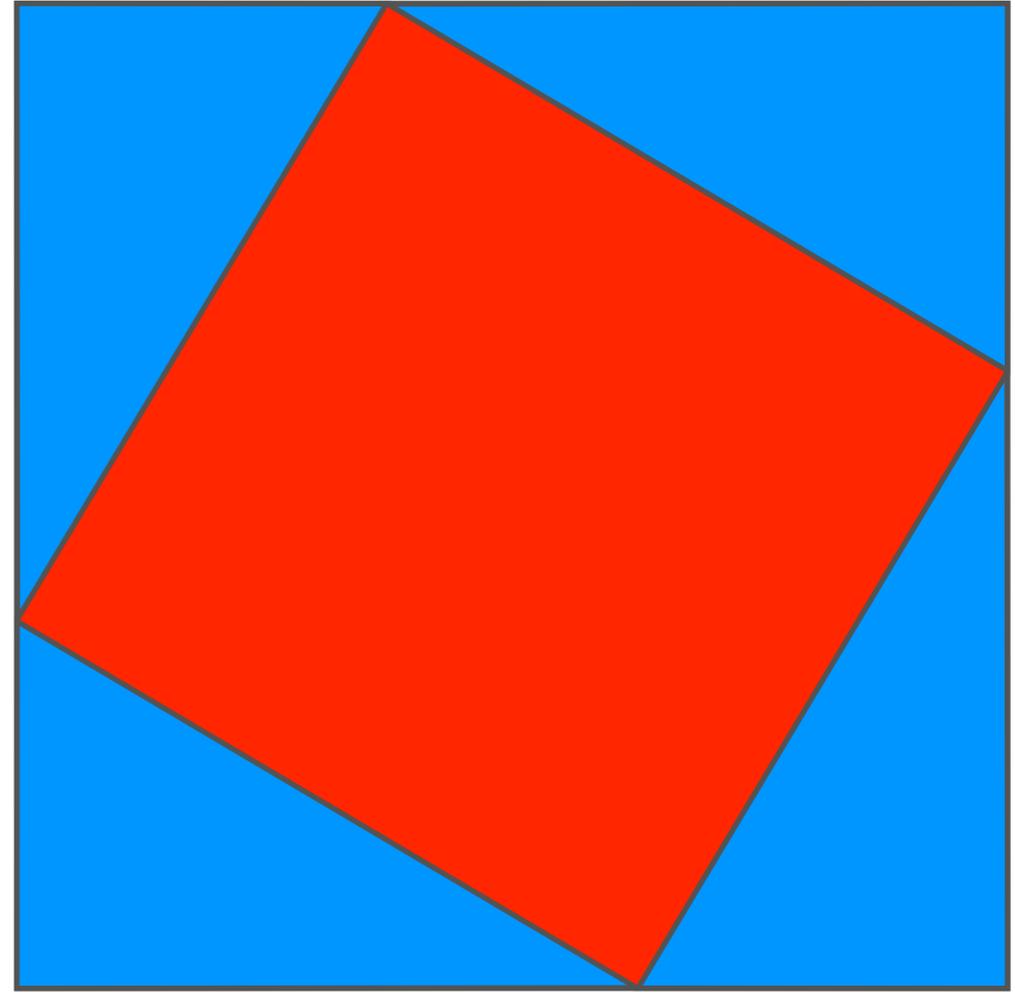
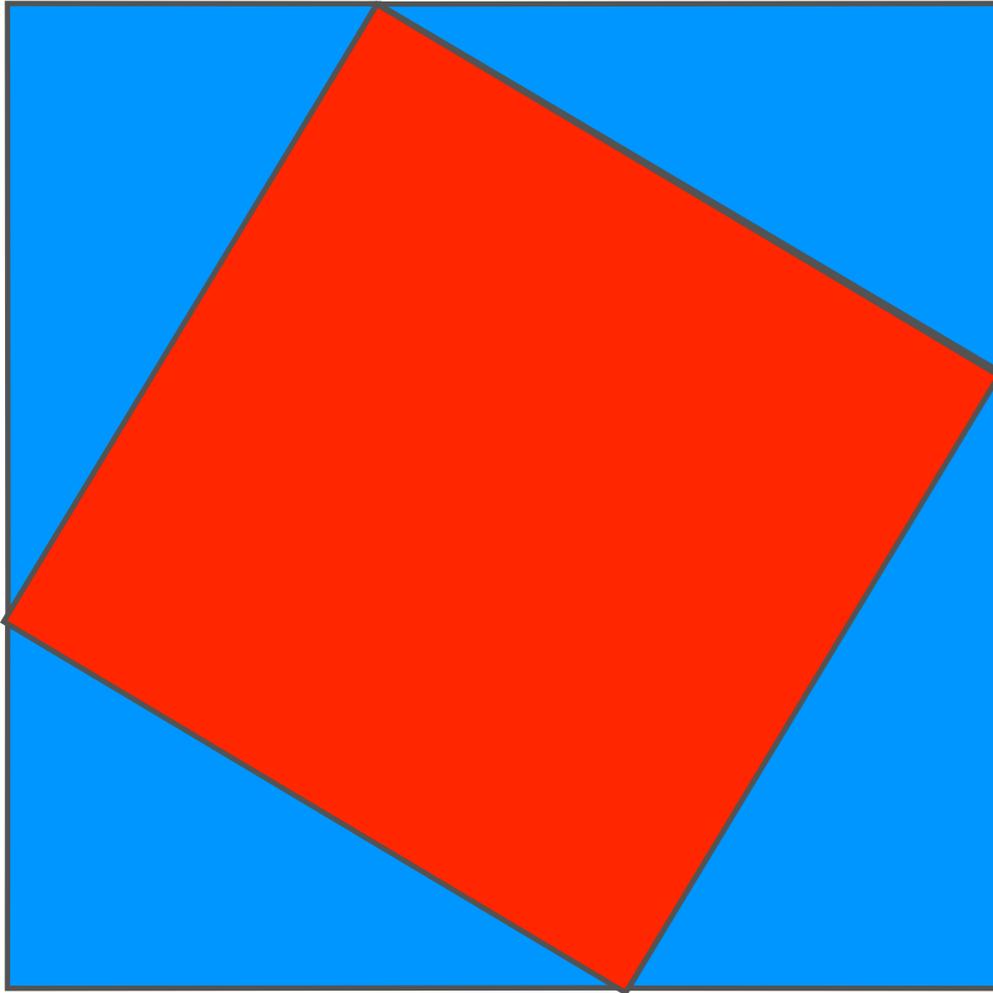
# Théorème de Pythagore



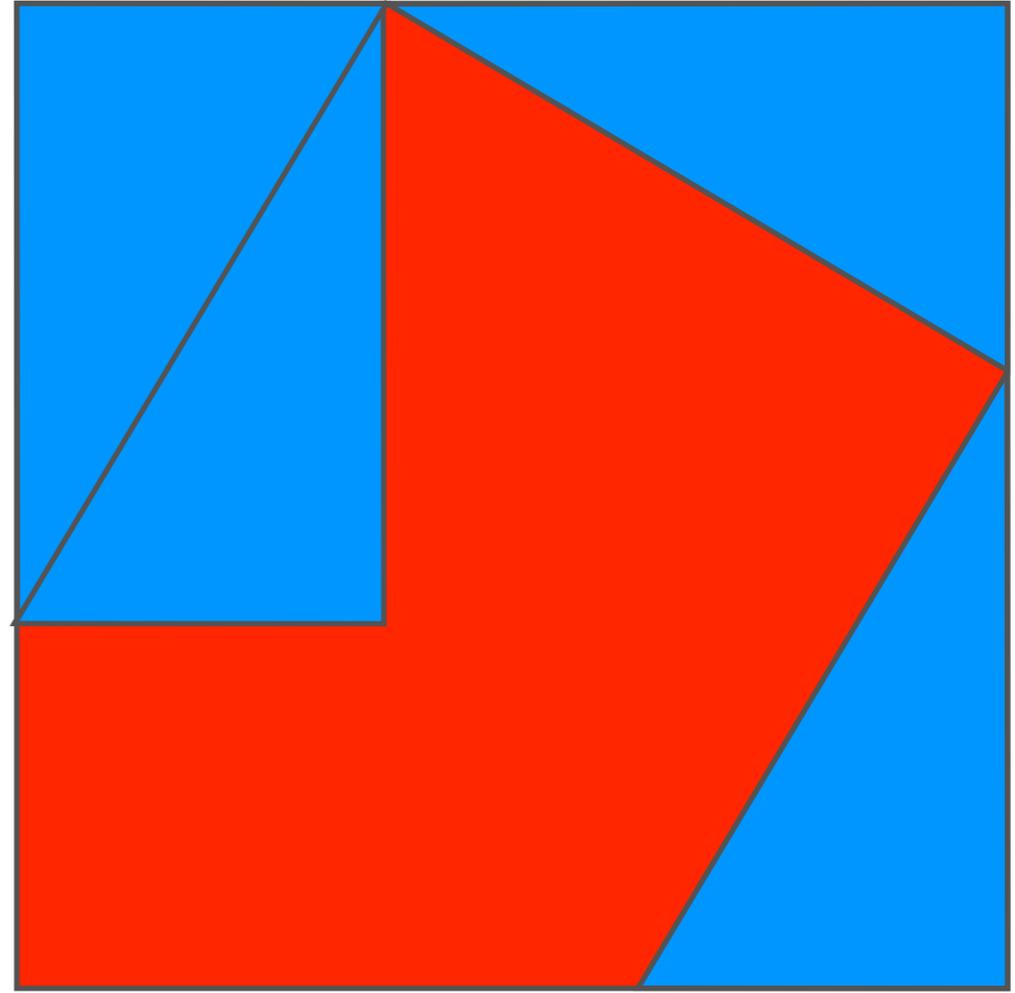
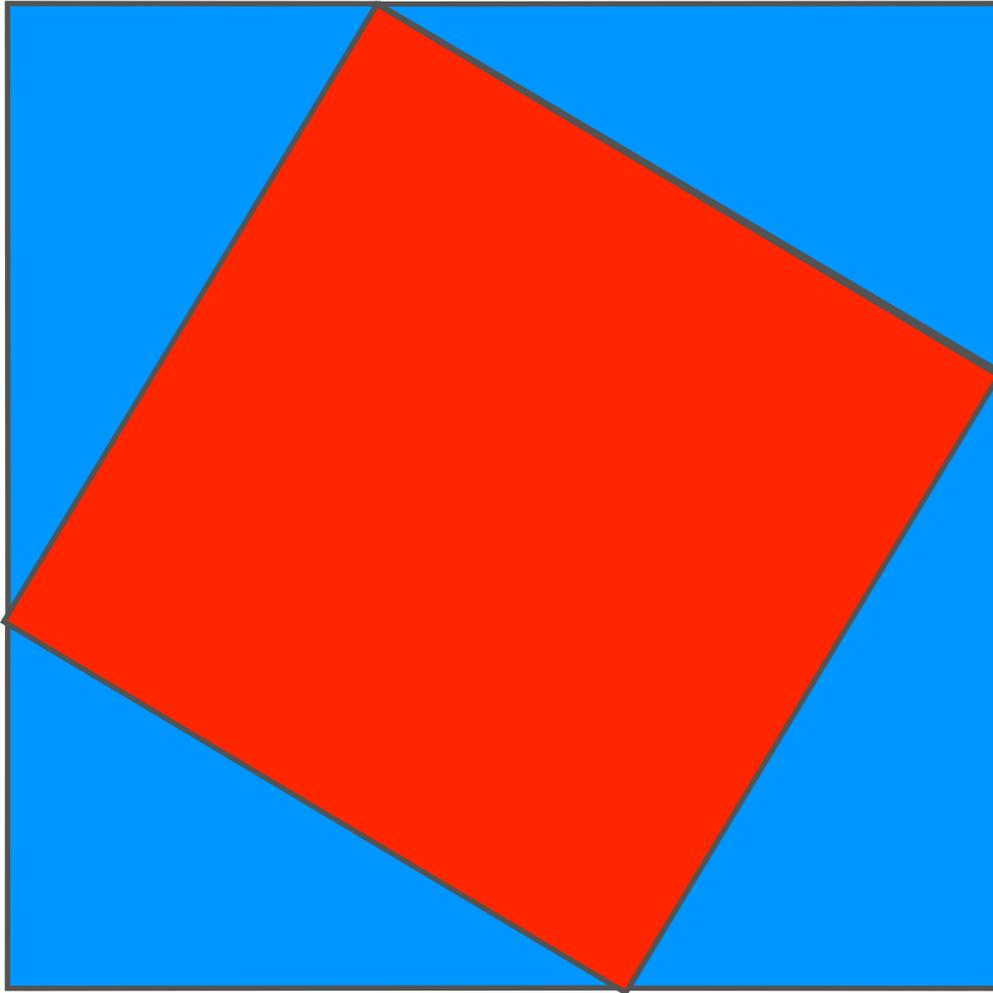
# Théorème de Pythagore



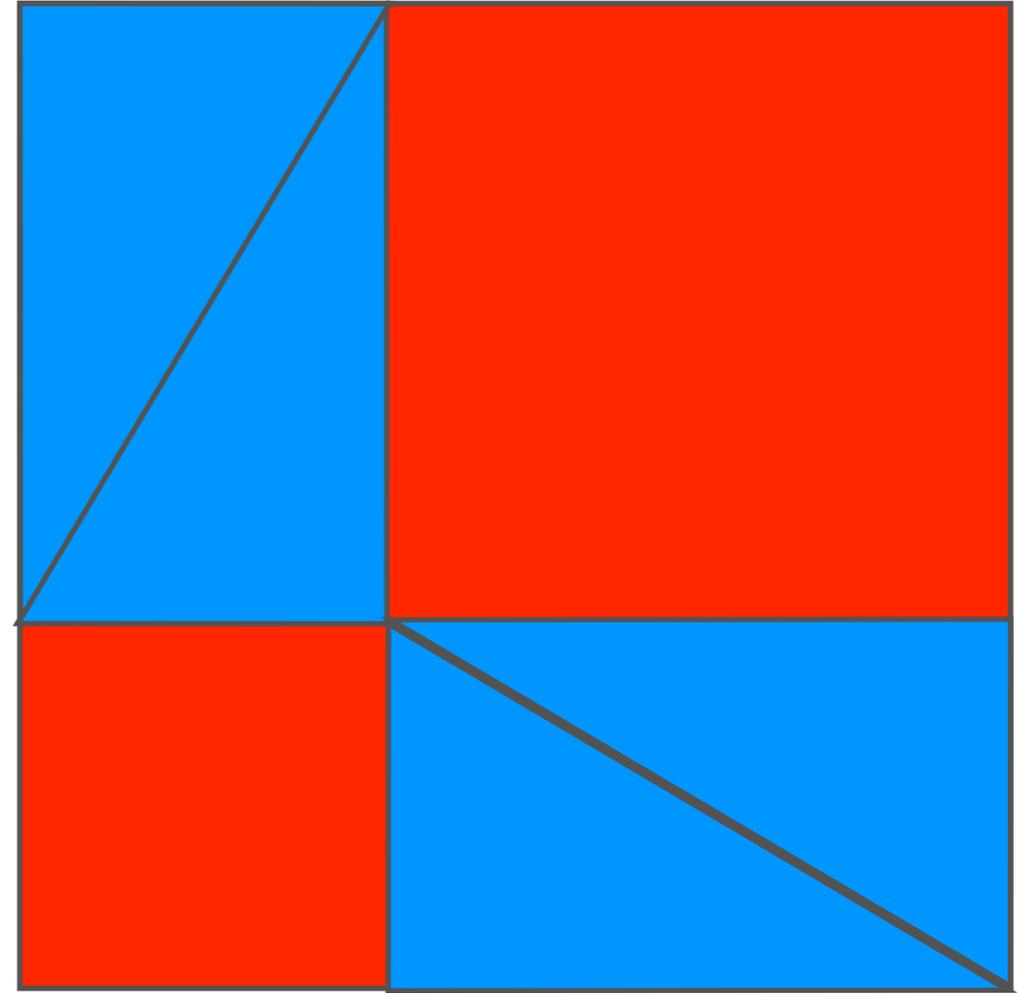
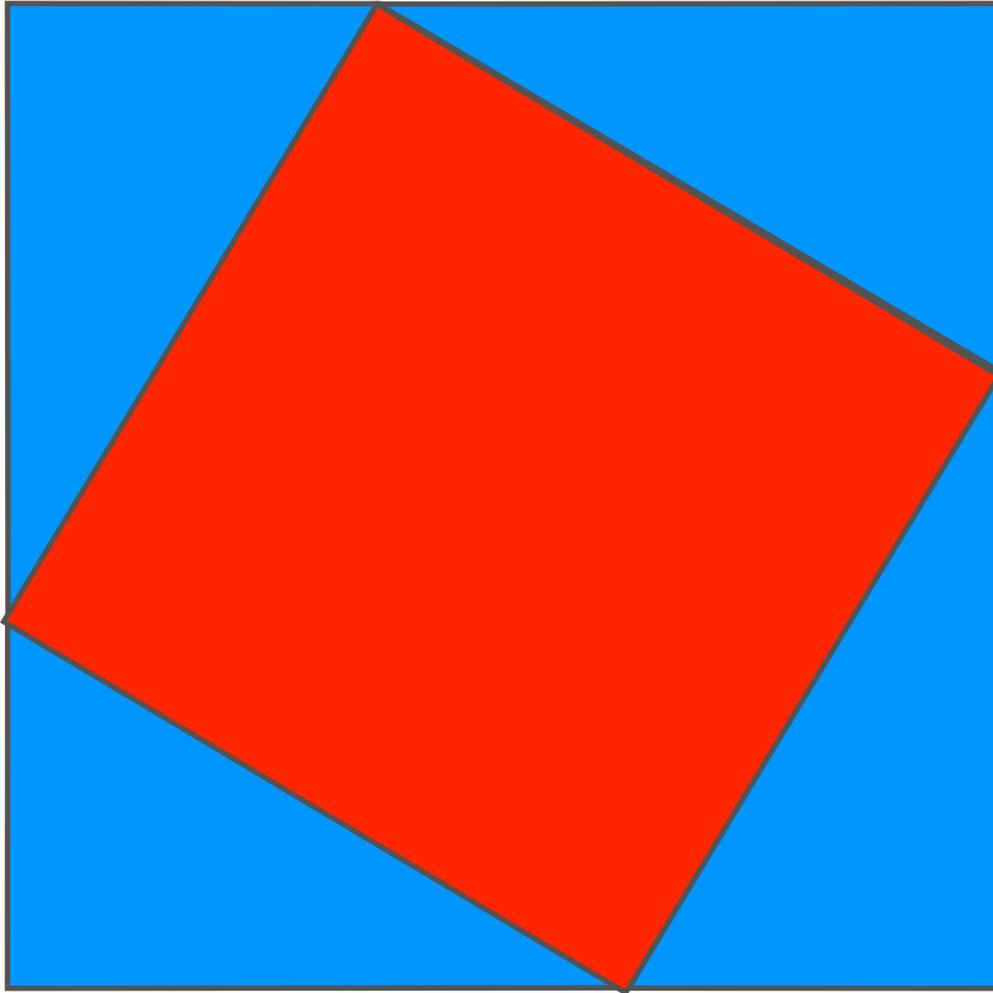
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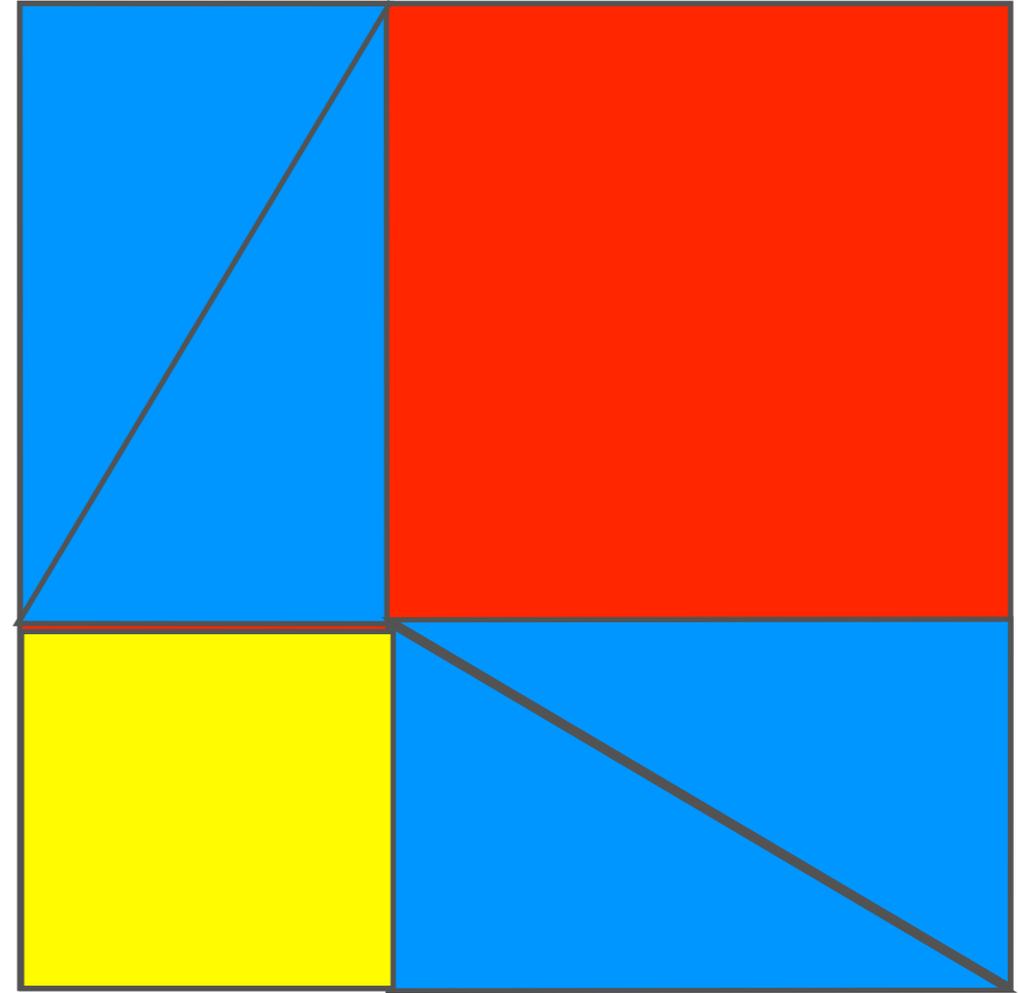
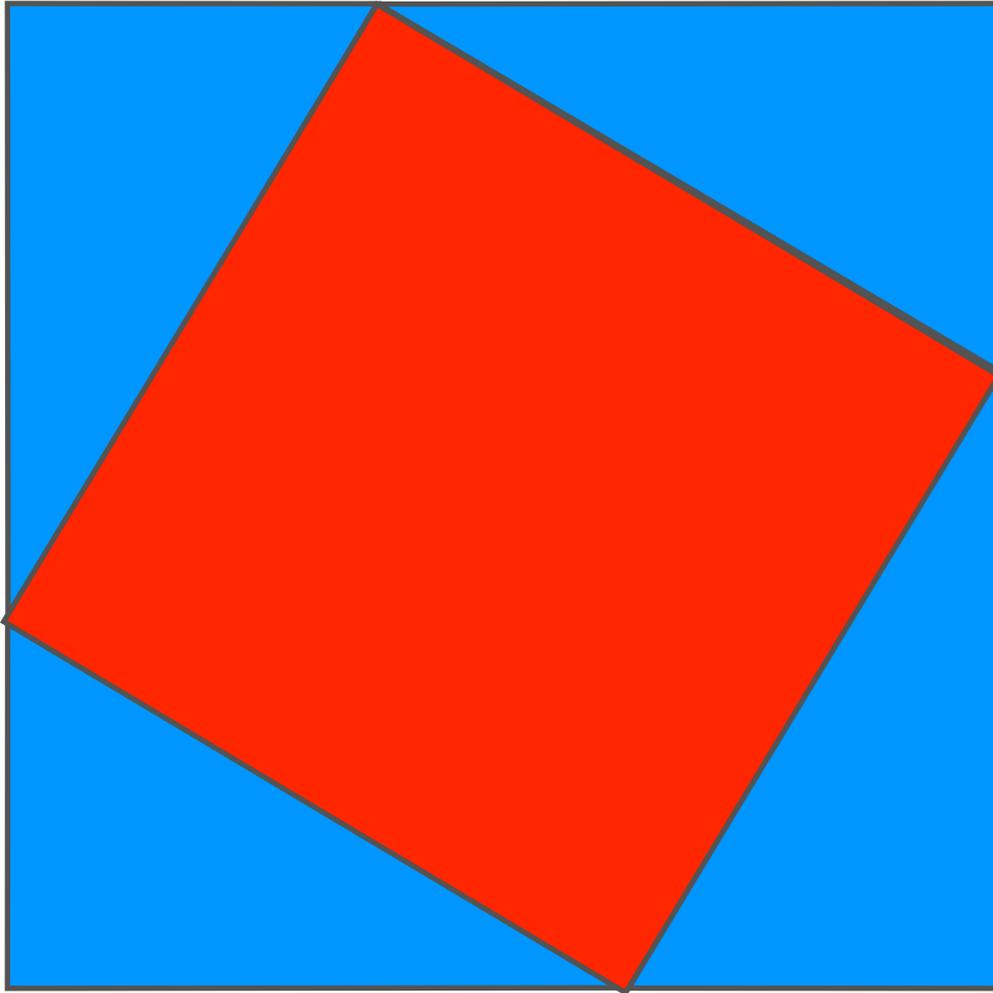
# Théorème de Pythagore



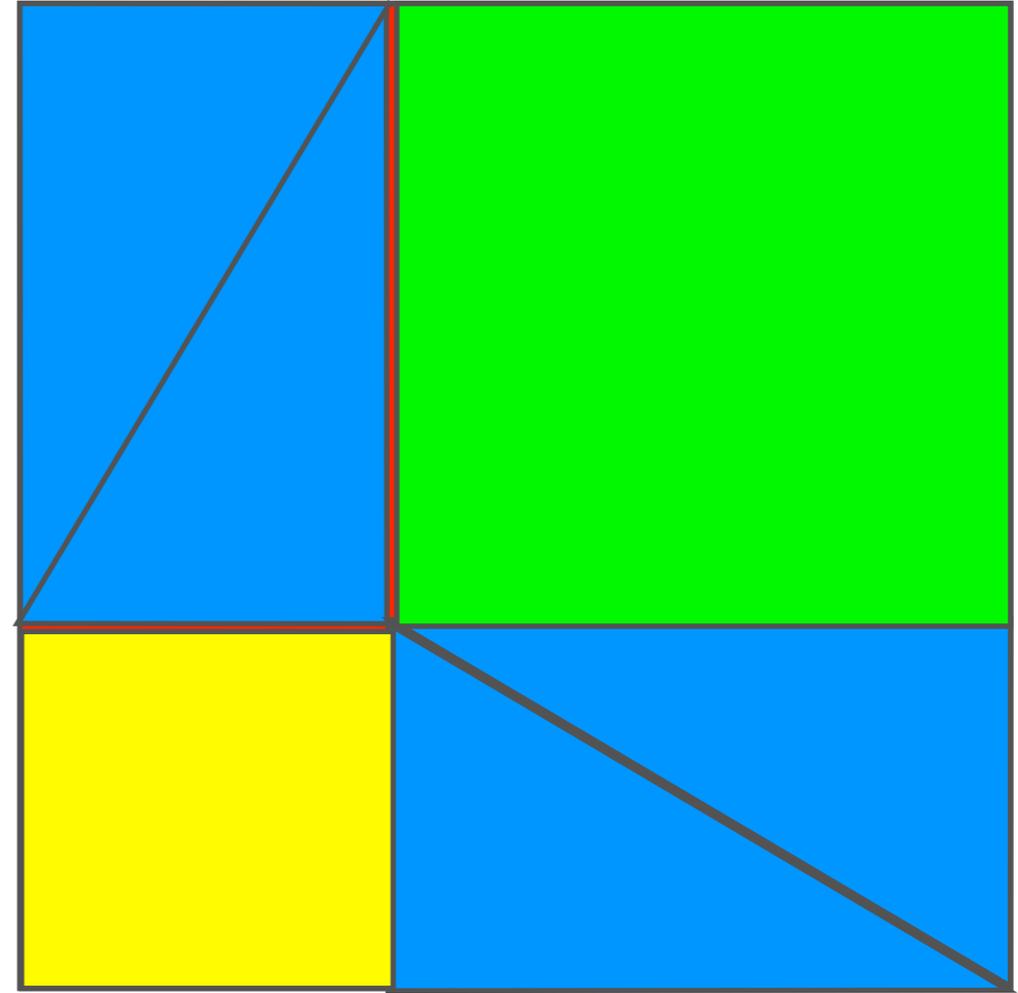
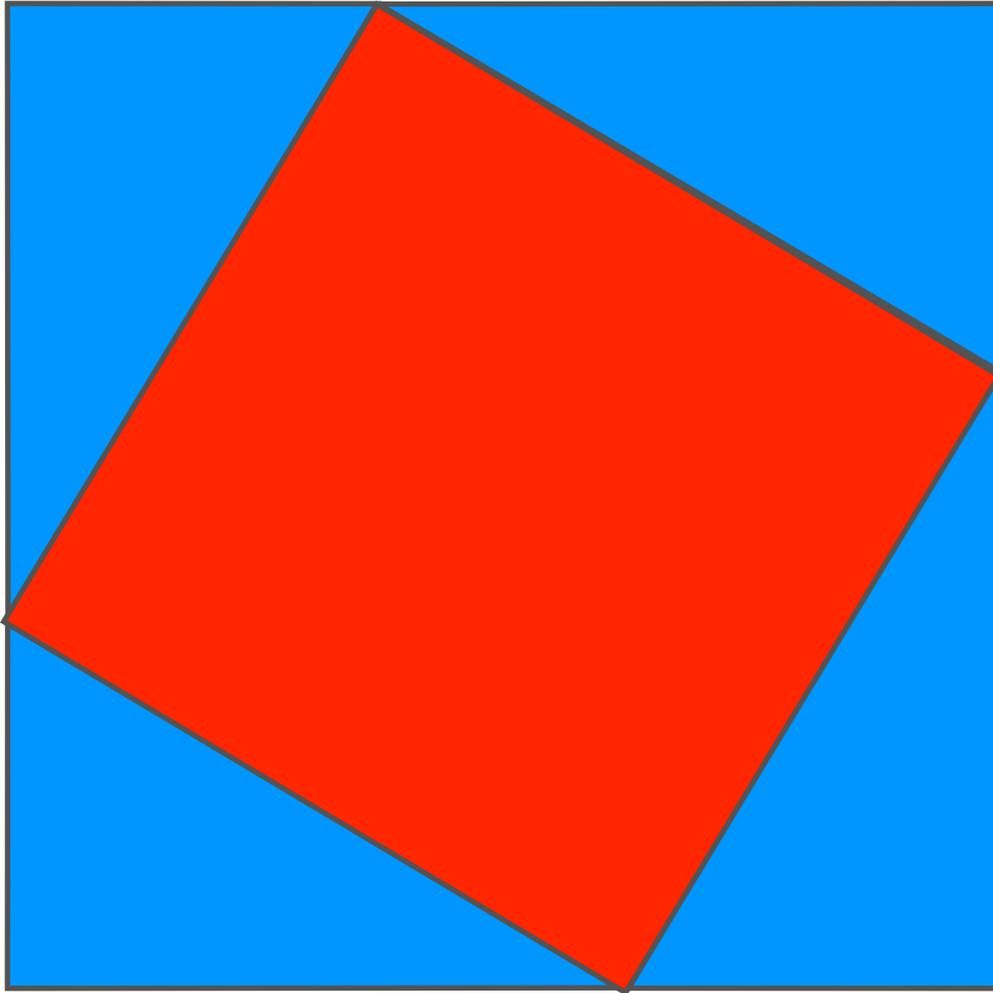
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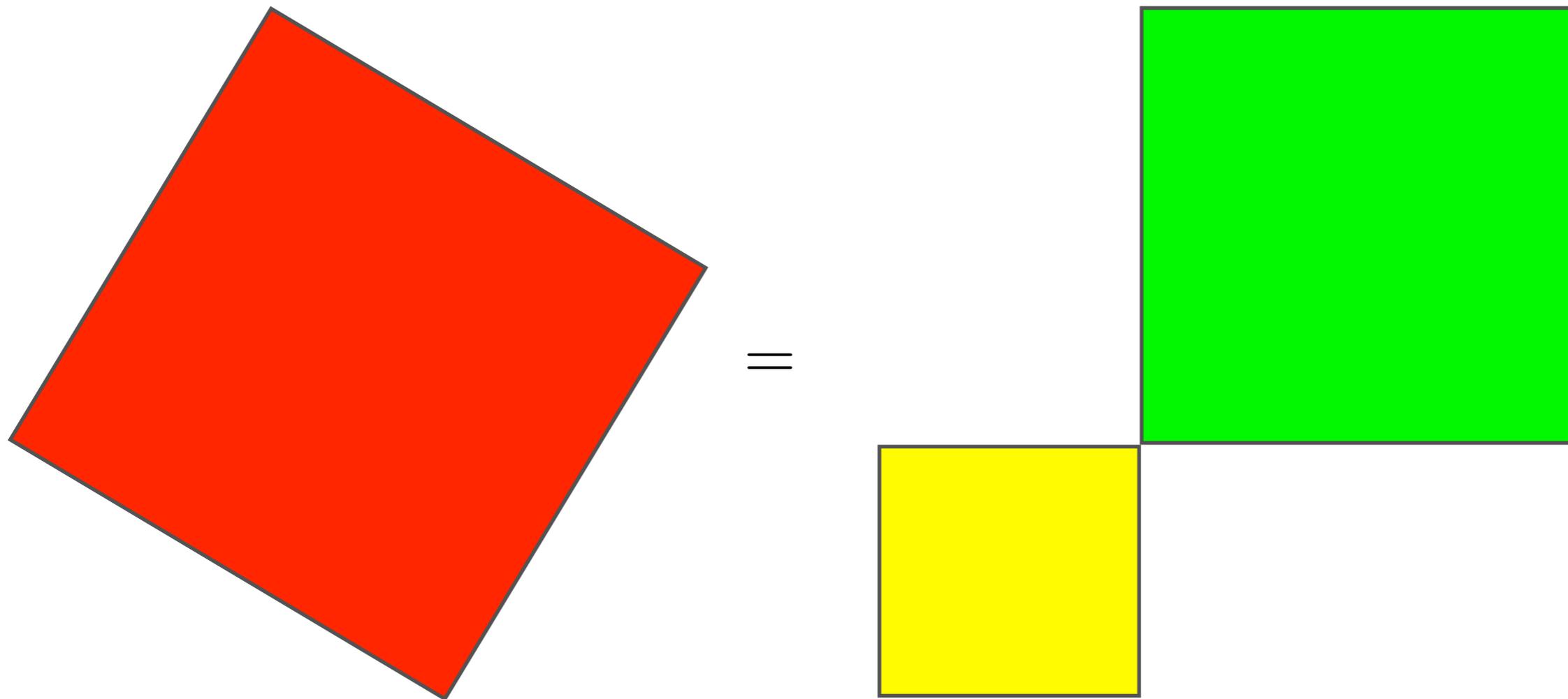
# Théorème de Pythagore



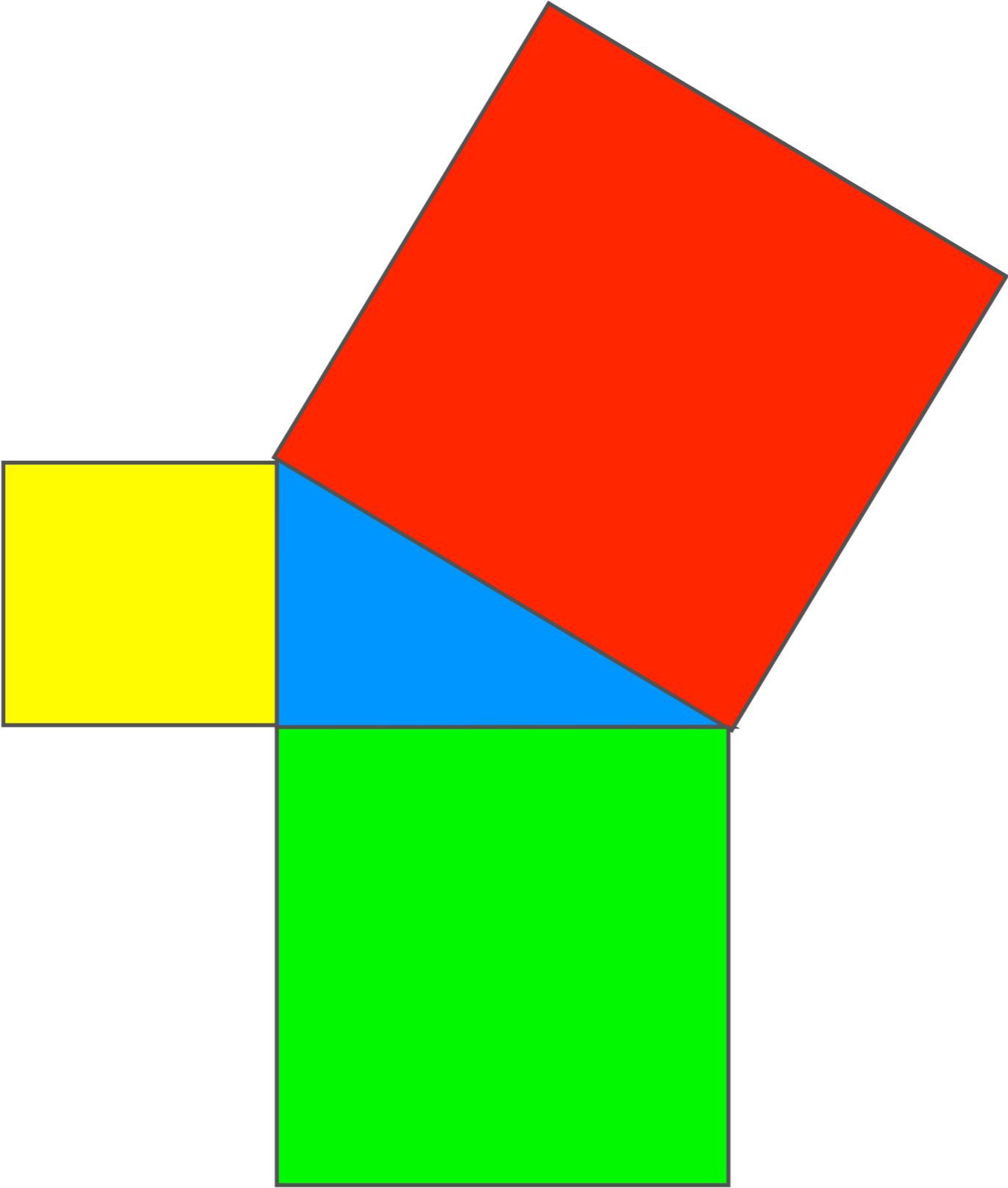
# Théorème de Pythagore



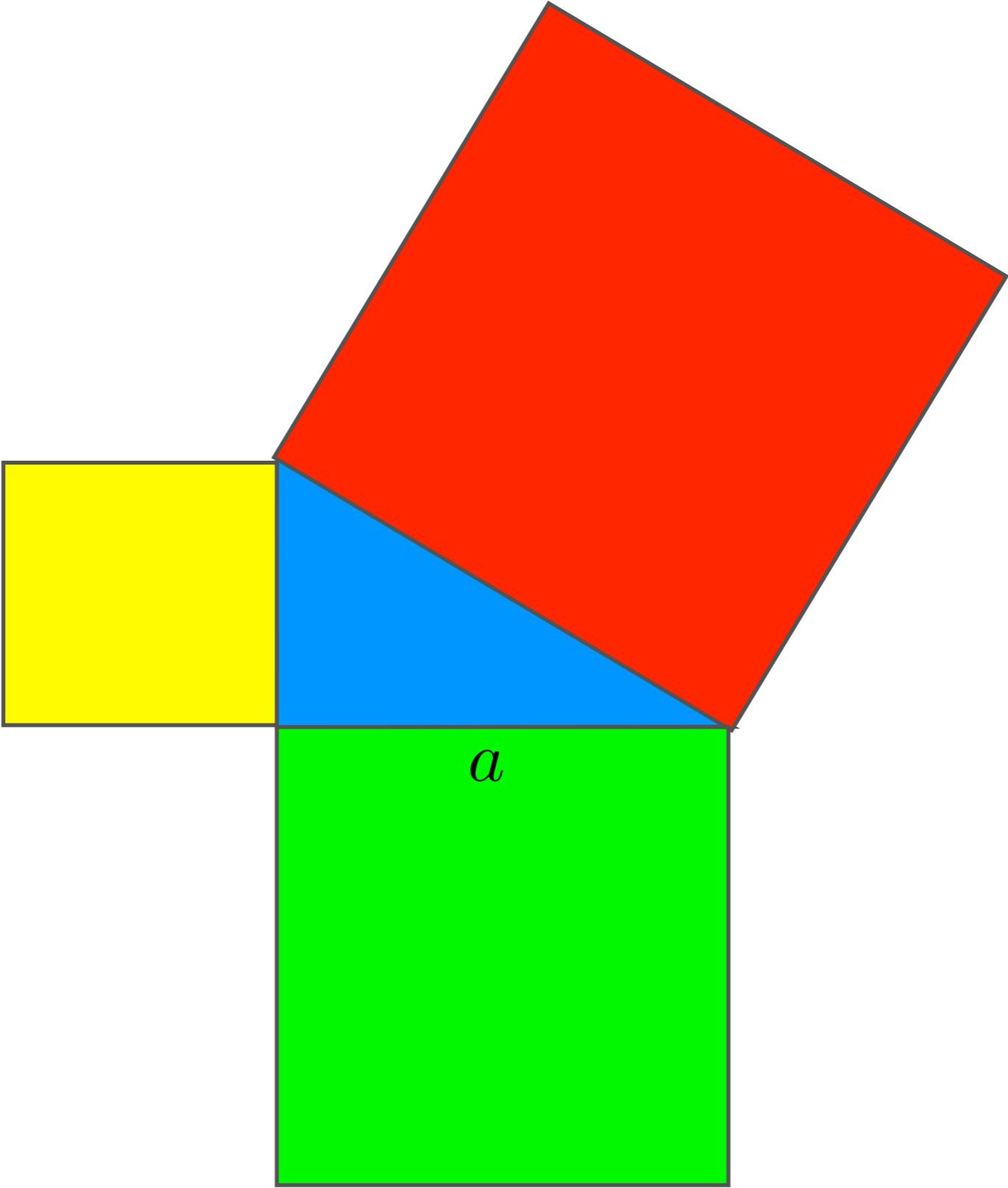
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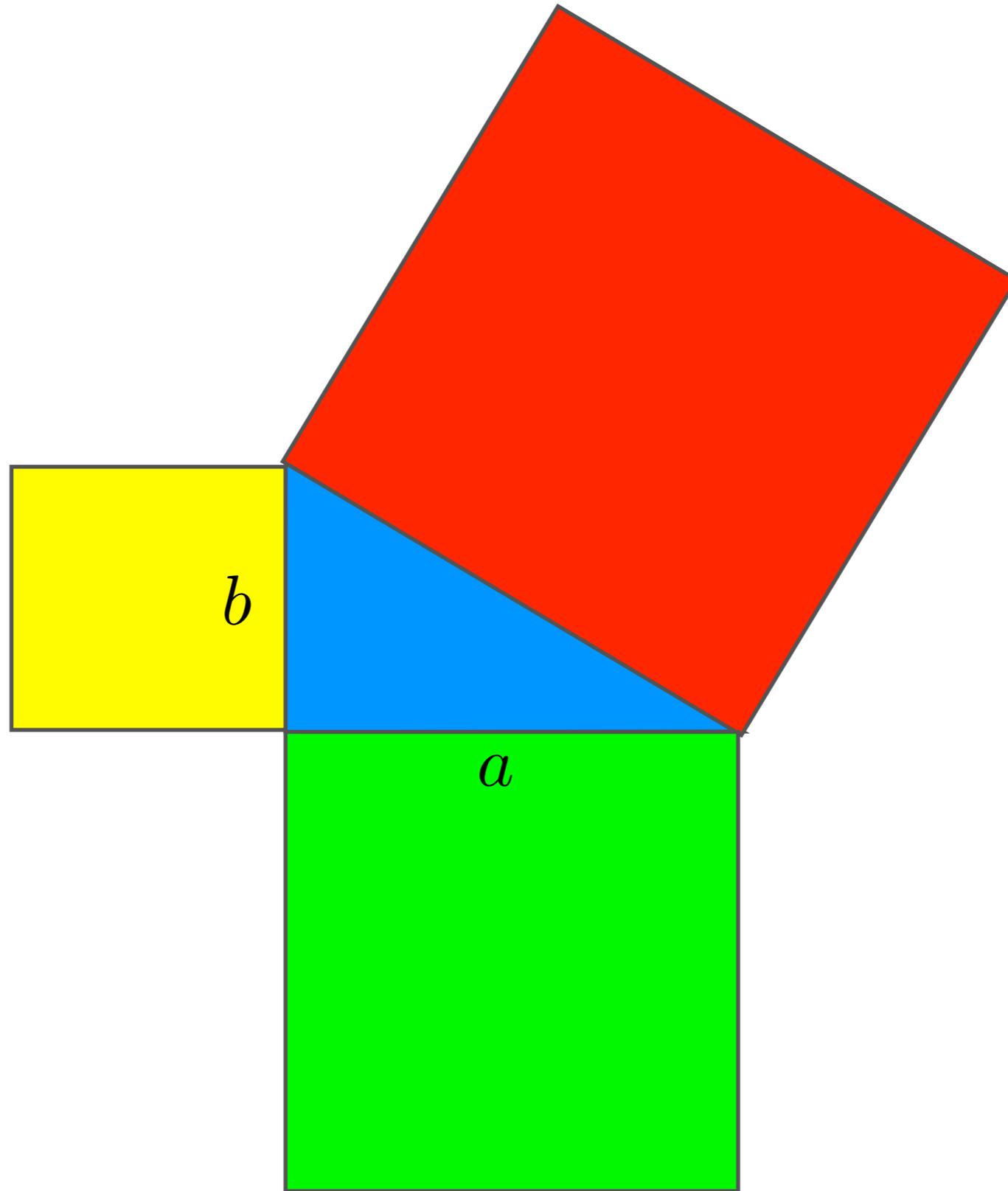
# Théorème de Pythagore



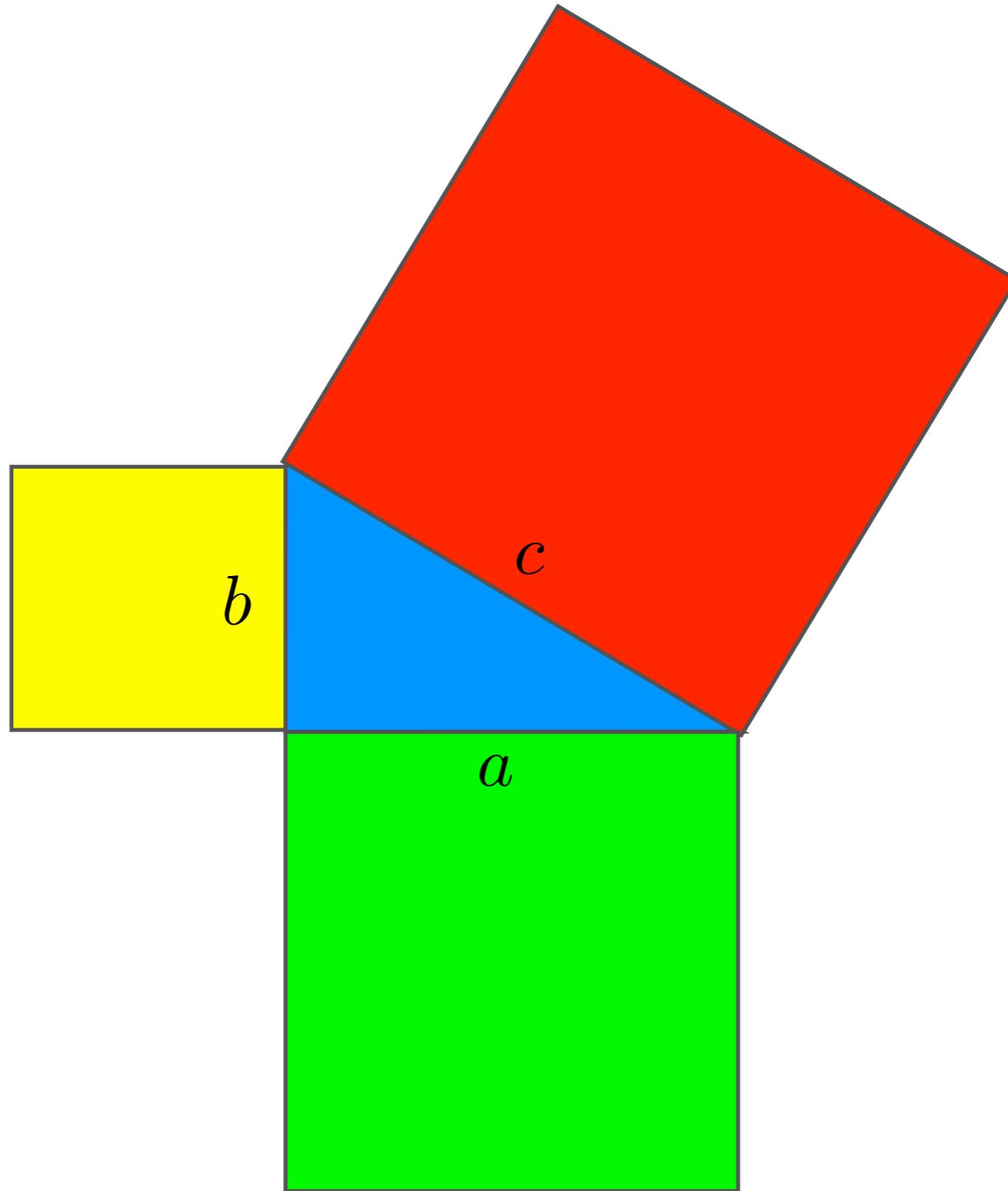
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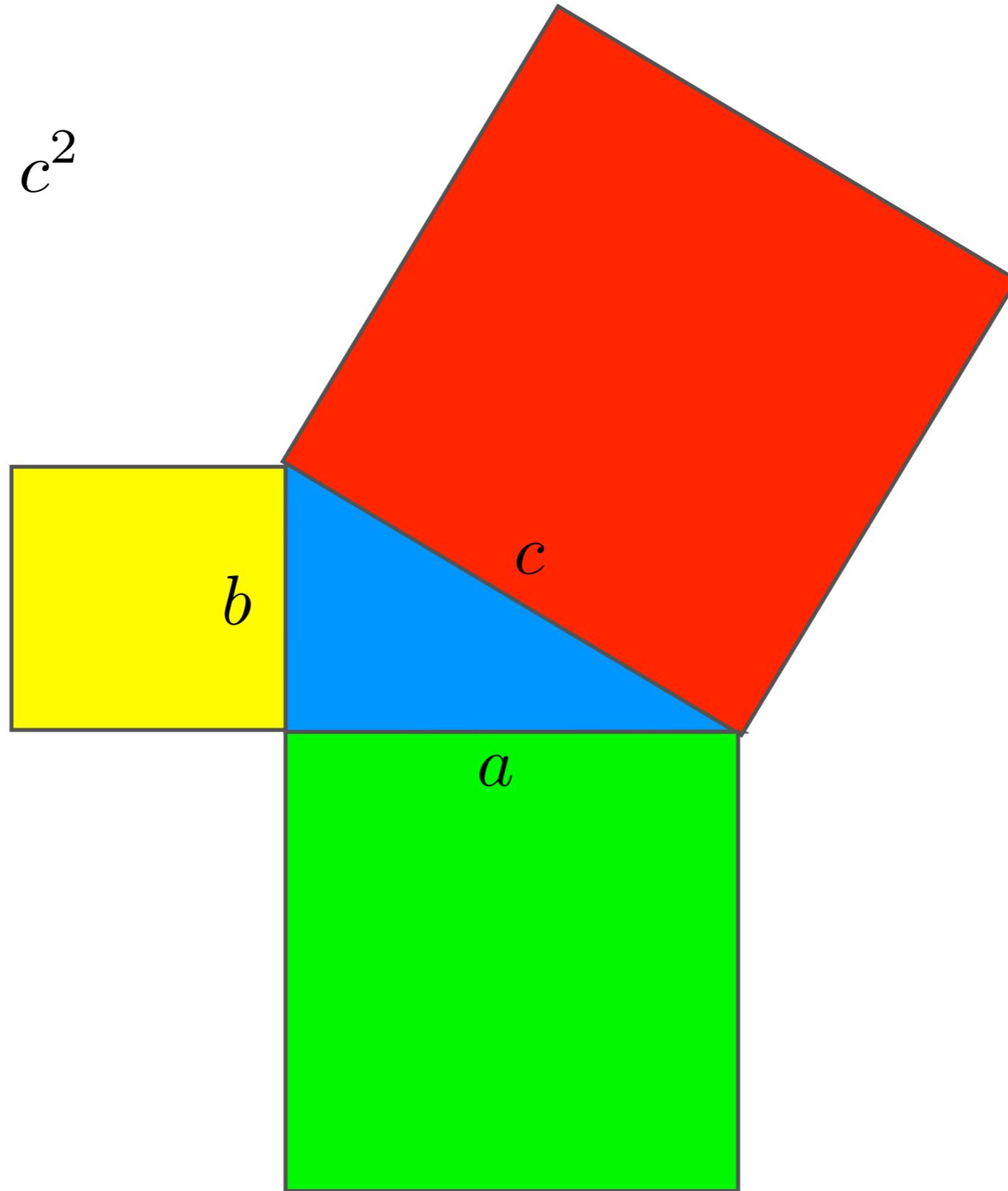


# Théorème de Pythagore

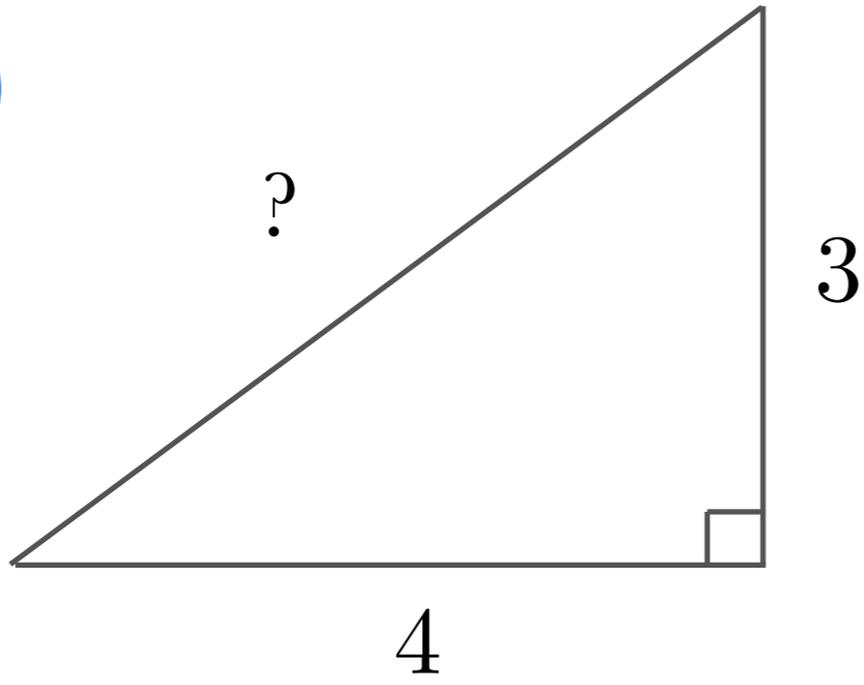


# Théorème de Pythagore

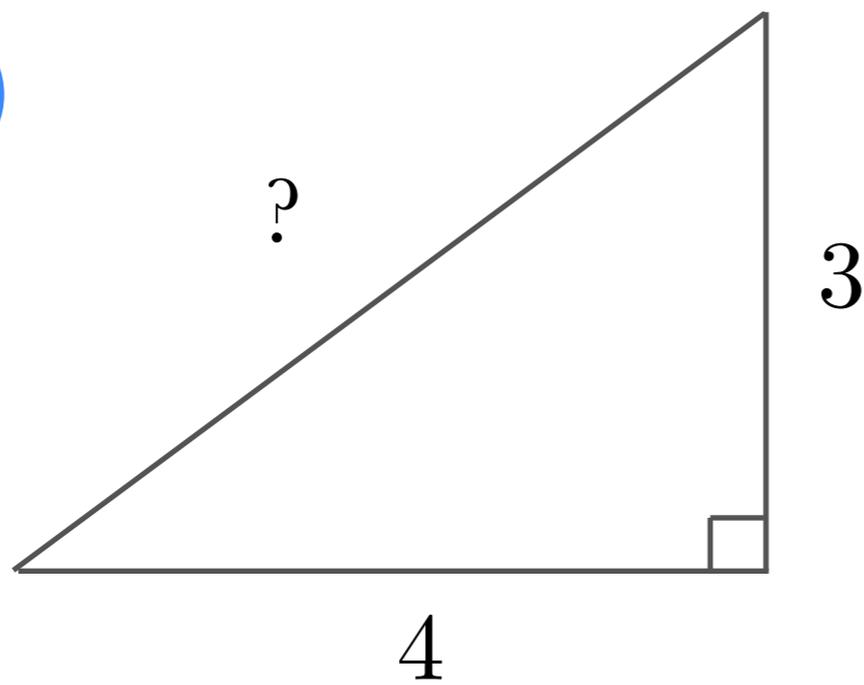
$$a^2 + b^2 = c^2$$



# Example

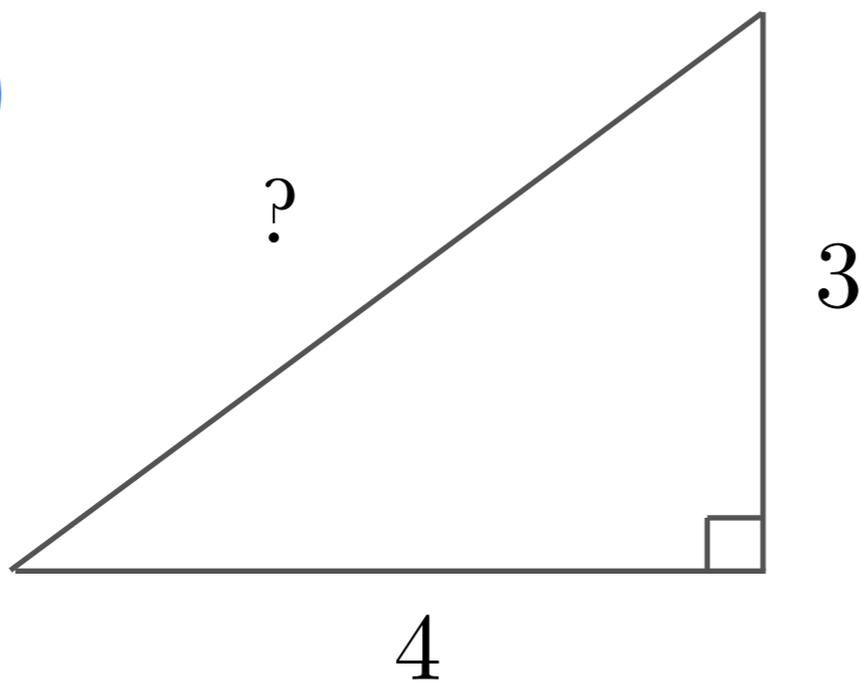


# Example



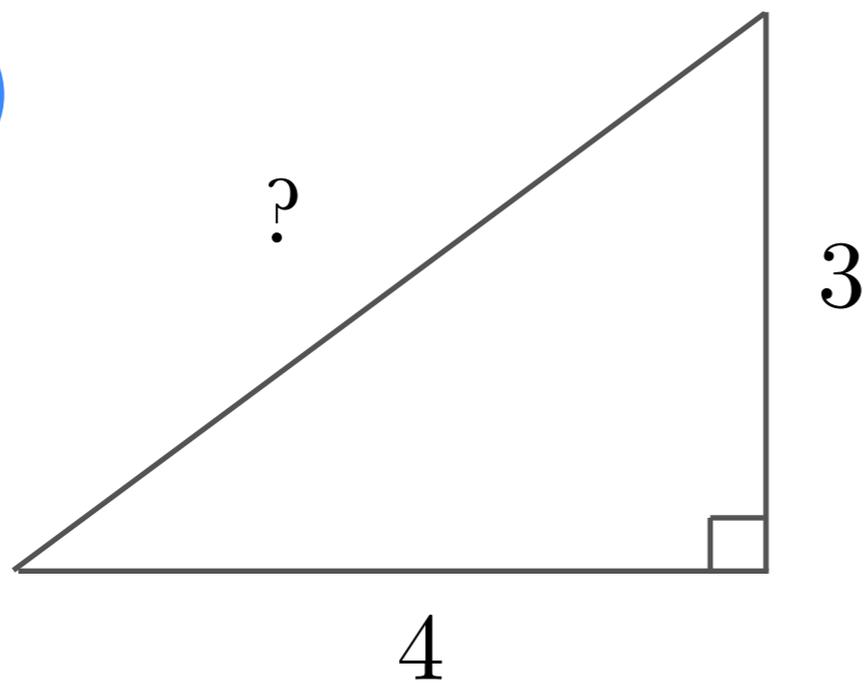
$$3^2 + 4^2 = 9 + 16$$

# Example



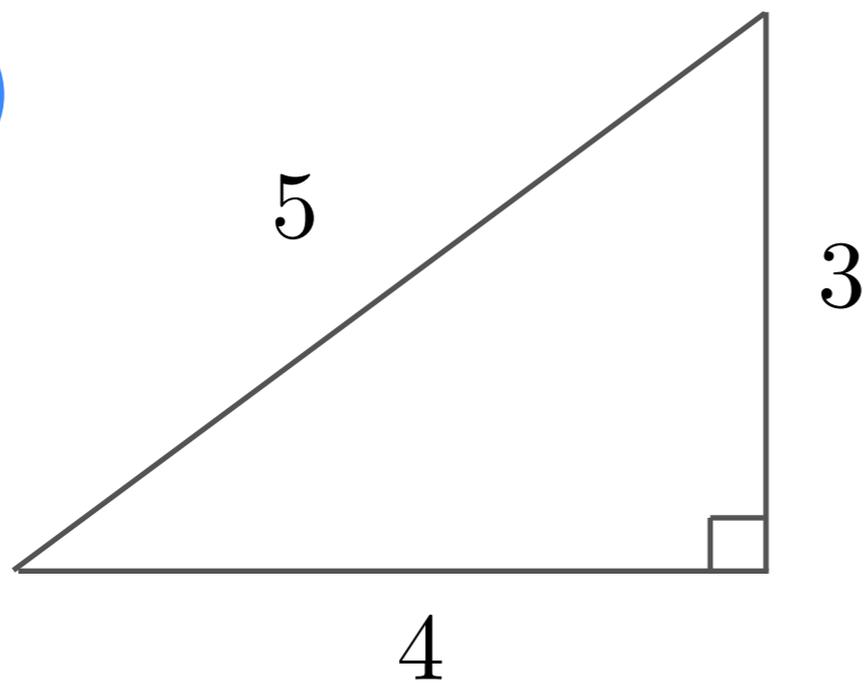
$$\begin{aligned} 3^2 + 4^2 &= 9 + 16 \\ &= 25 \end{aligned}$$

# Example



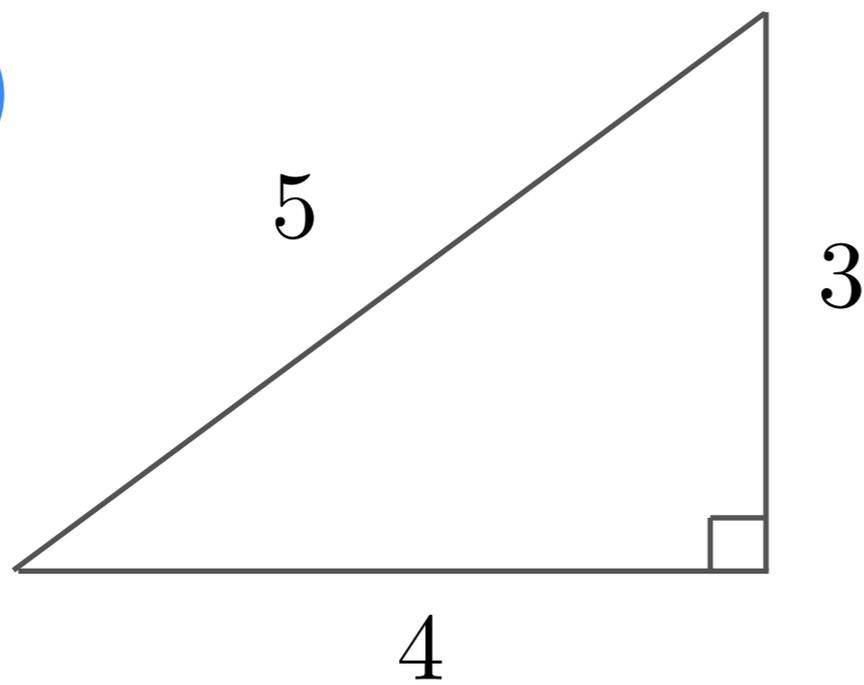
$$\begin{aligned} 3^2 + 4^2 &= 9 + 16 \\ &= 25 = 5^2 \end{aligned}$$

# Example



$$\begin{aligned} 3^2 + 4^2 &= 9 + 16 \\ &= 25 = 5^2 \end{aligned}$$

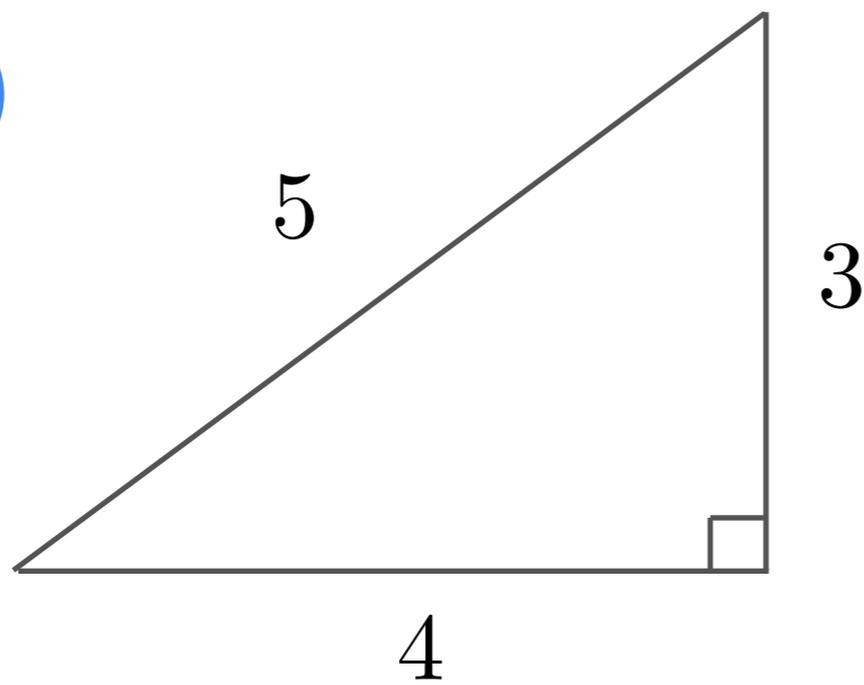
Example



$$\begin{aligned}3^2 + 4^2 &= 9 + 16 \\ &= 25 = 5^2\end{aligned}$$

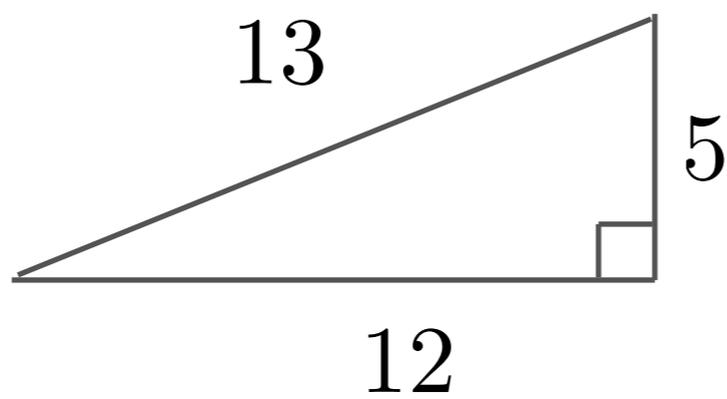
Example

Example

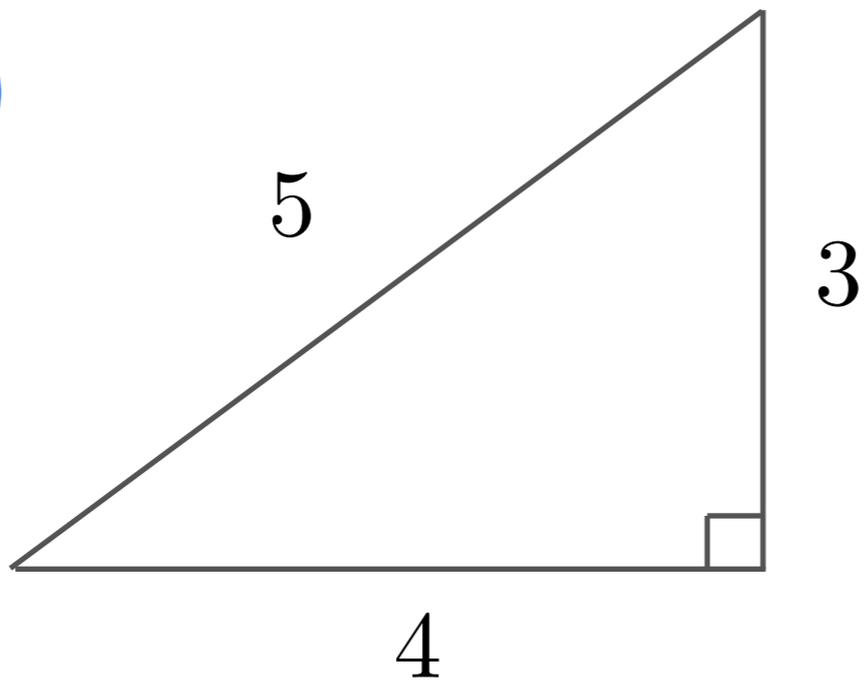


$$\begin{aligned} 3^2 + 4^2 &= 9 + 16 \\ &= 25 = 5^2 \end{aligned}$$

Example

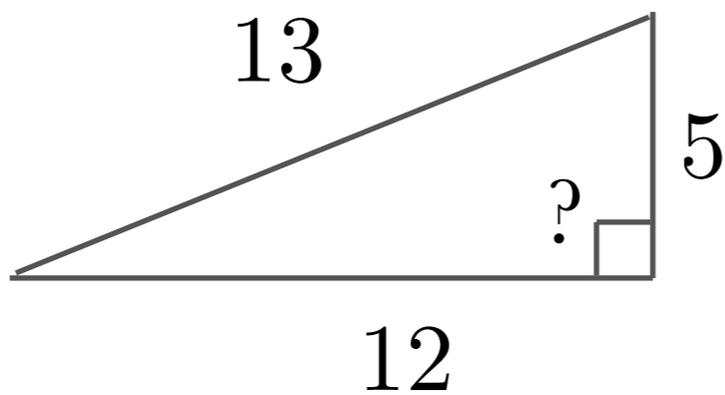


Example

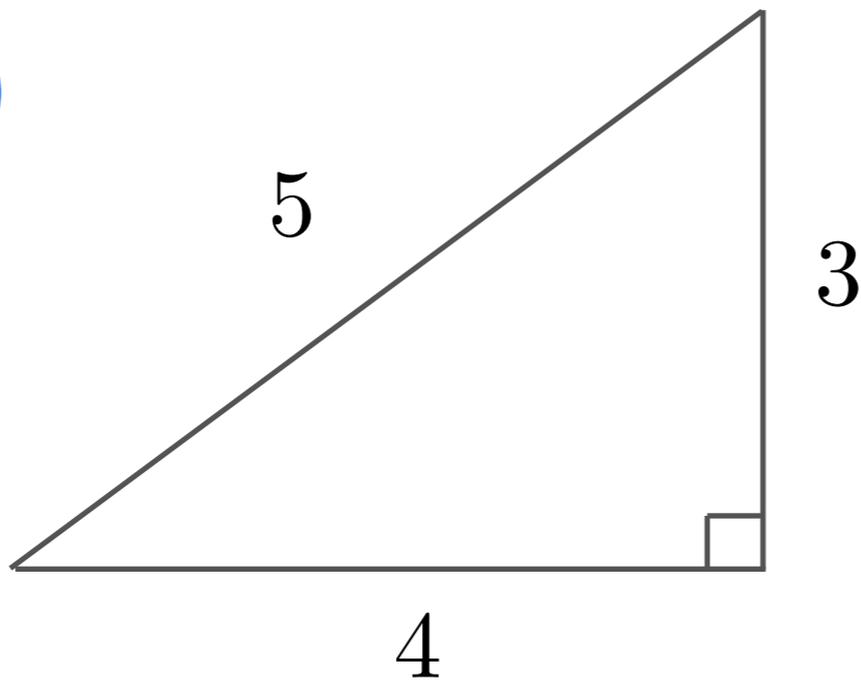


$$\begin{aligned} 3^2 + 4^2 &= 9 + 16 \\ &= 25 = 5^2 \end{aligned}$$

Example

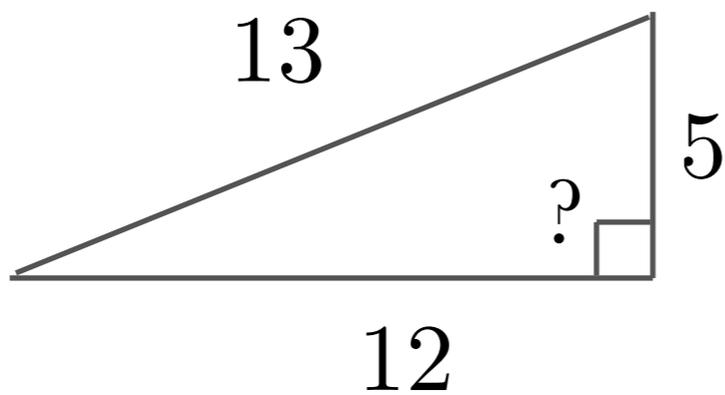


Example



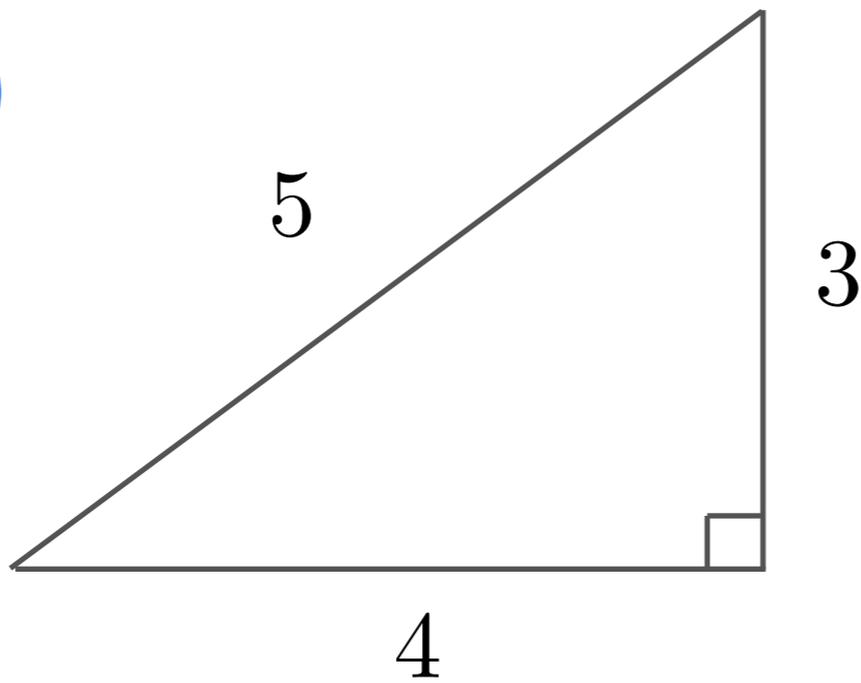
$$\begin{aligned} 3^2 + 4^2 &= 9 + 16 \\ &= 25 = 5^2 \end{aligned}$$

Example



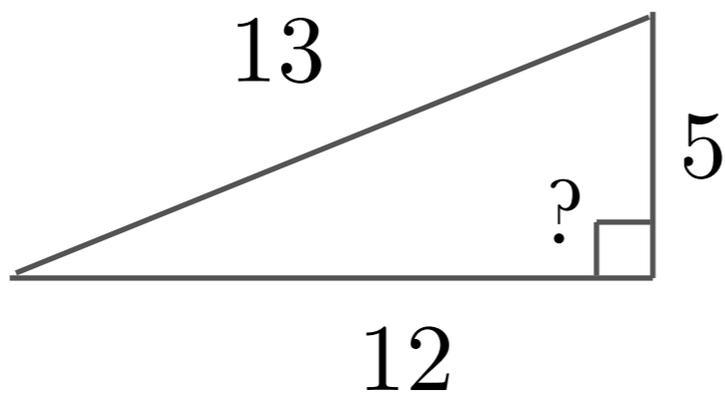
$$12^2 + 5^2 = 144 + 25$$

Example



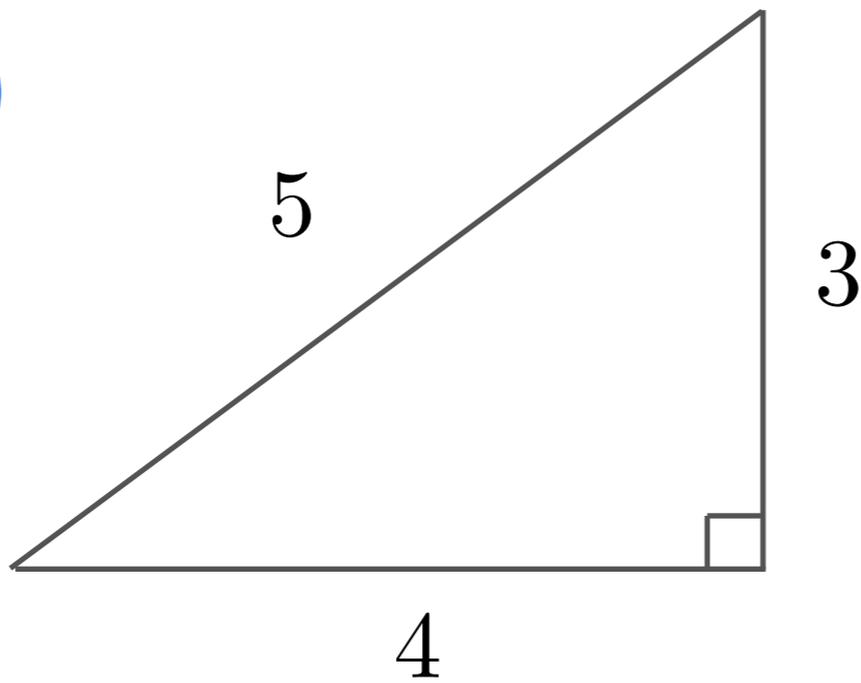
$$\begin{aligned}3^2 + 4^2 &= 9 + 16 \\ &= 25 = 5^2\end{aligned}$$

Example



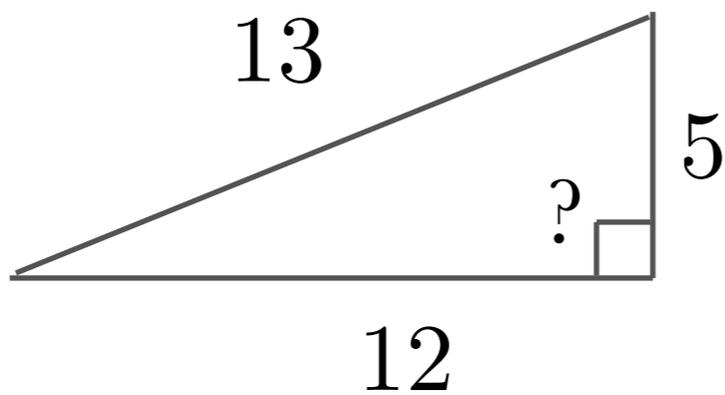
$$\begin{aligned}12^2 + 5^2 &= 144 + 25 \\ &= 169\end{aligned}$$

Example



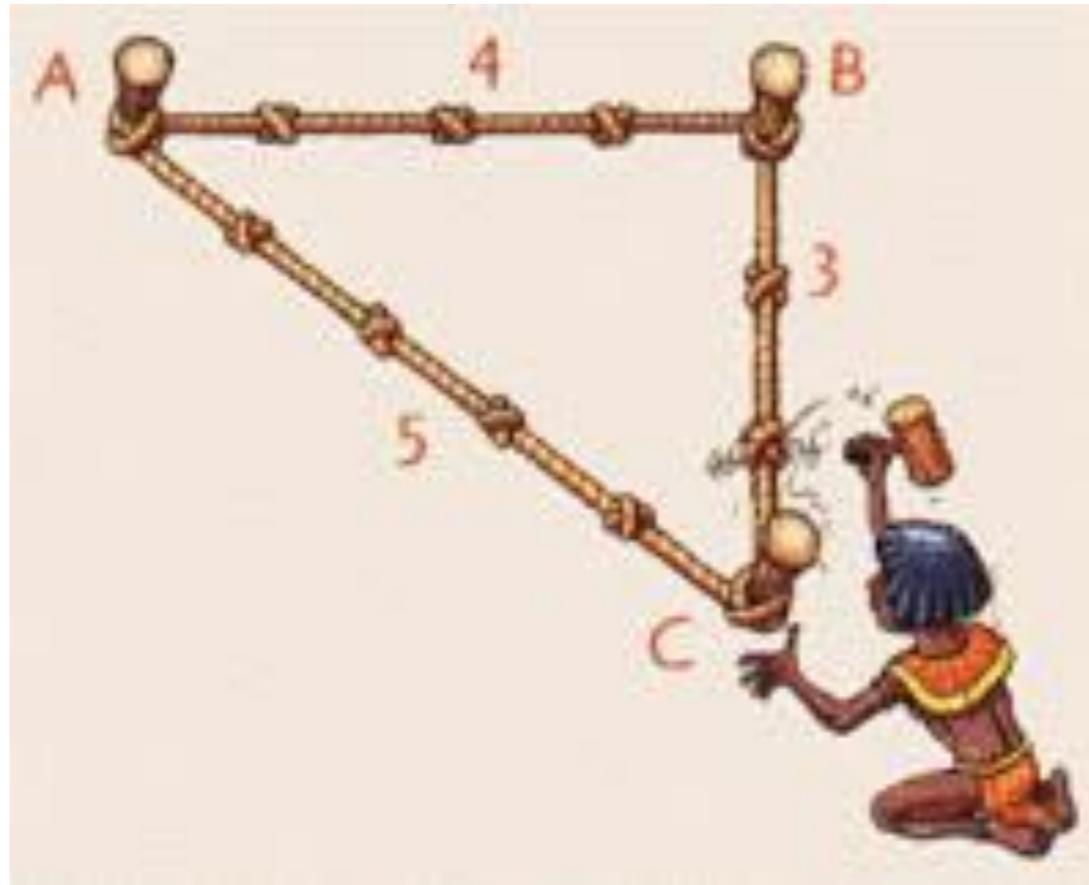
$$\begin{aligned}3^2 + 4^2 &= 9 + 16 \\ &= 25 = 5^2\end{aligned}$$

Example



$$\begin{aligned}12^2 + 5^2 &= 144 + 25 \\ &= 169 \\ &= 13^2\end{aligned}$$

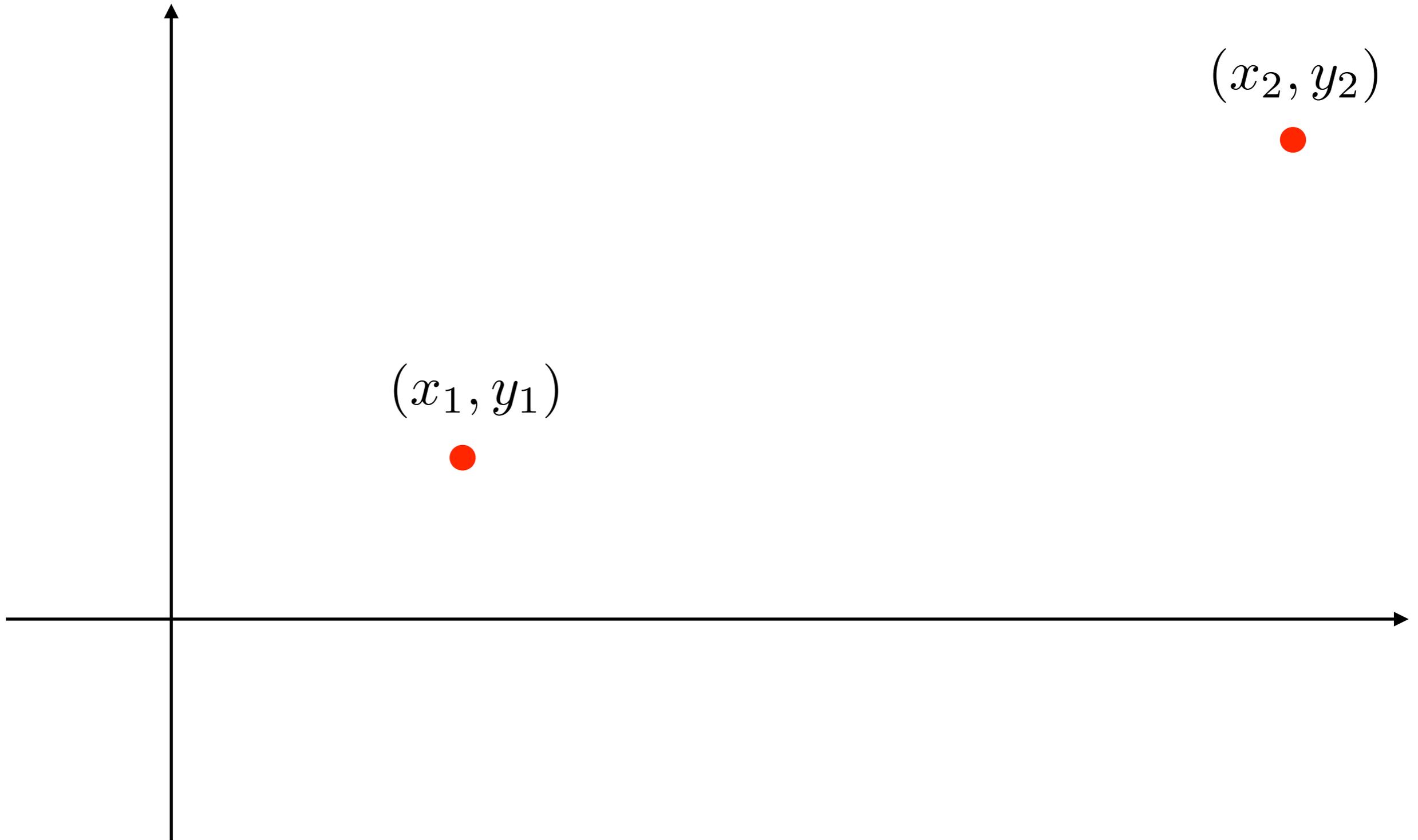
# La corde à 13 noeuds



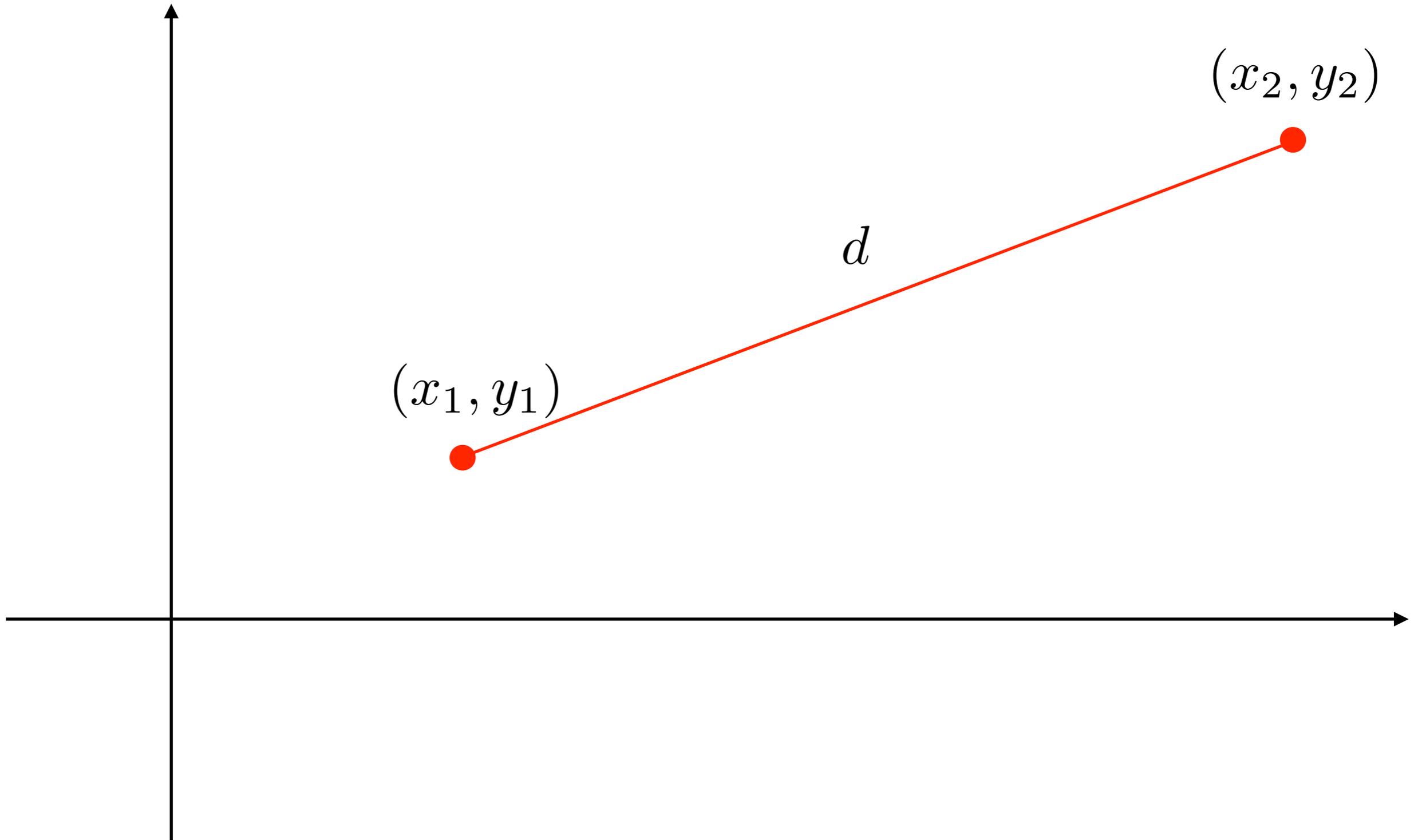
Faites les exercices suivants

p. 464 # 3 à 7

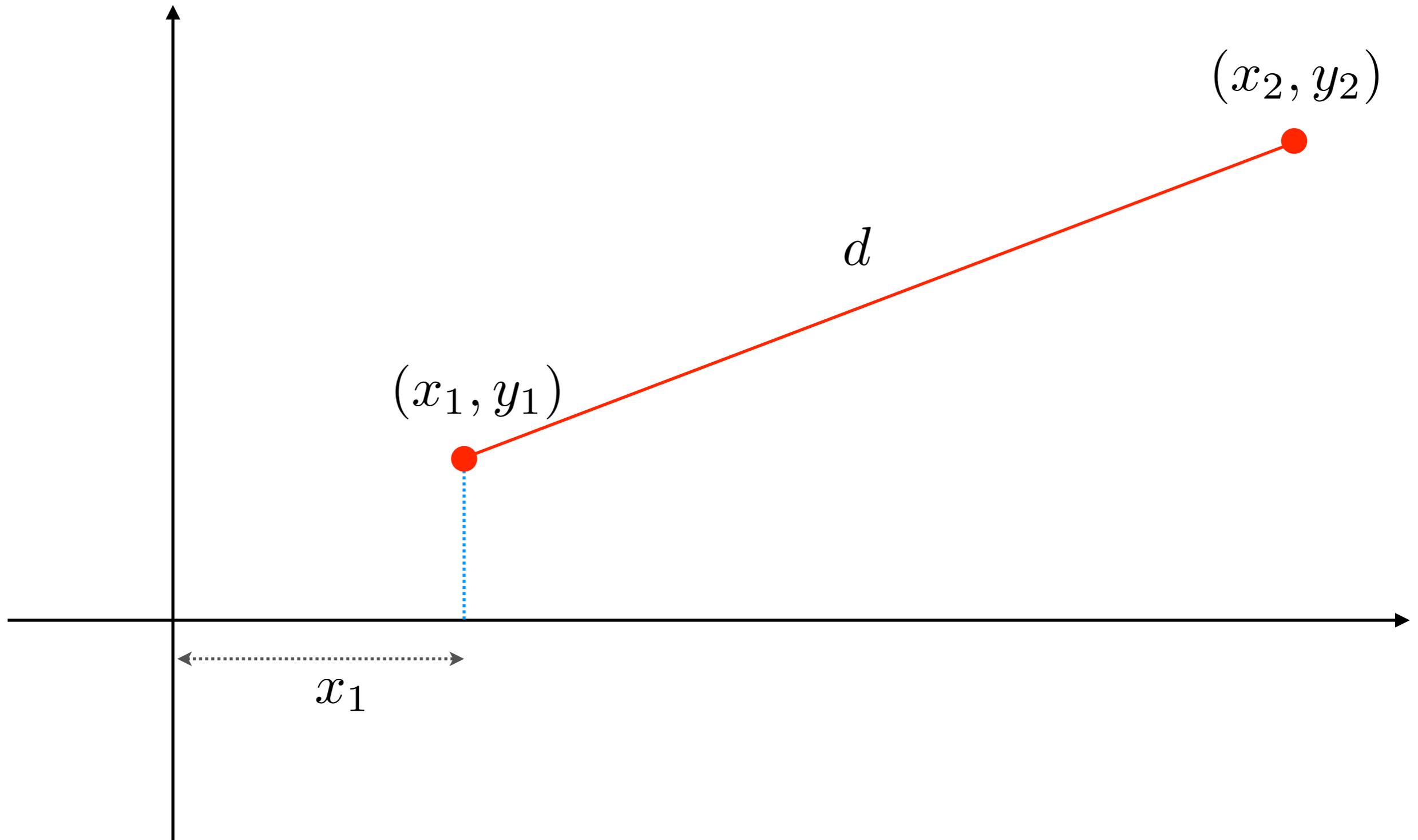
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



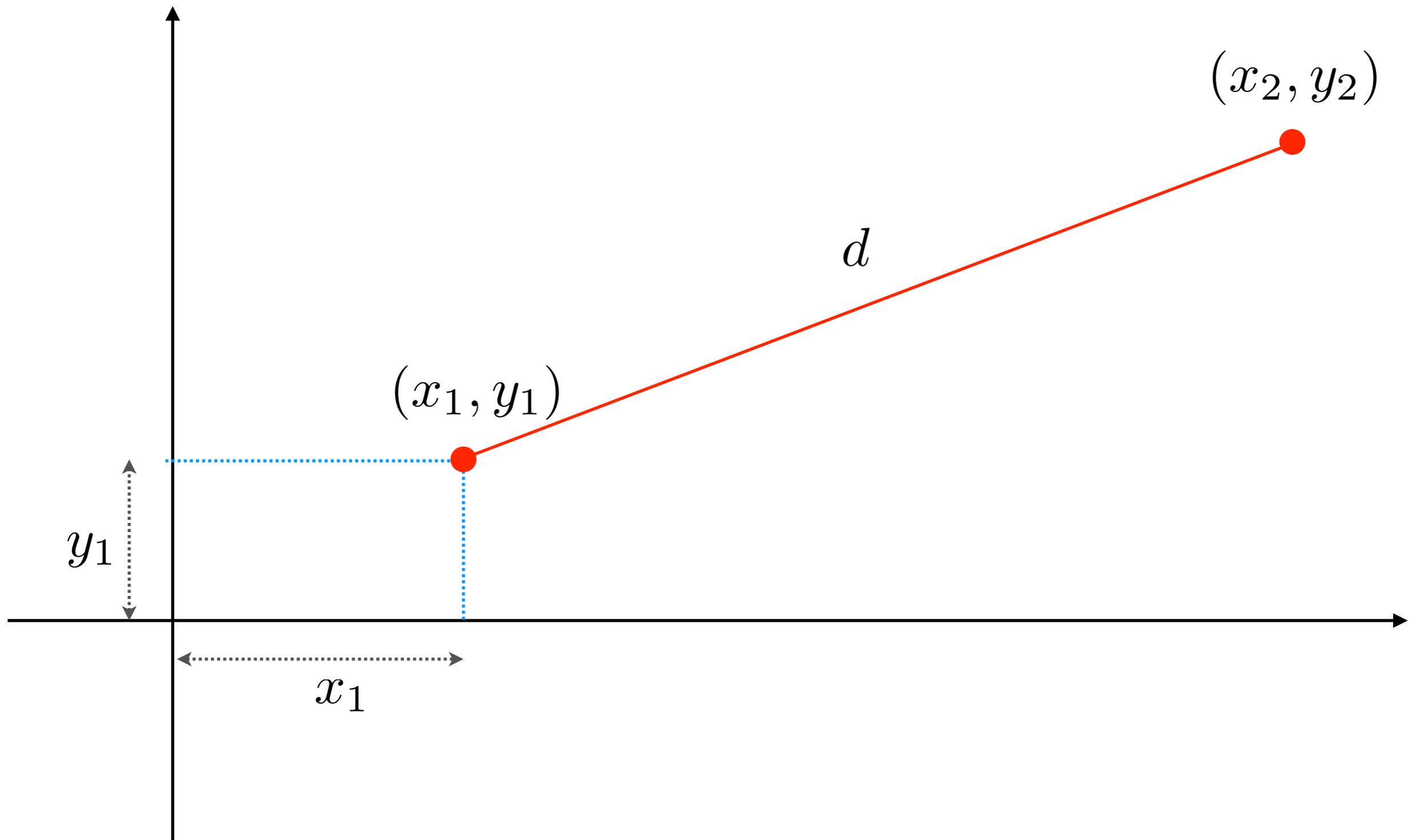
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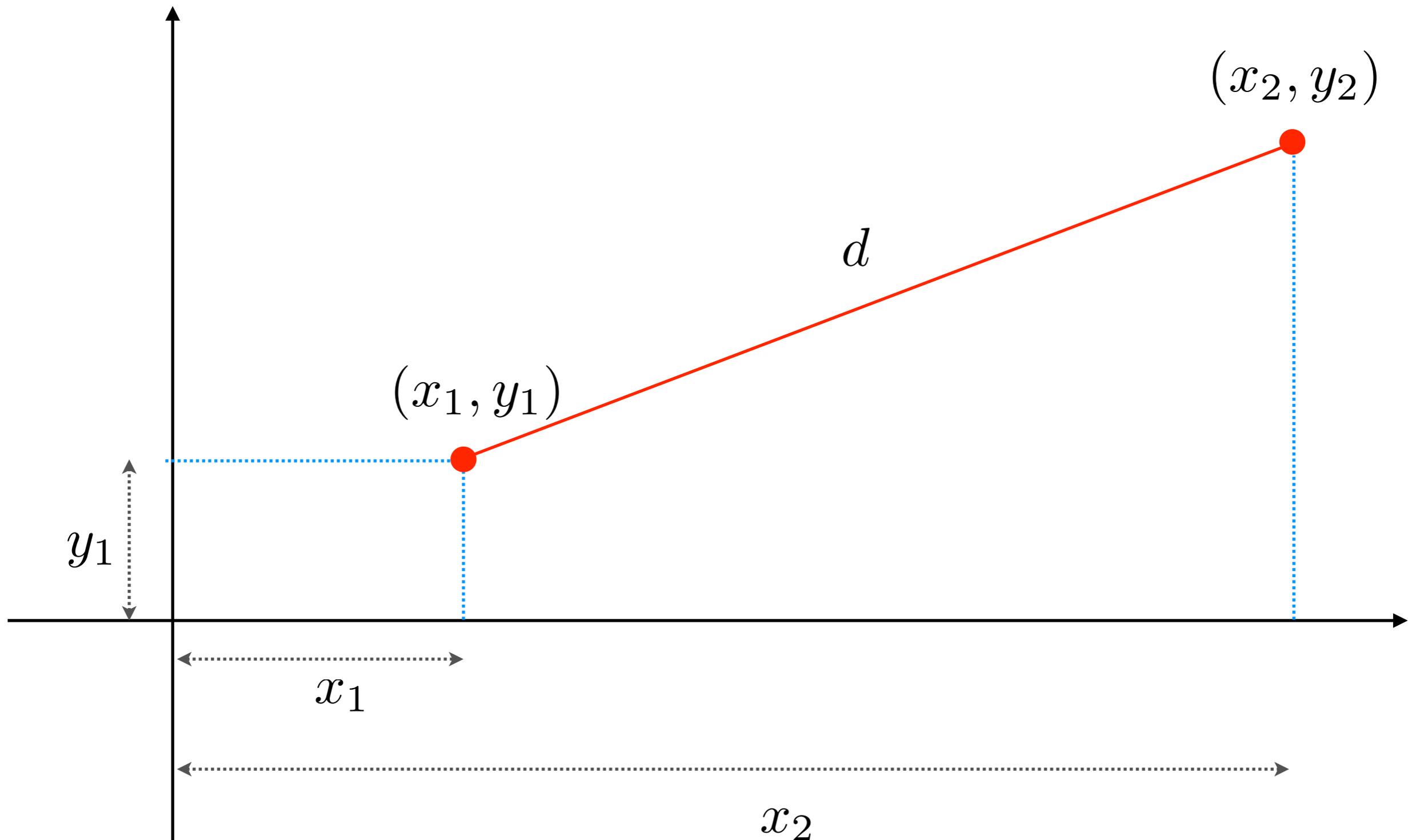
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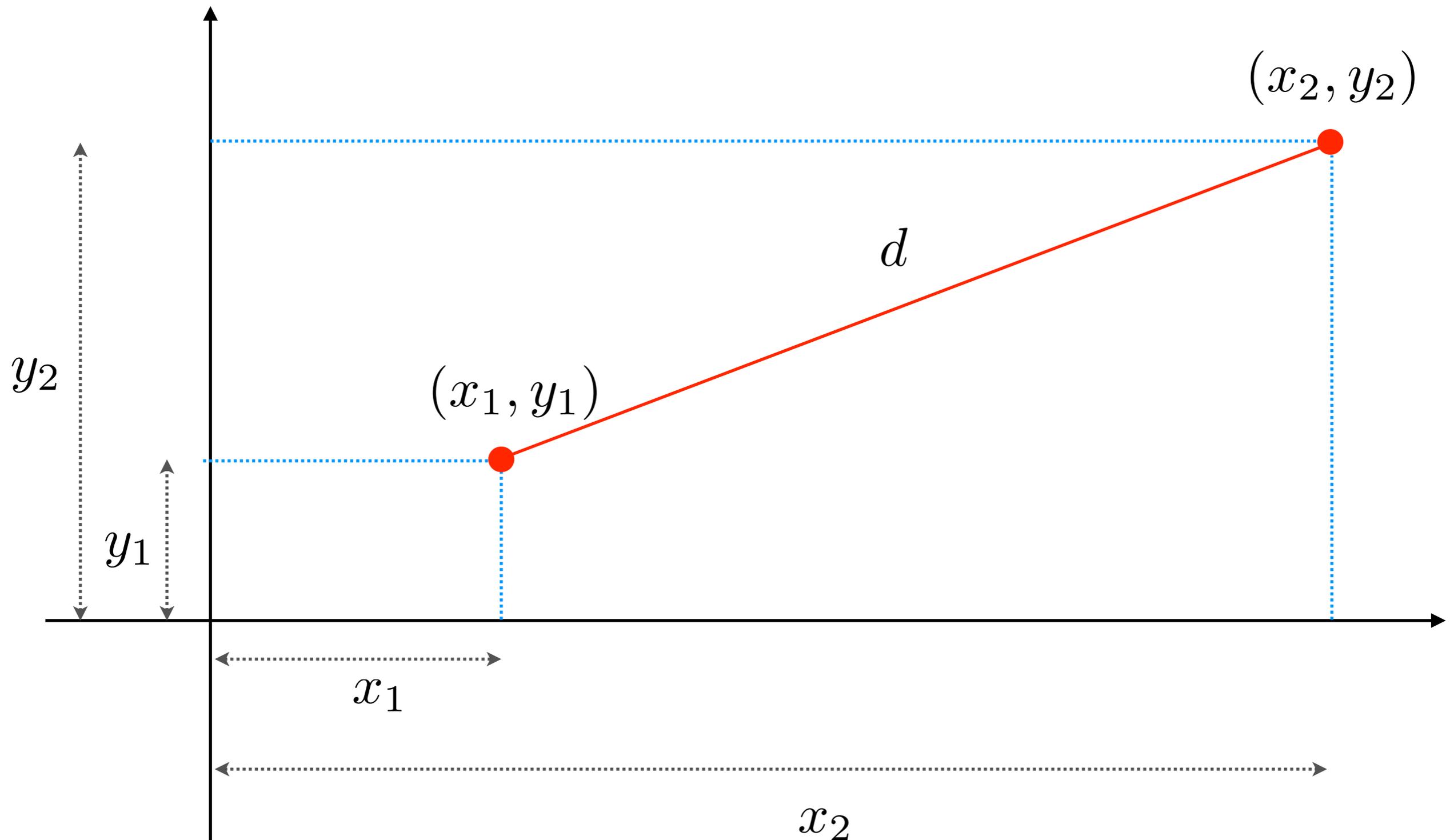
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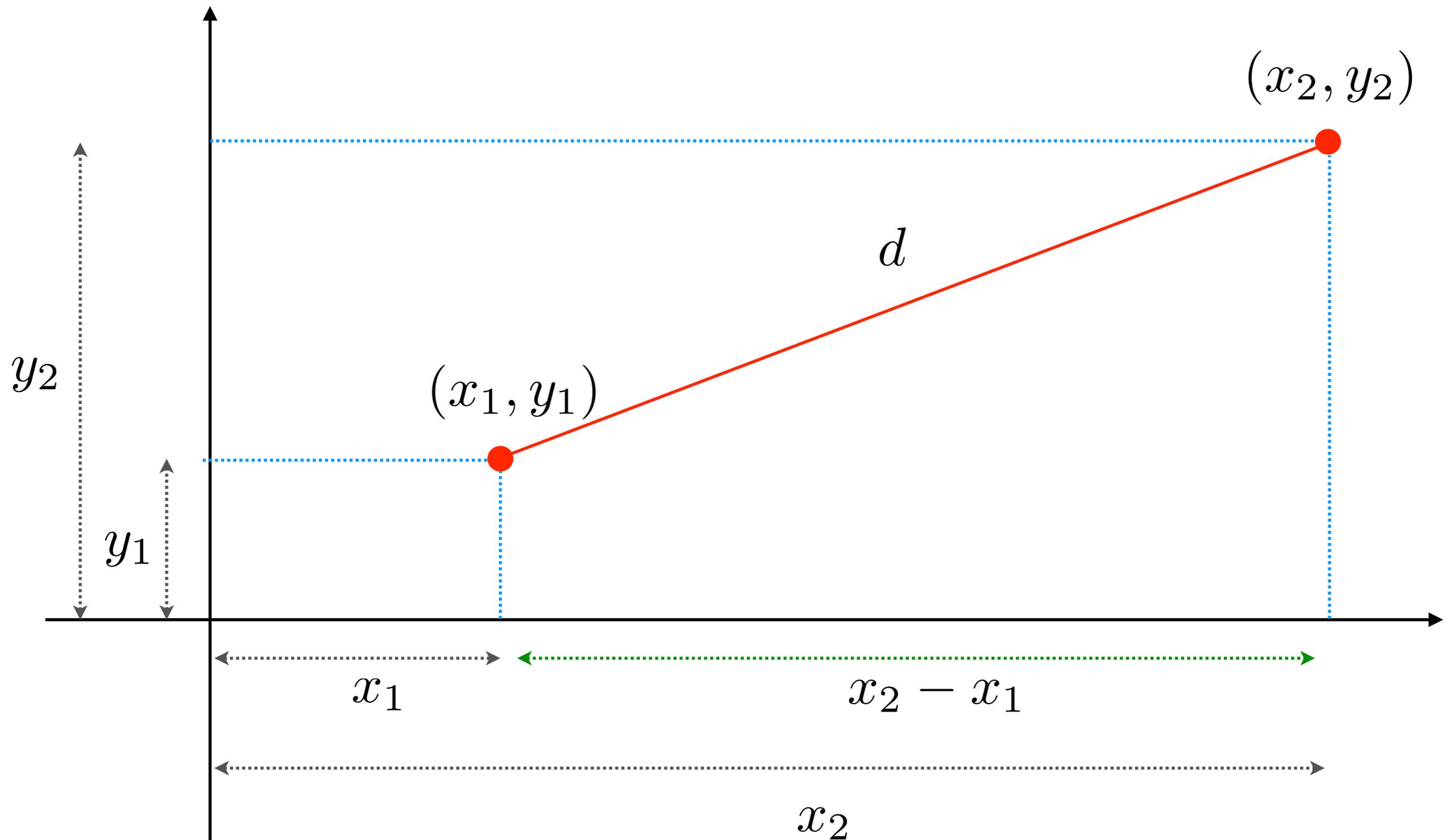
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



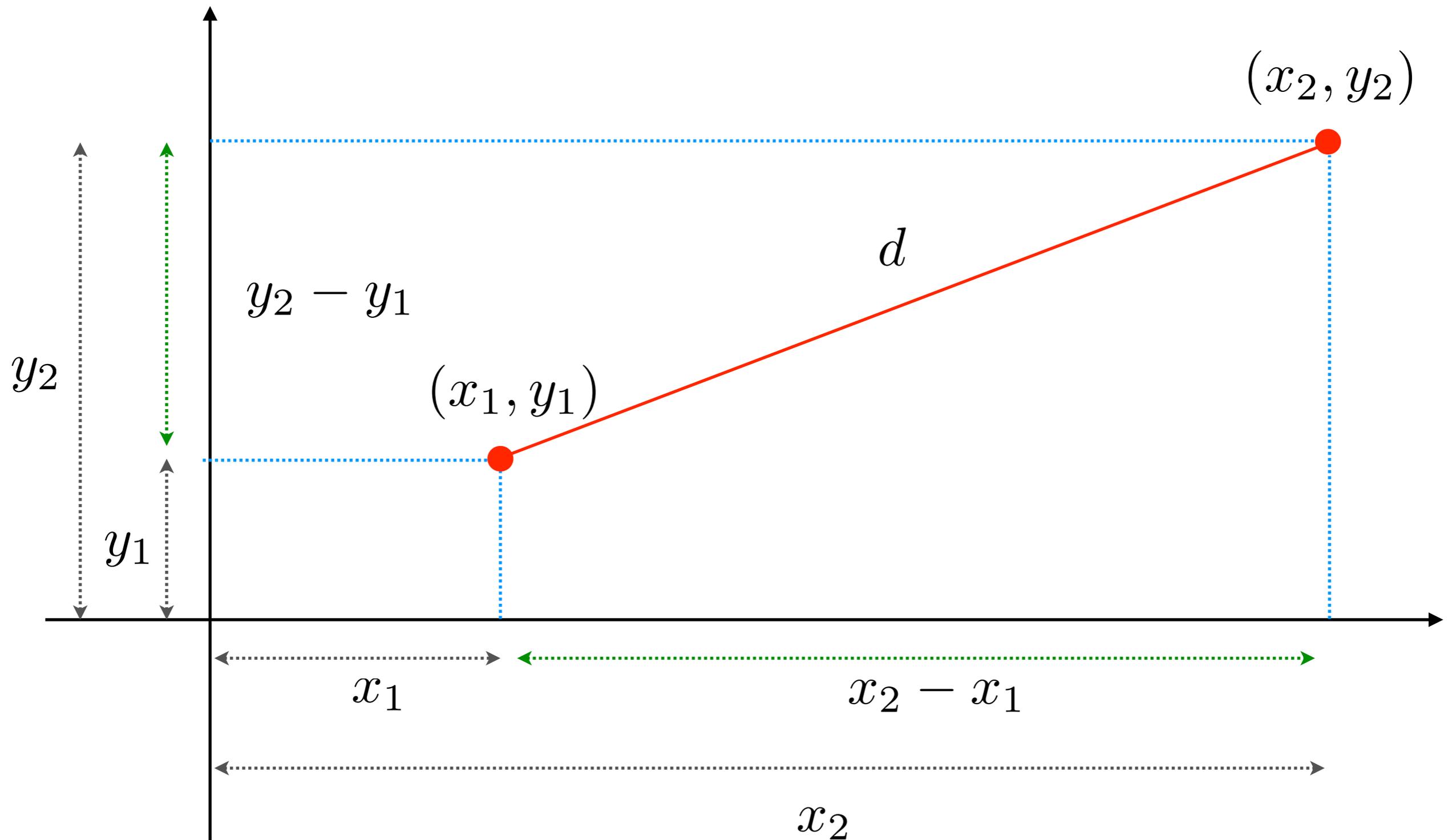
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



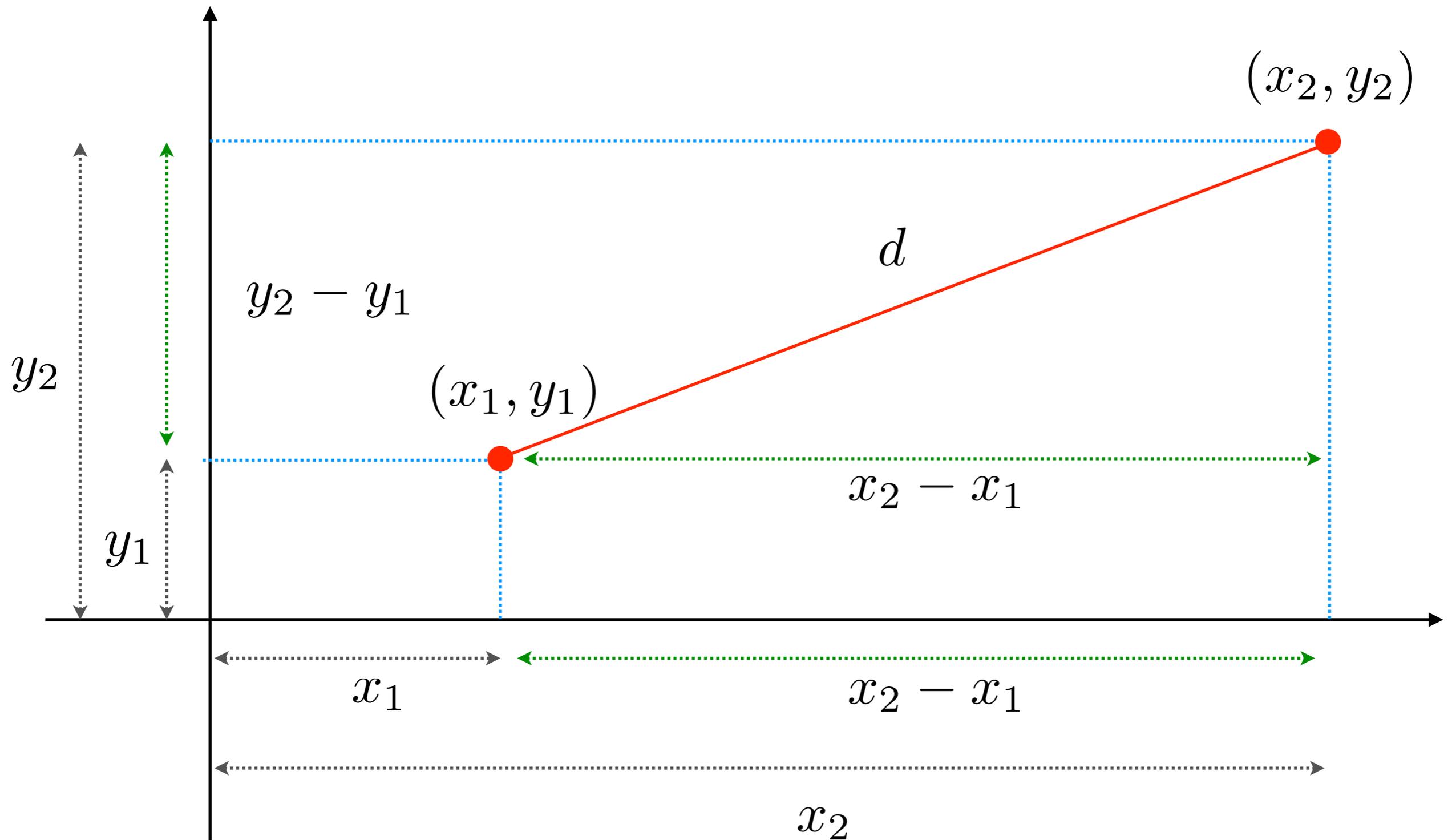
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



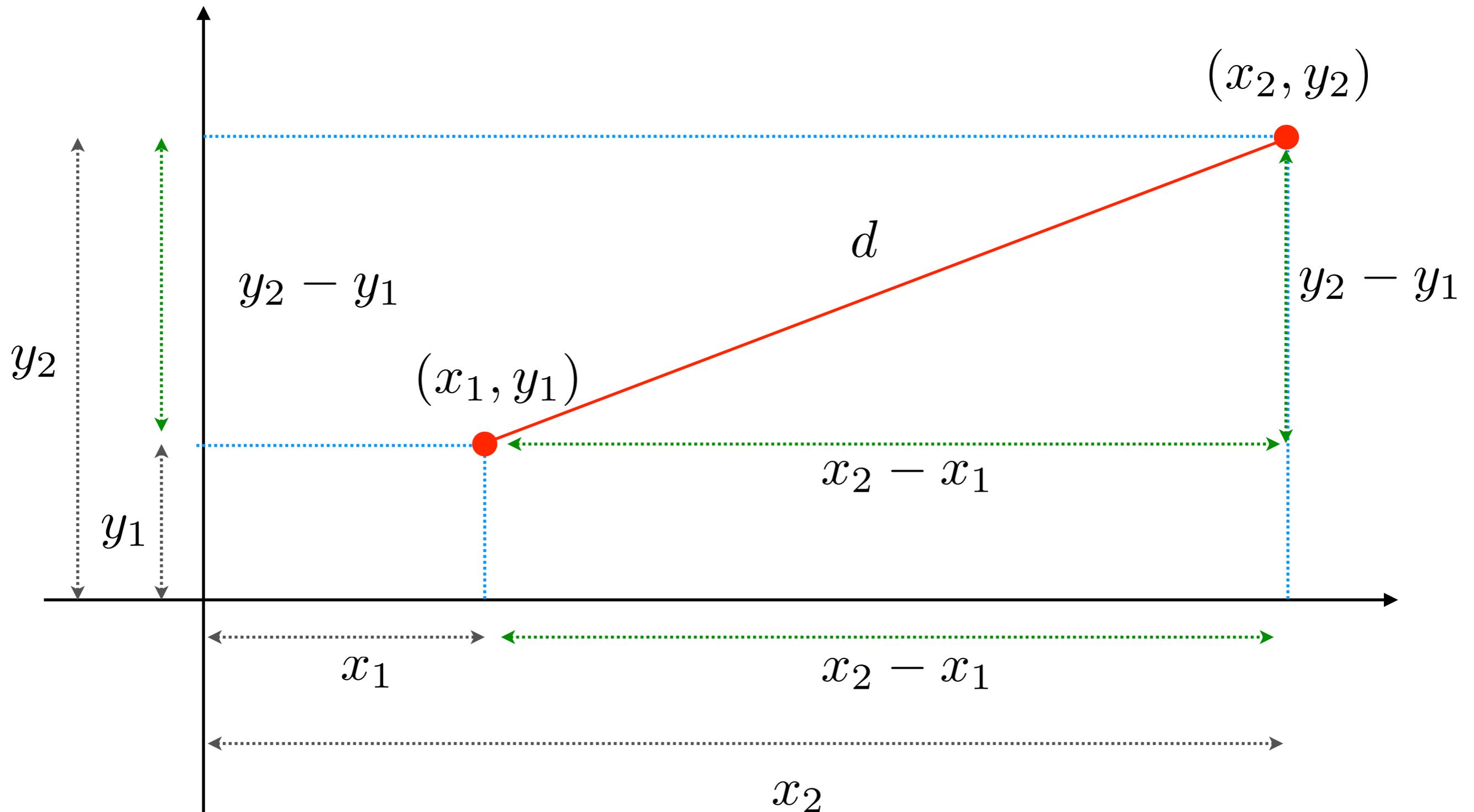
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



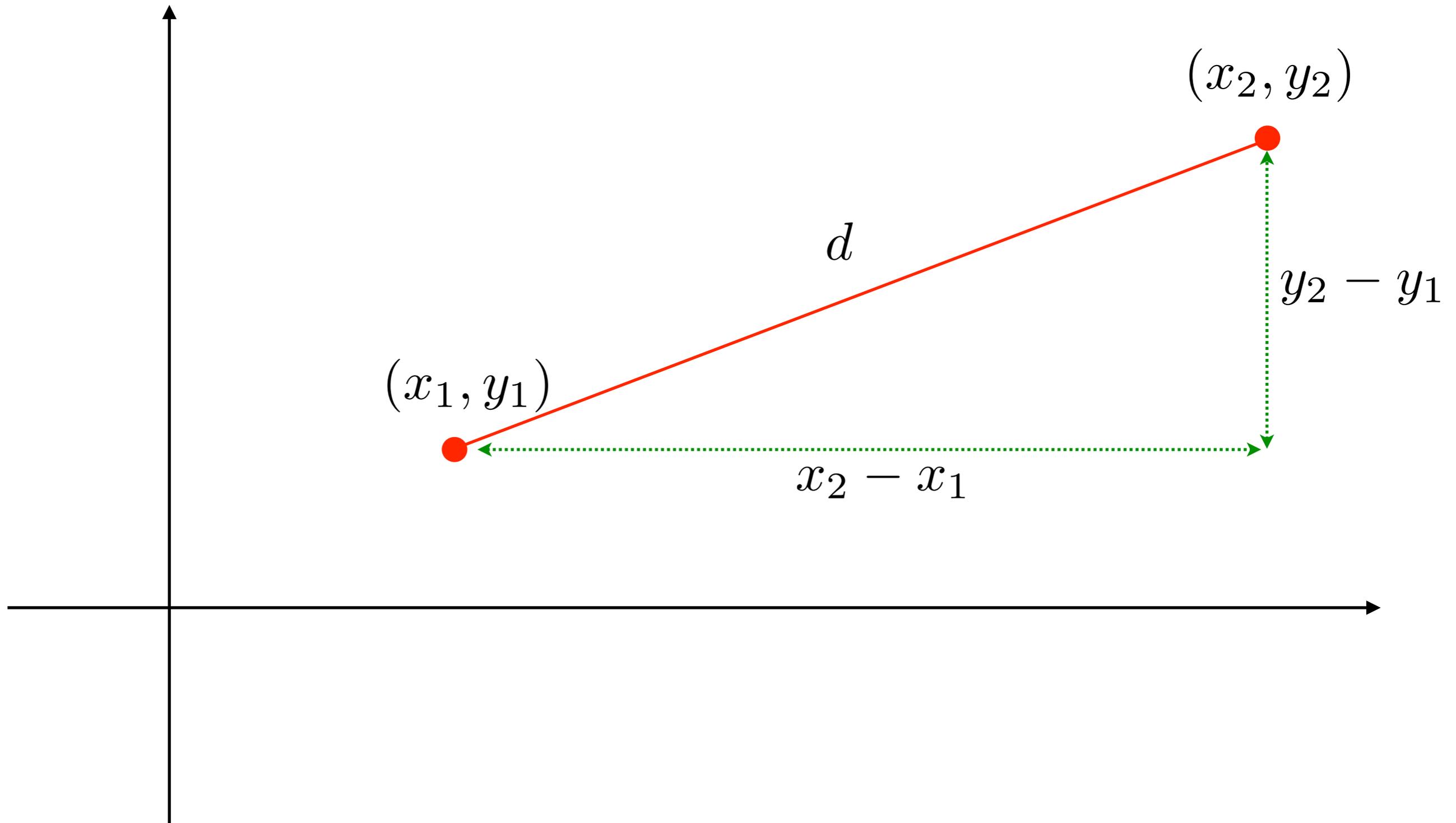
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



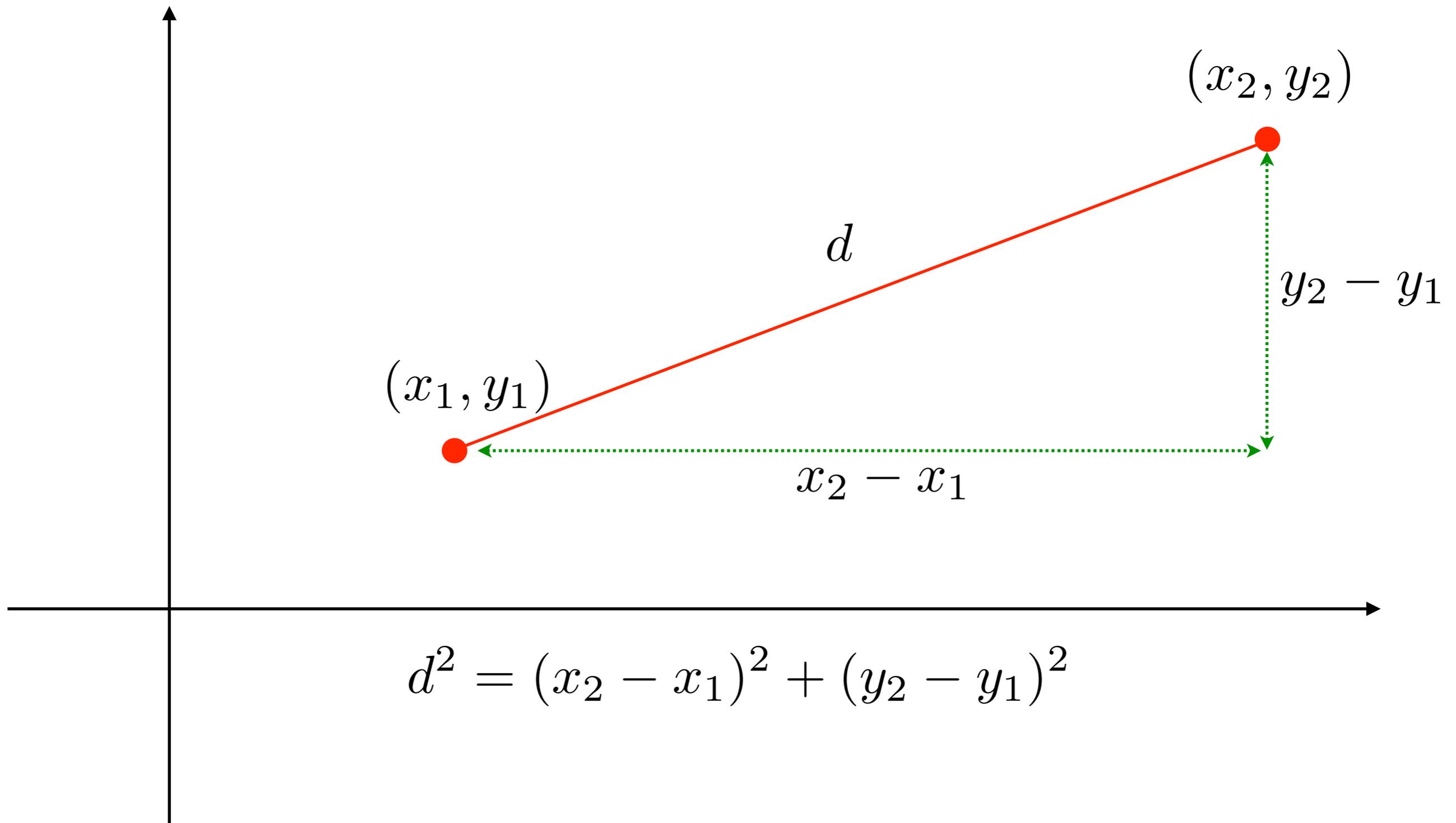
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



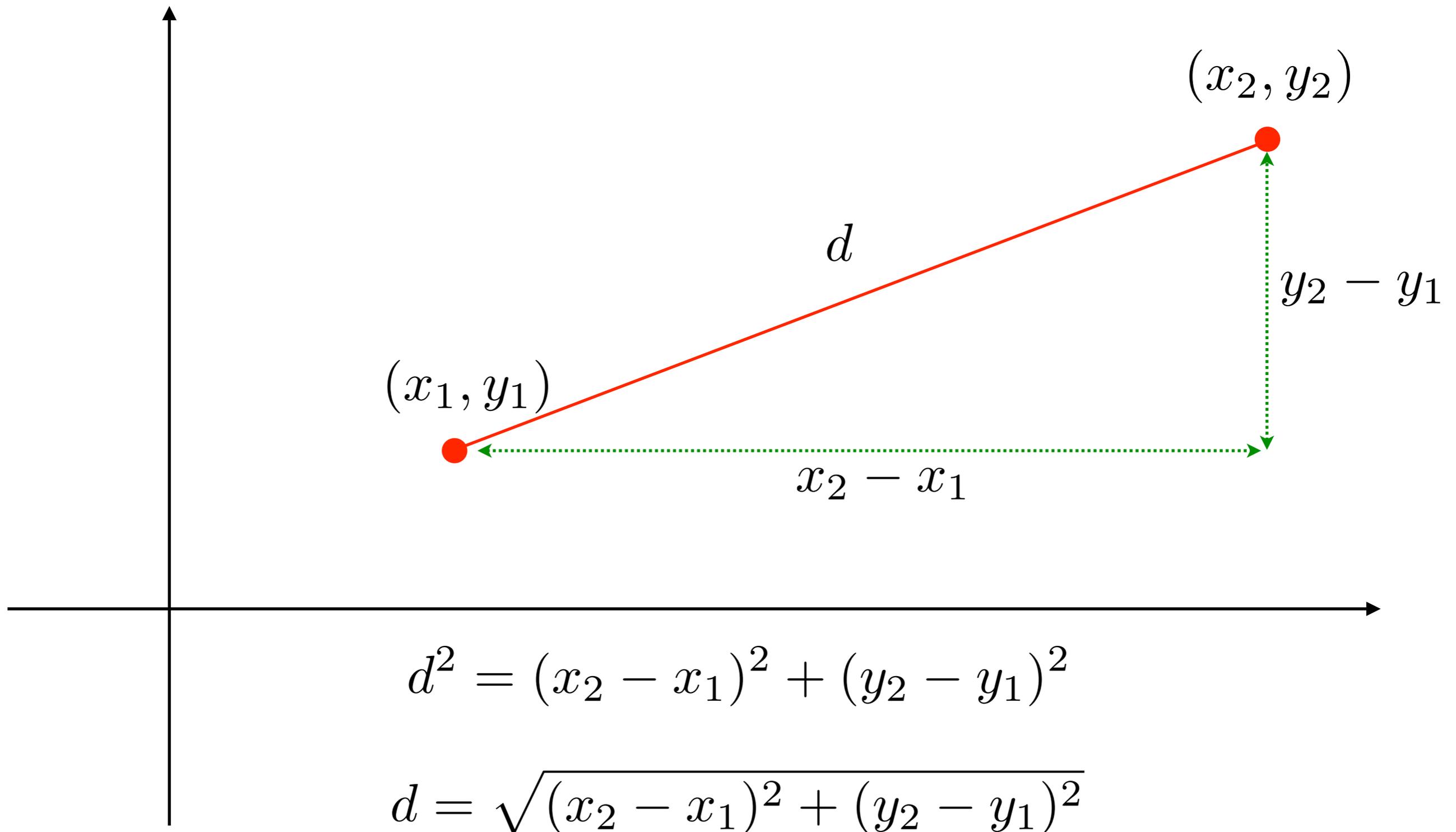
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



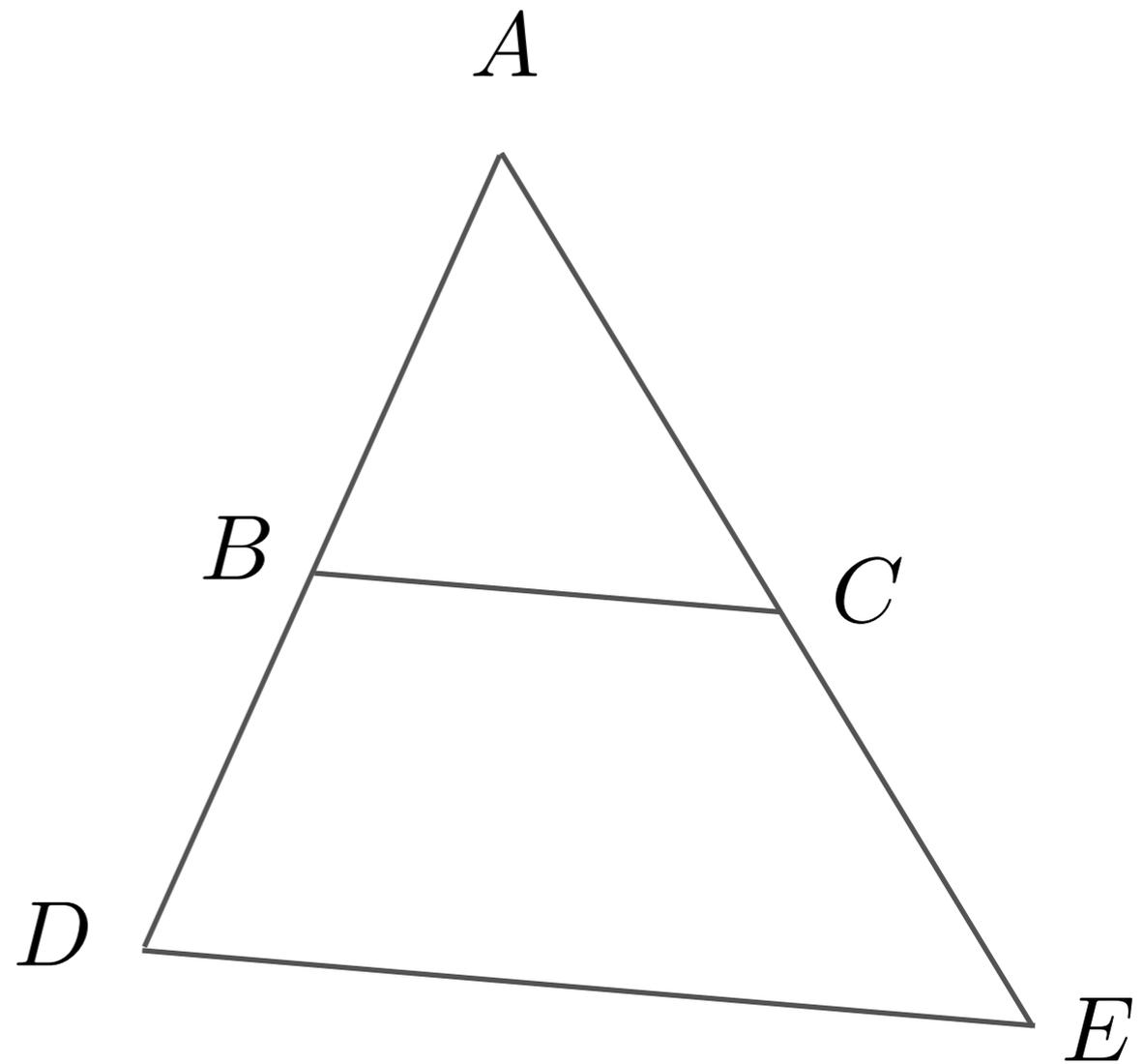
Le théorème de Pythagore permet de trouver la distance entre deux points dans le plan



Faites les exercices suivants

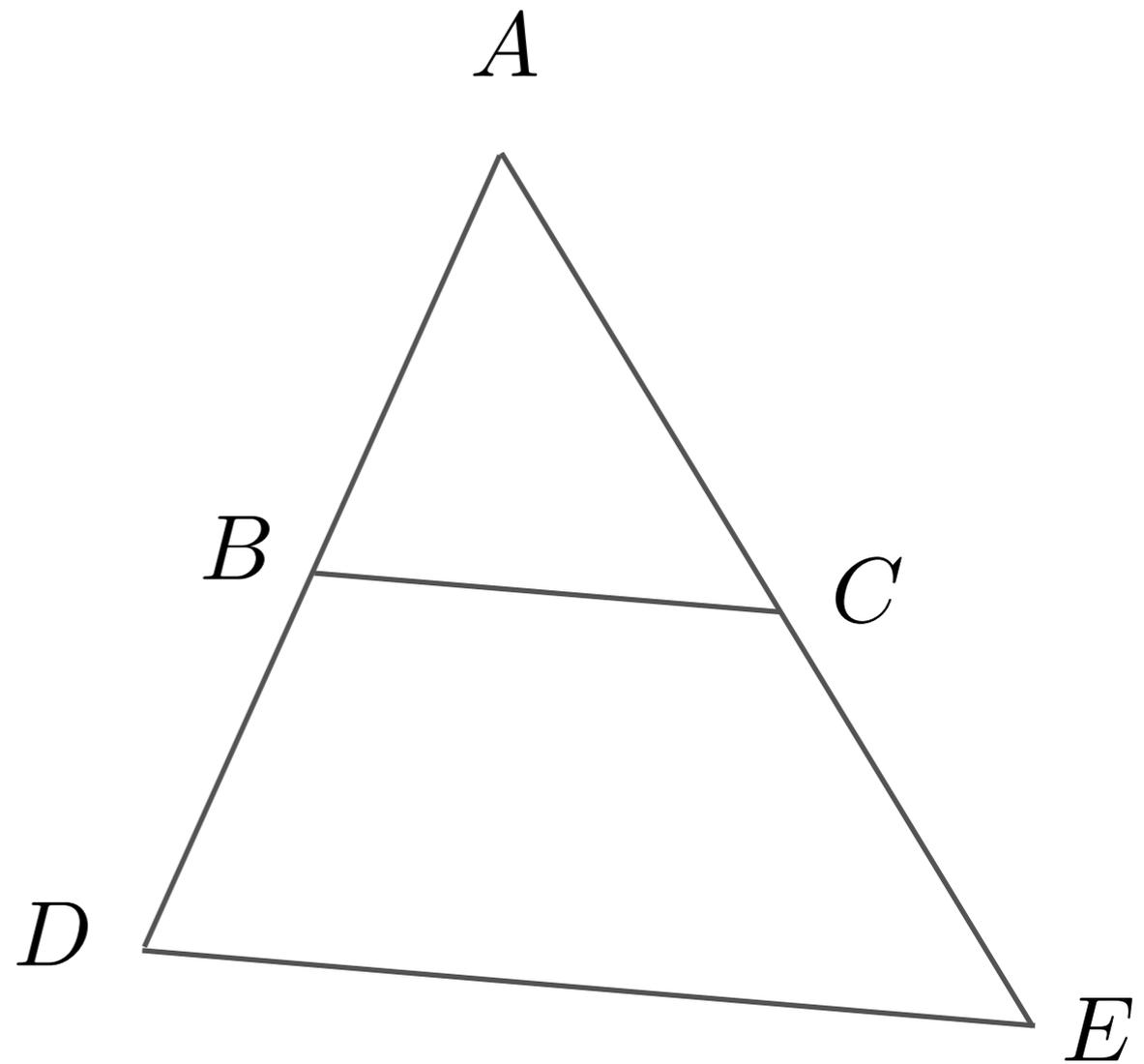
p. 465 # 12

# Théorème de Thalès



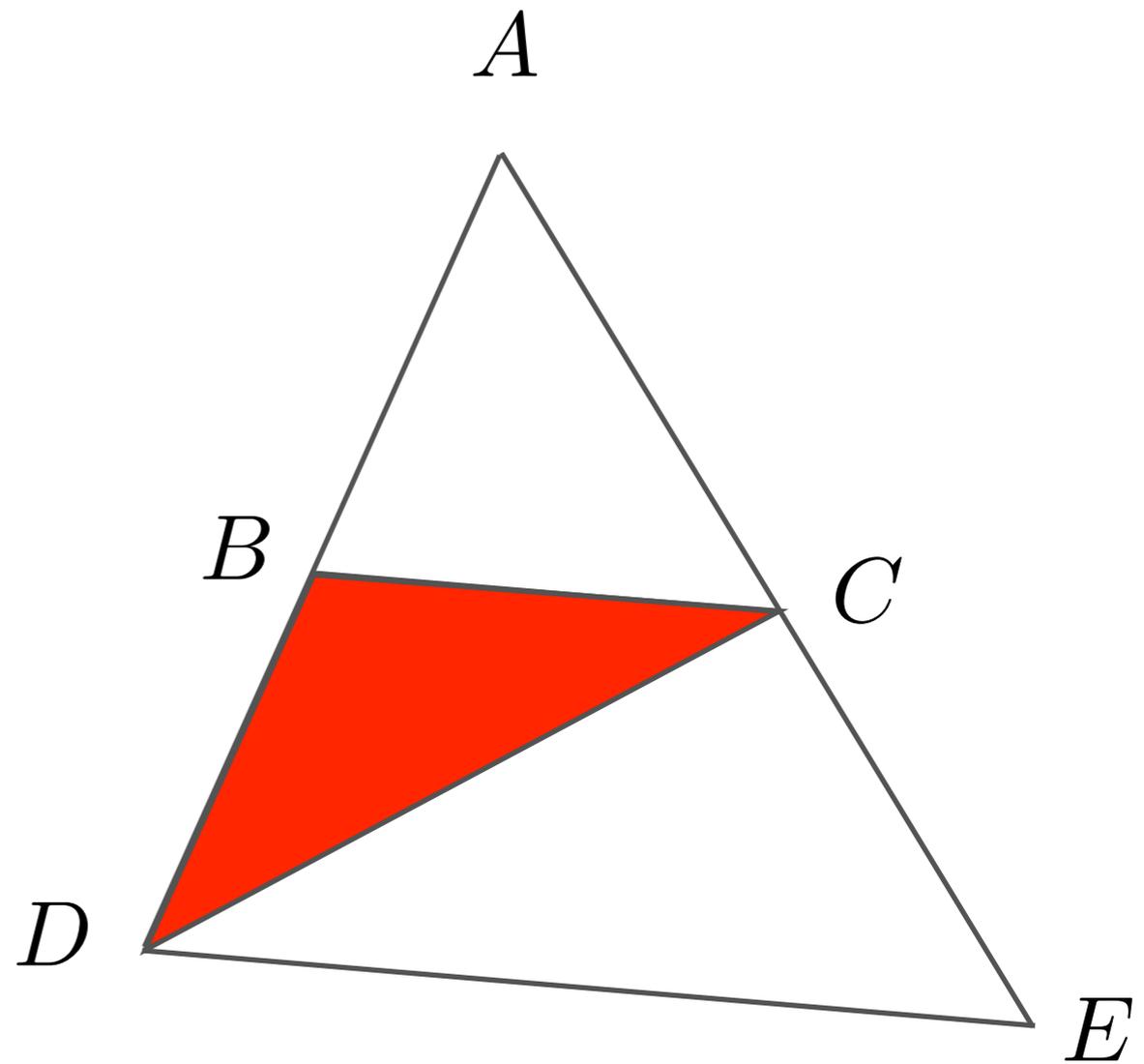
# Théorème de Thalès

$$BC \parallel DE$$



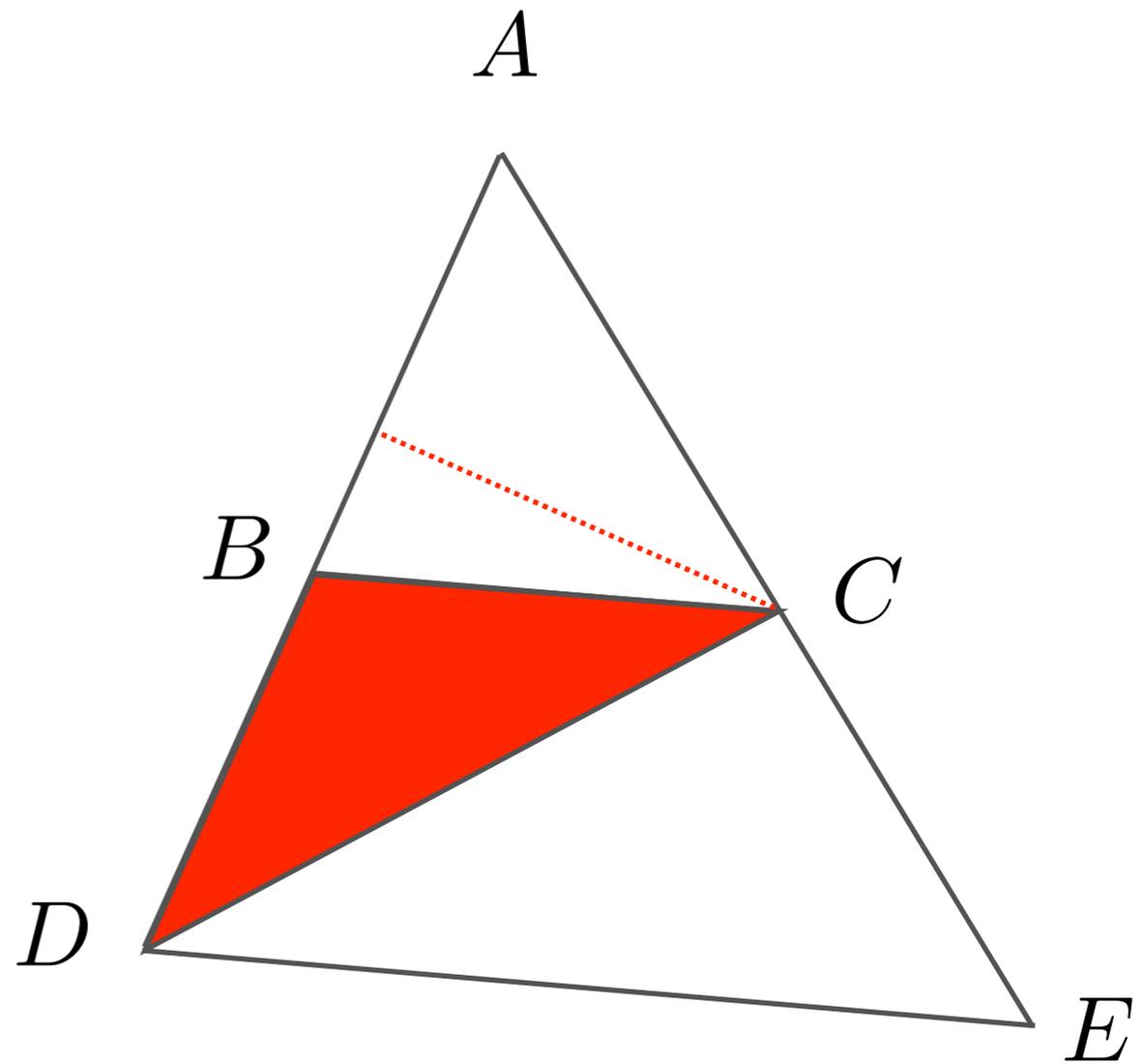
# Théorème de Thalès

$$BC \parallel DE$$



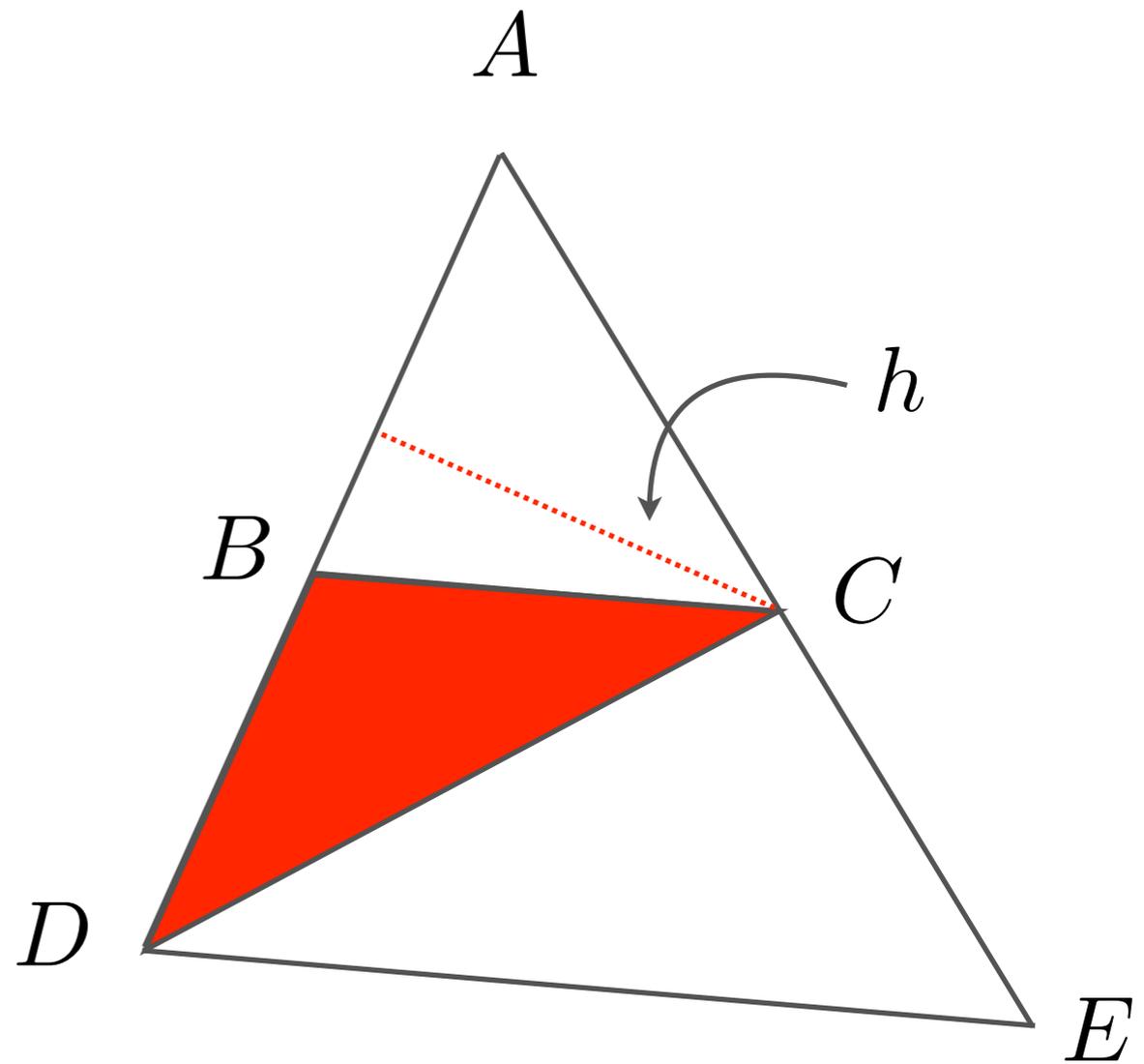
# Théorème de Thalès

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# Théorème de Thalès

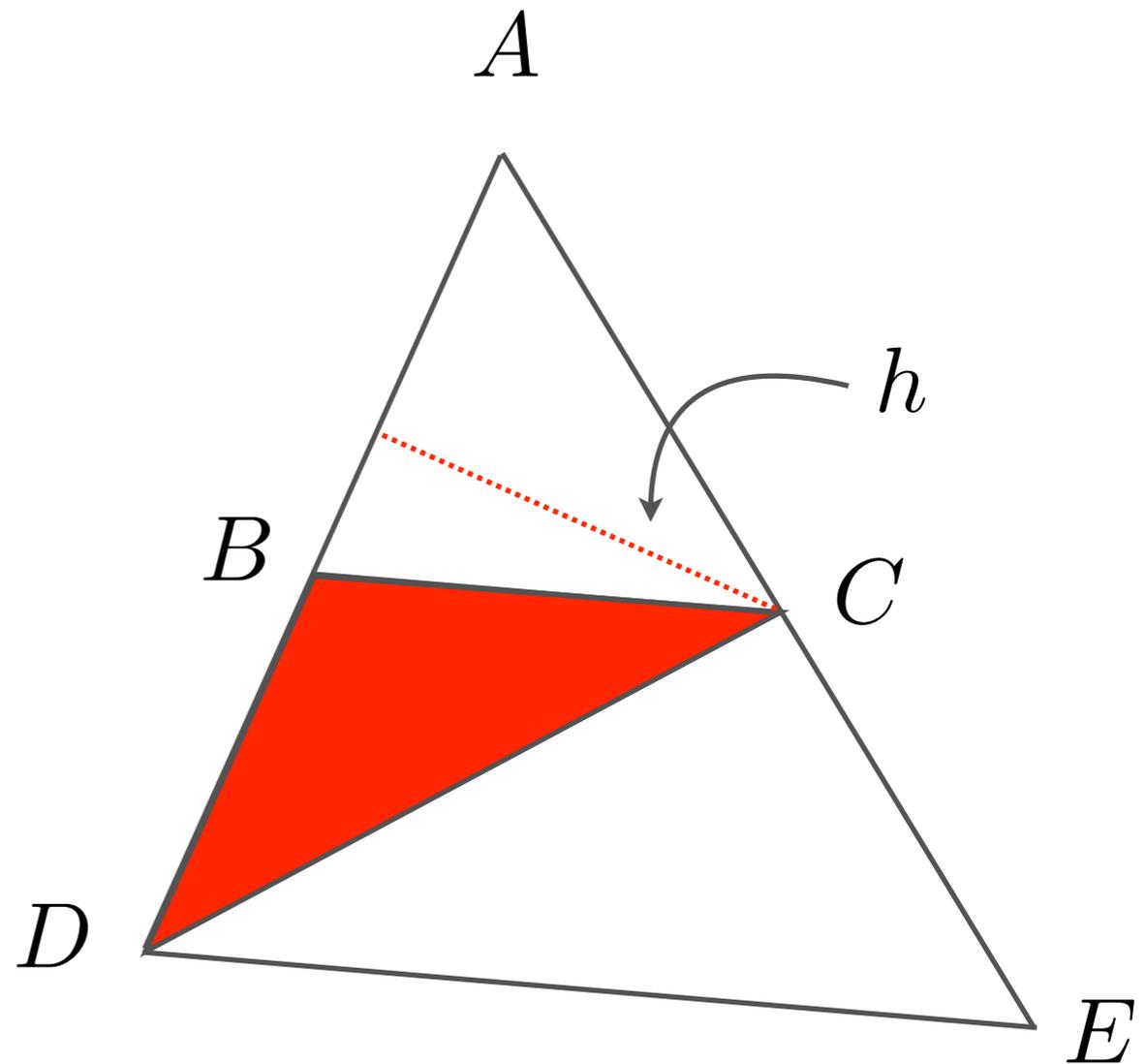
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Théorème de Thalès

$BC \parallel DE$

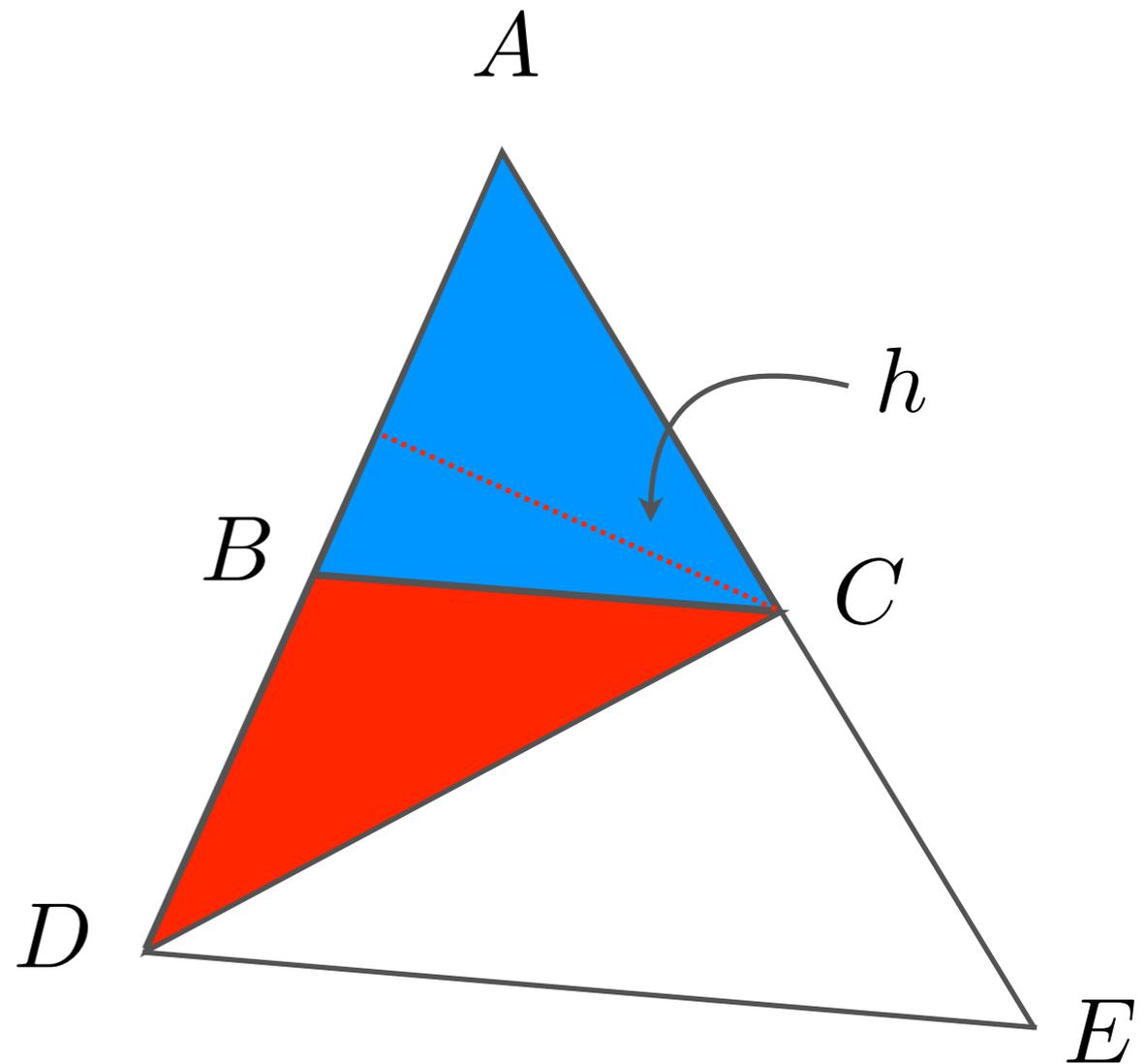
$$\text{Aire}(\triangle DCB) = \frac{BD \times h}{2}$$



Théorème de Thalès

$BC \parallel DE$

$$\text{Aire}(\triangle DCB) = \frac{BD \times h}{2}$$

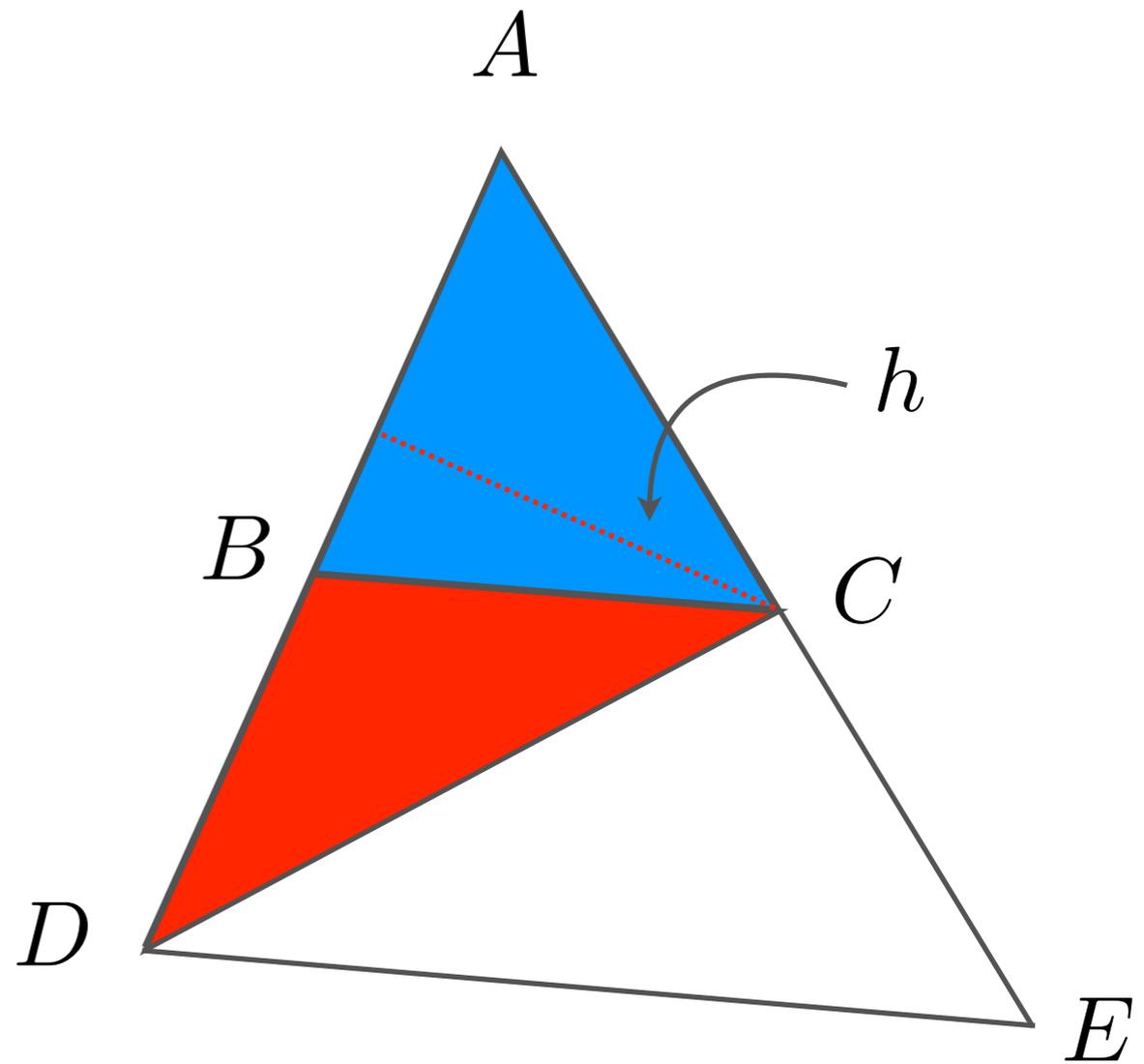


# Théorème de Thalès

$BC \parallel DE$

$$\text{Aire}(\triangle DCB) = \frac{BD \times h}{2}$$

$$\text{Aire}(\triangle ABC) = \frac{AB \times h}{2}$$

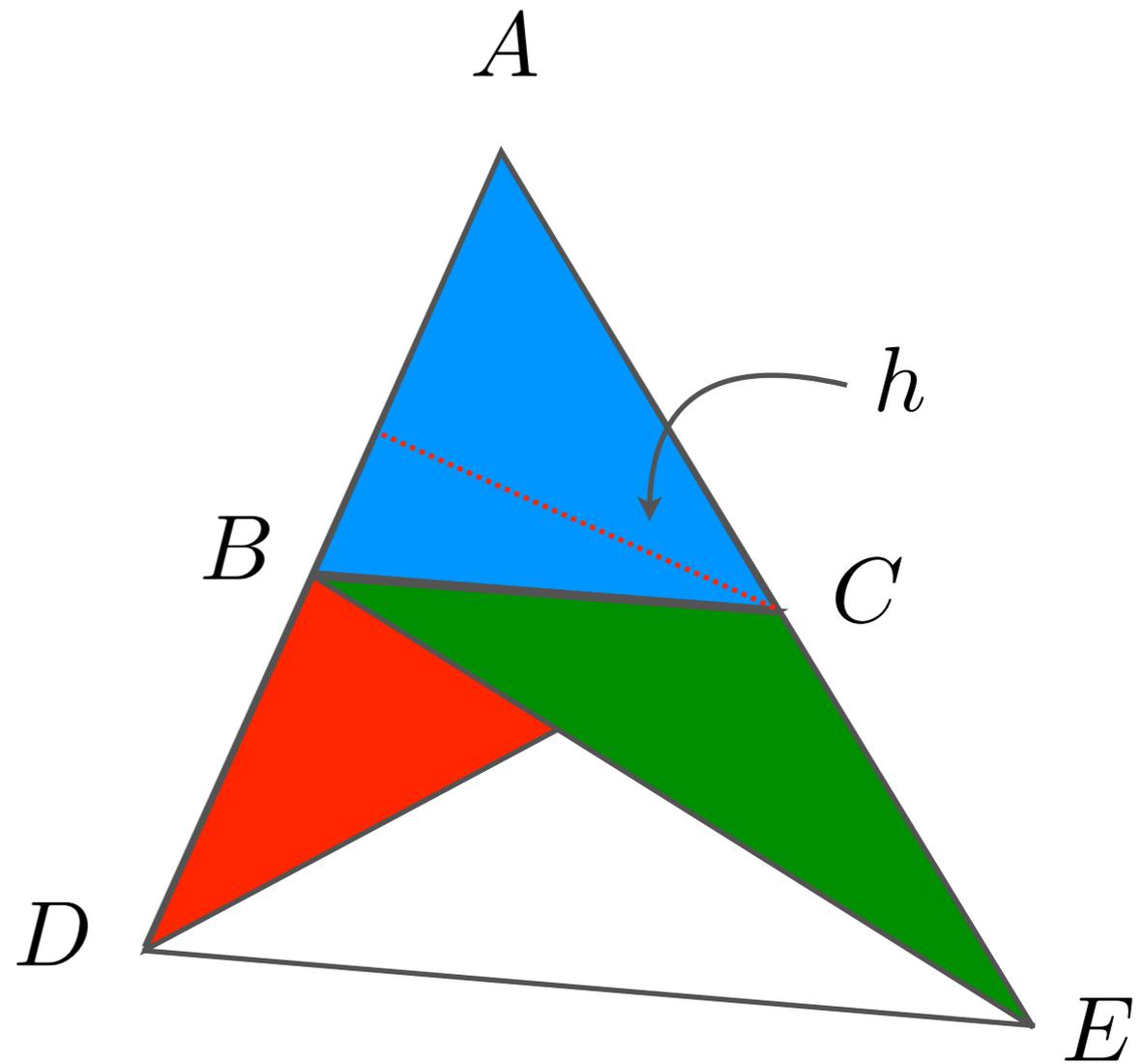


# Théorème de Thalès

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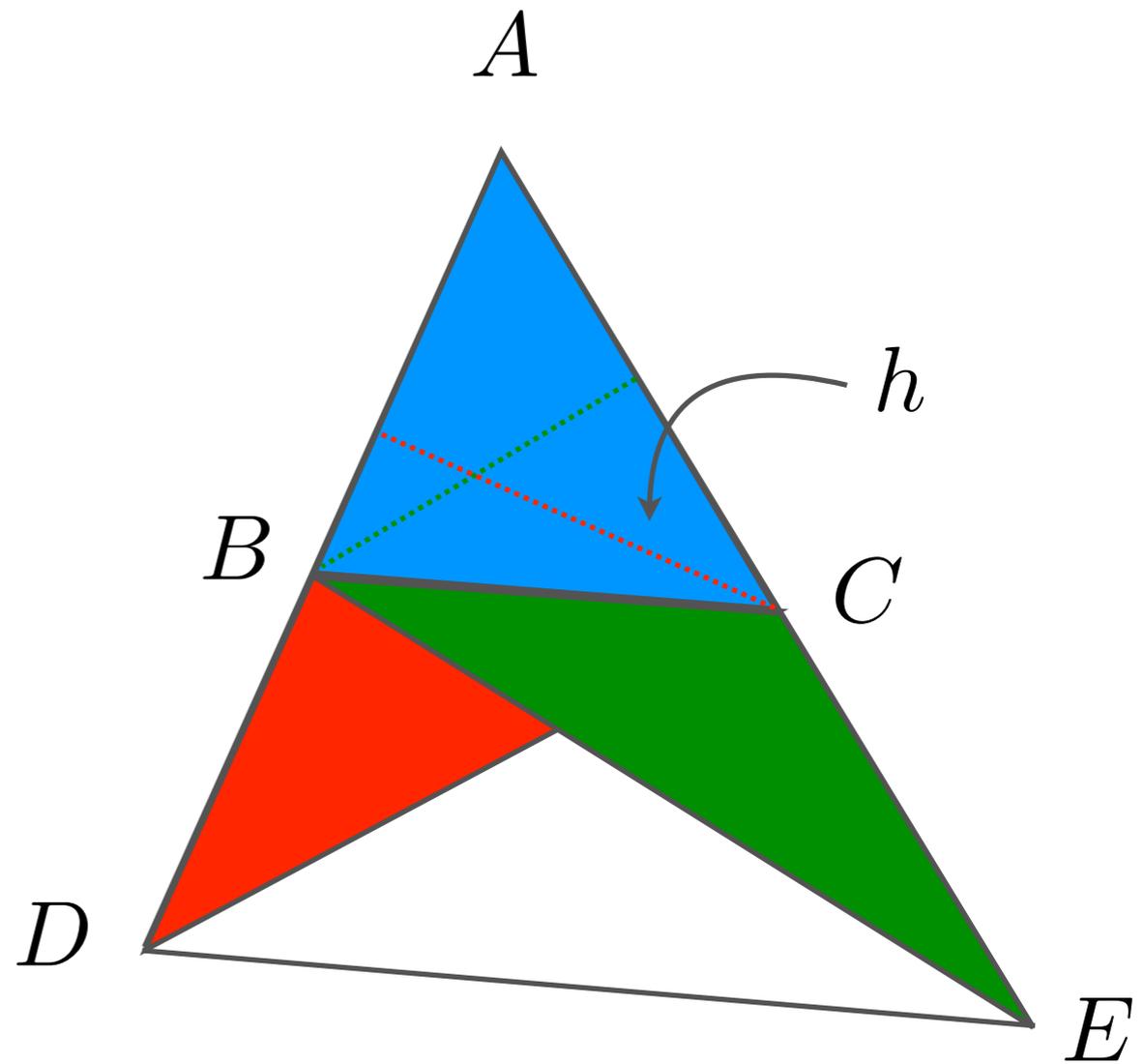


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$$\text{Aire}(\triangle DCB) = \frac{BD \times h}{2}$$

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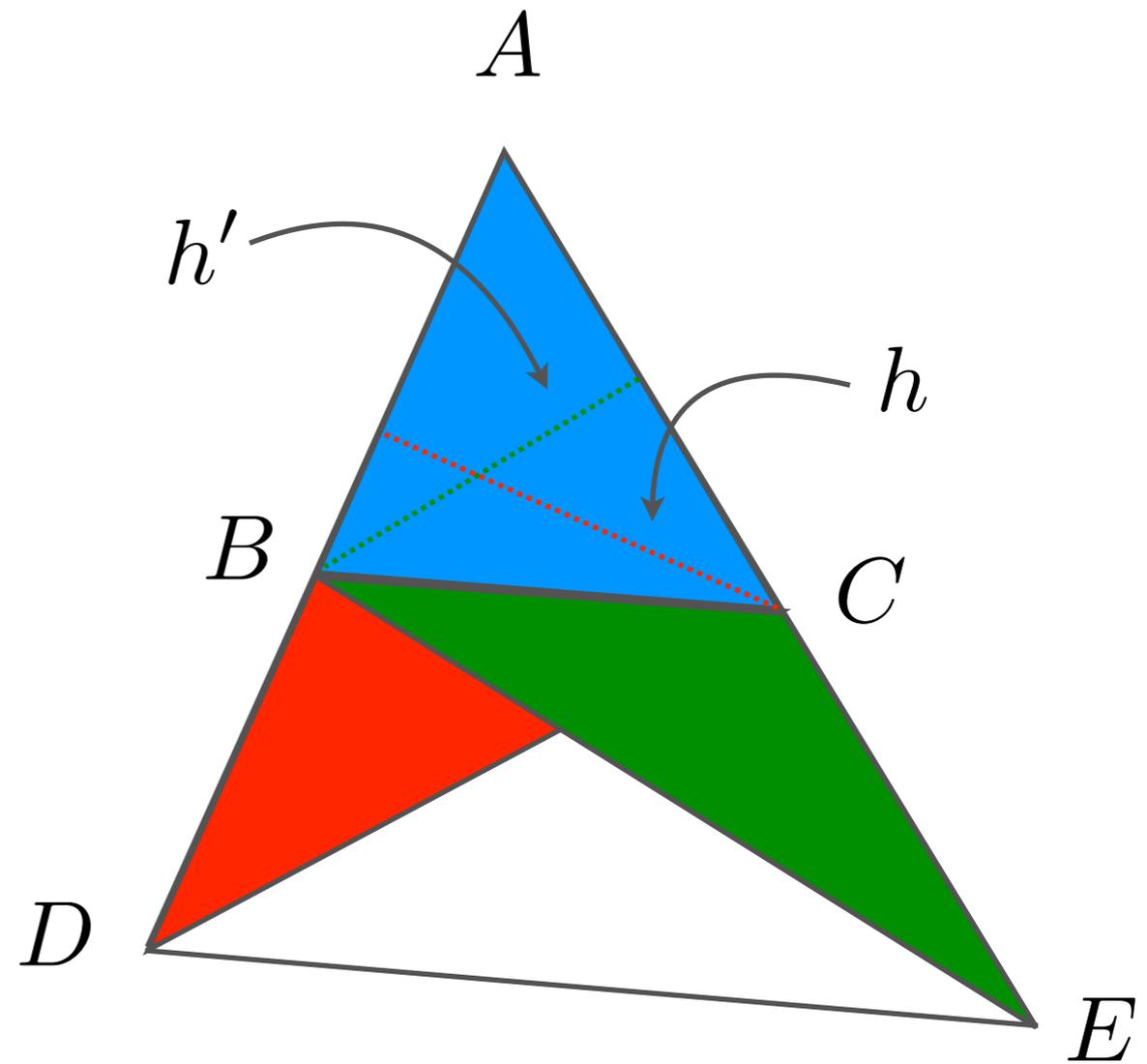


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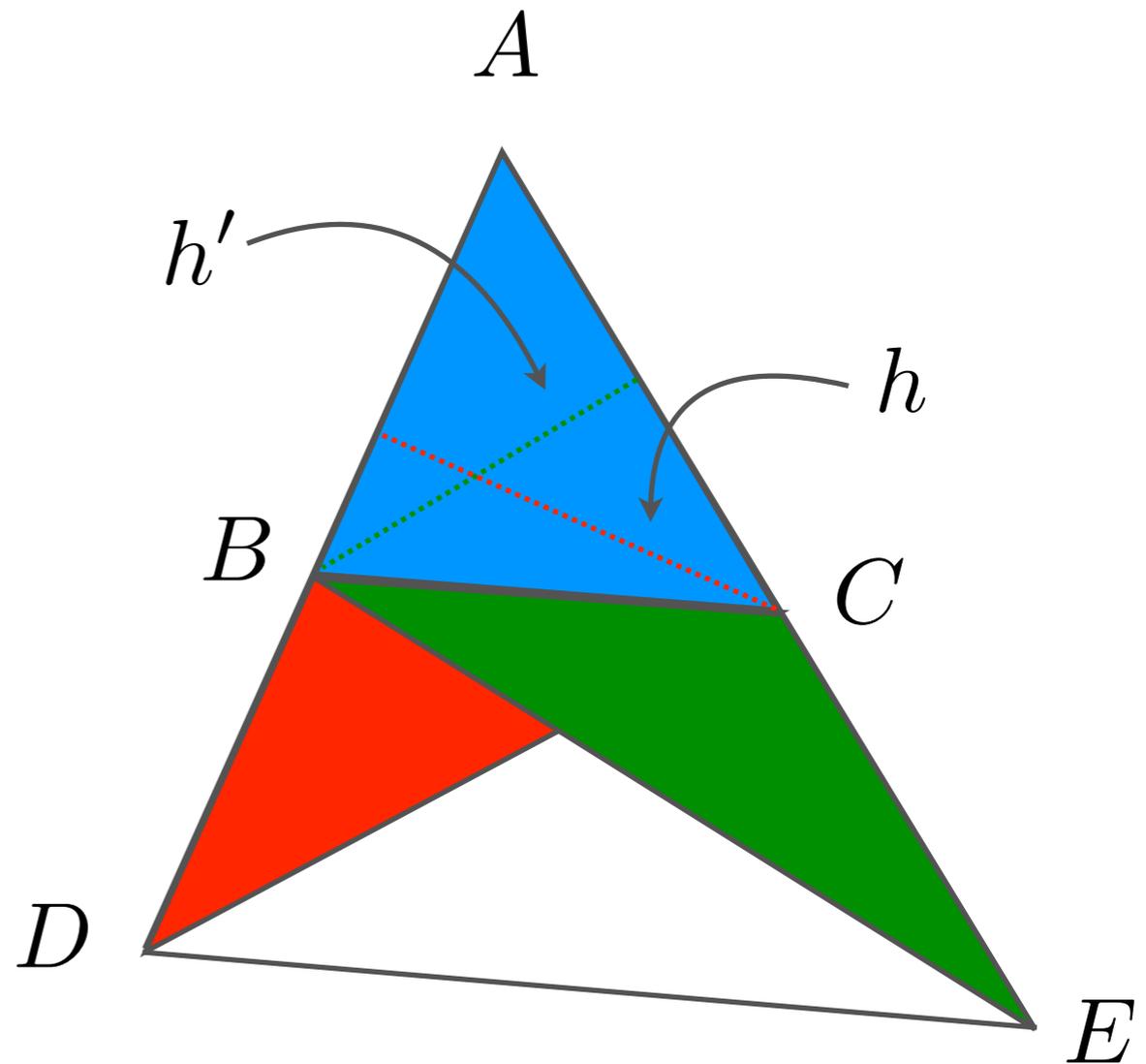
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$$\text{Aire}(\triangle DCB) = \frac{BD \times h}{2}$$

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# Théorème de Thalès

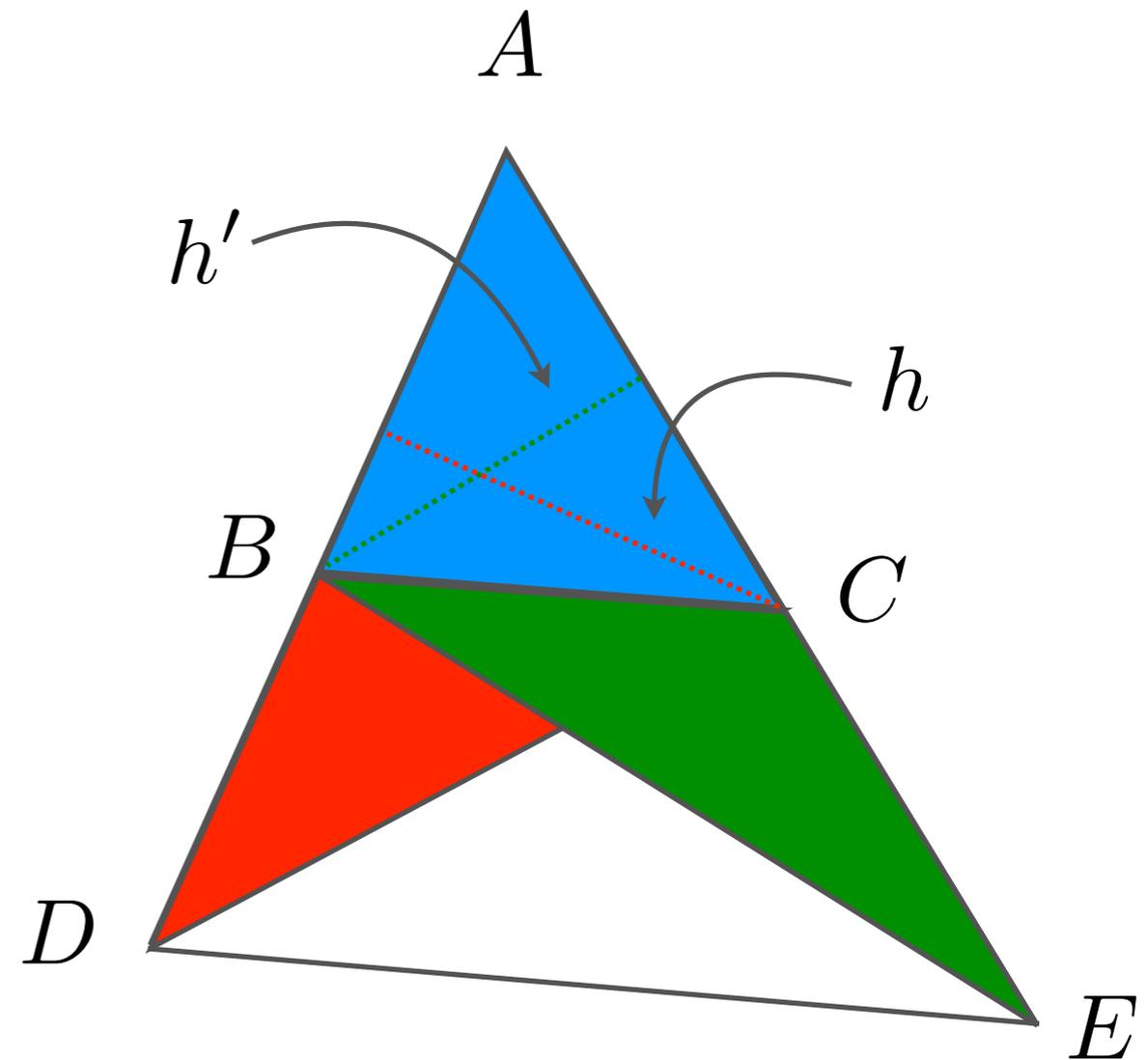
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# Théorème de Thalès

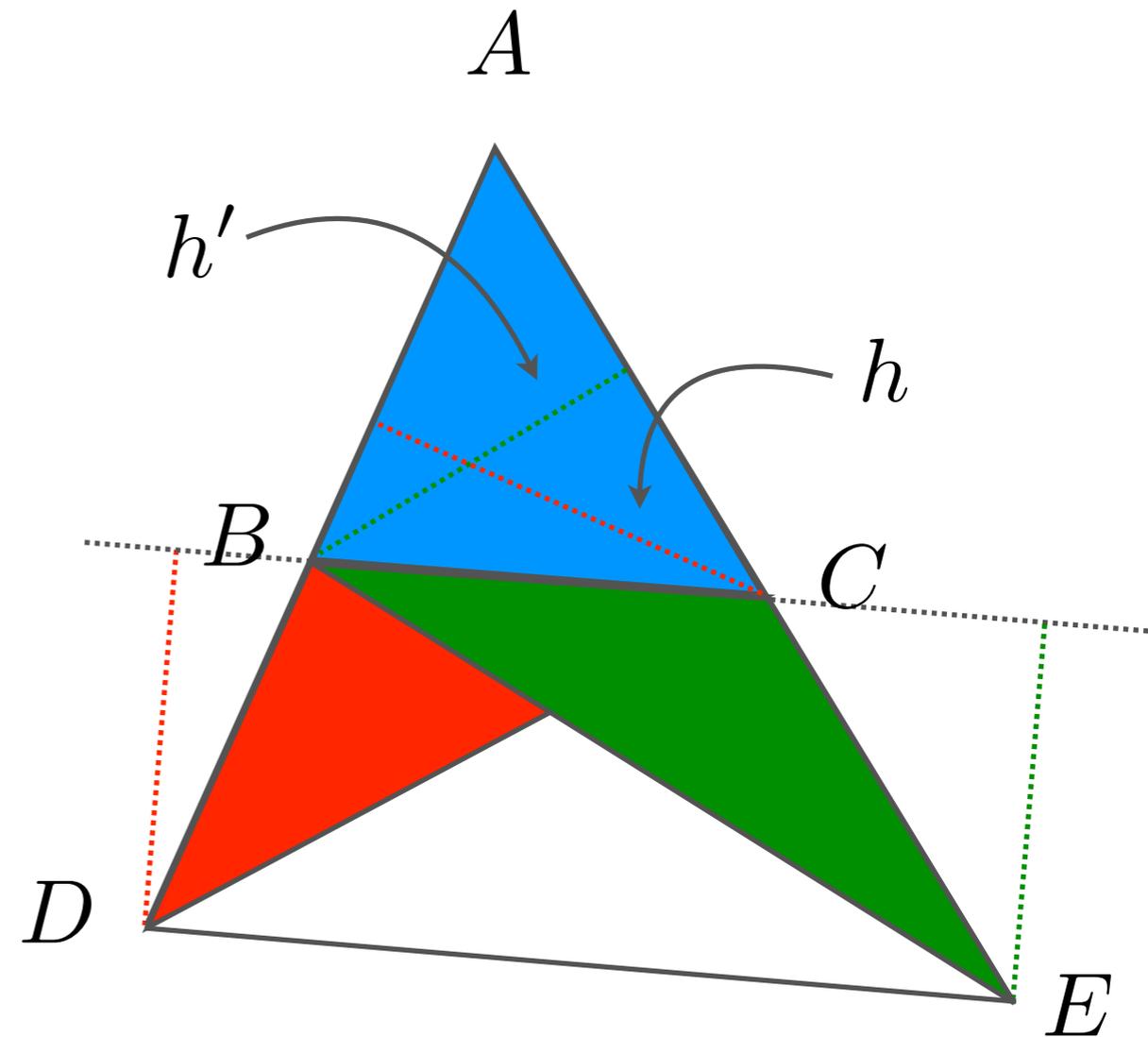
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# Théorème de Thalès

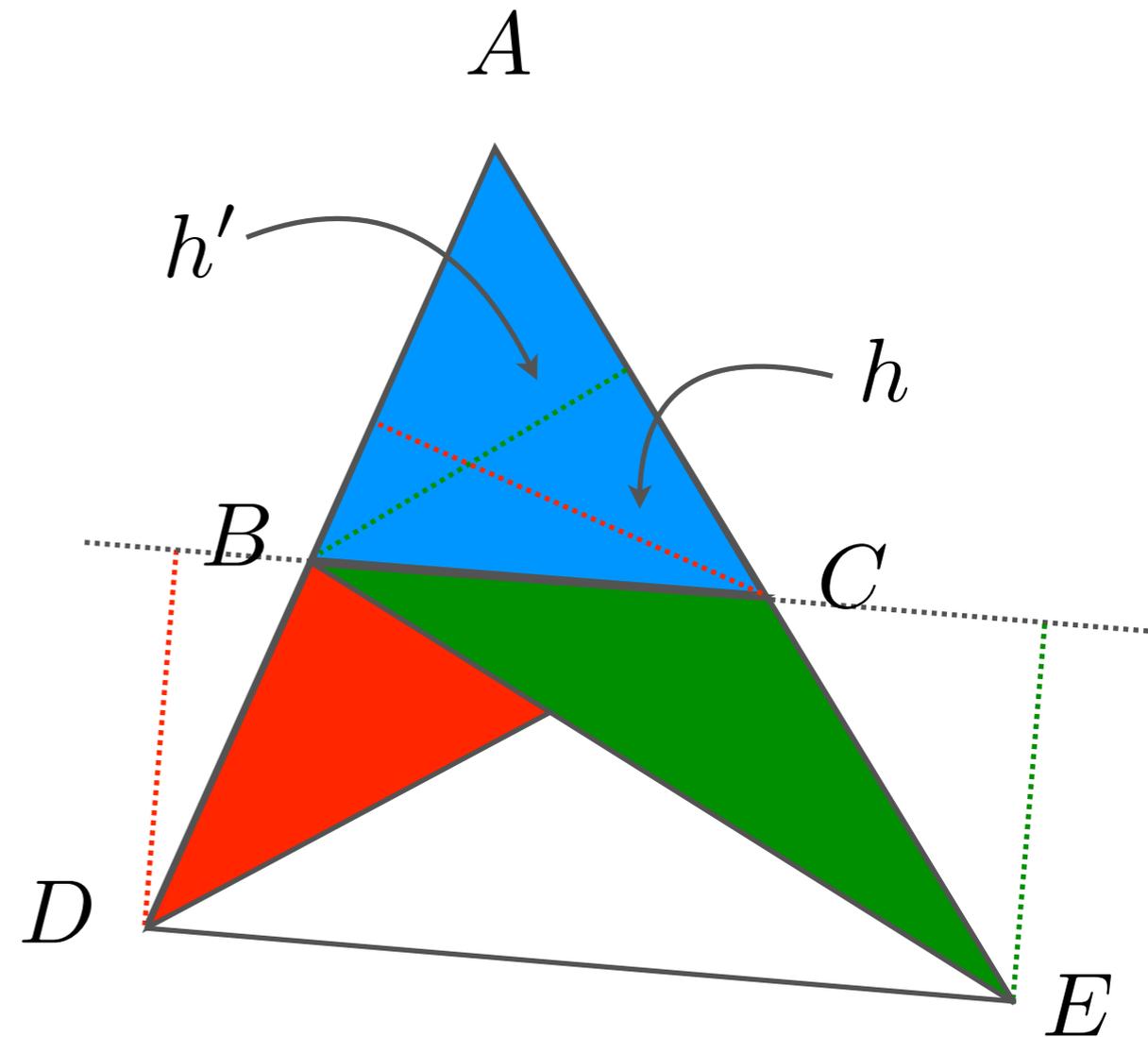
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$$\text{Aire}(\triangle DCB) = \text{Aire}(\triangle CEB)$$

# Théorème de Thalès

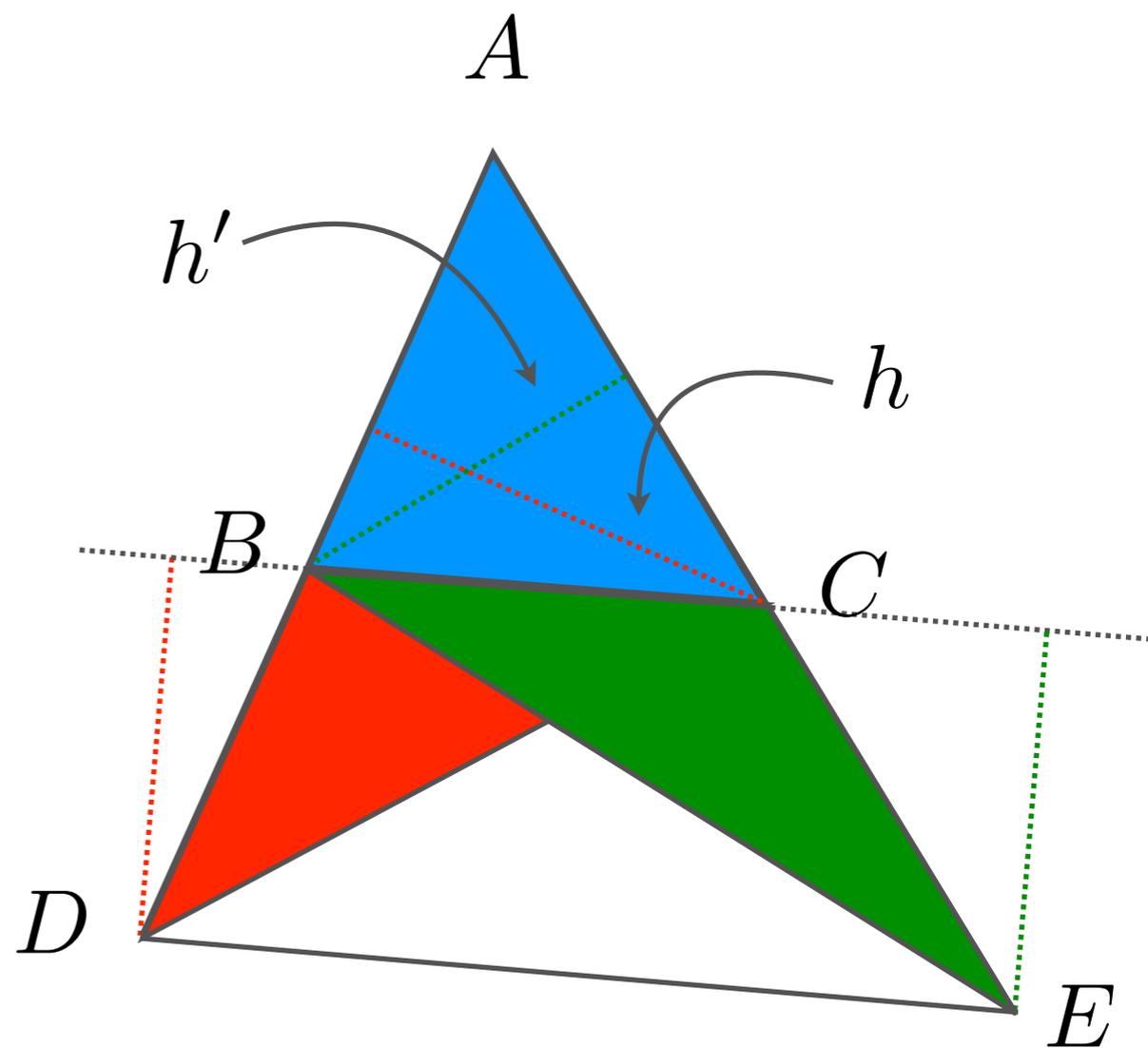
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$$\text{Aire}(\triangle ABC) = \frac{AC \times h'}{2}$$



$$\frac{\text{Aire}(\triangle DCB)}{\text{Aire}(\triangle ABC)} = \frac{\text{Aire}(\triangle CEB)}{\text{Aire}(\triangle ABC)}$$

# Théorème de Thalès

$BC \parallel DE$

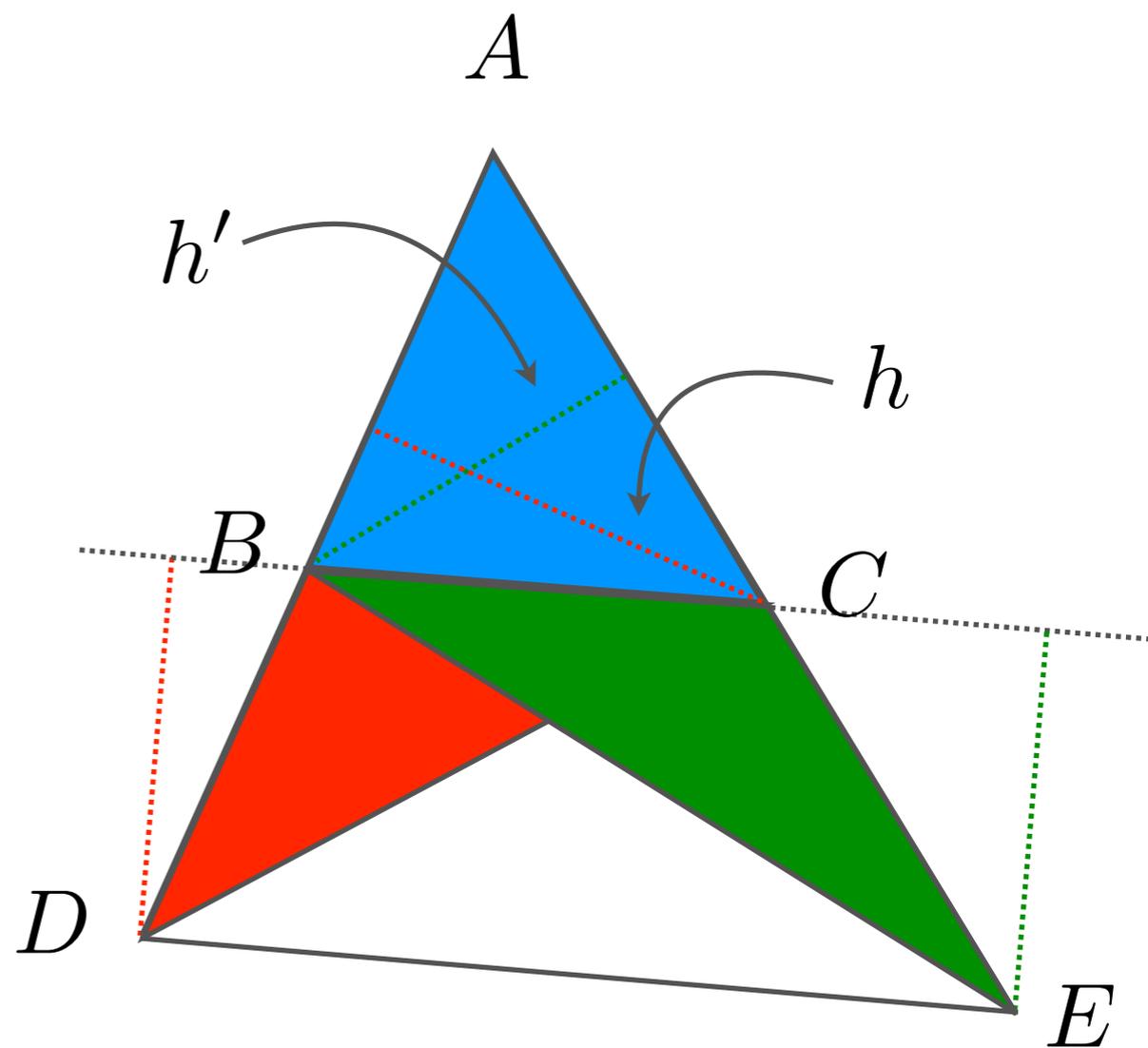
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$$\frac{\frac{BD \times h}{2}}{\frac{AB \times h}{2}} = \frac{\text{Aire}(\triangle DCB)}{\text{Aire}(\triangle ABC)} = \frac{\text{Aire}(\triangle CEB)}{\text{Aire}(\triangle ABC)}$$



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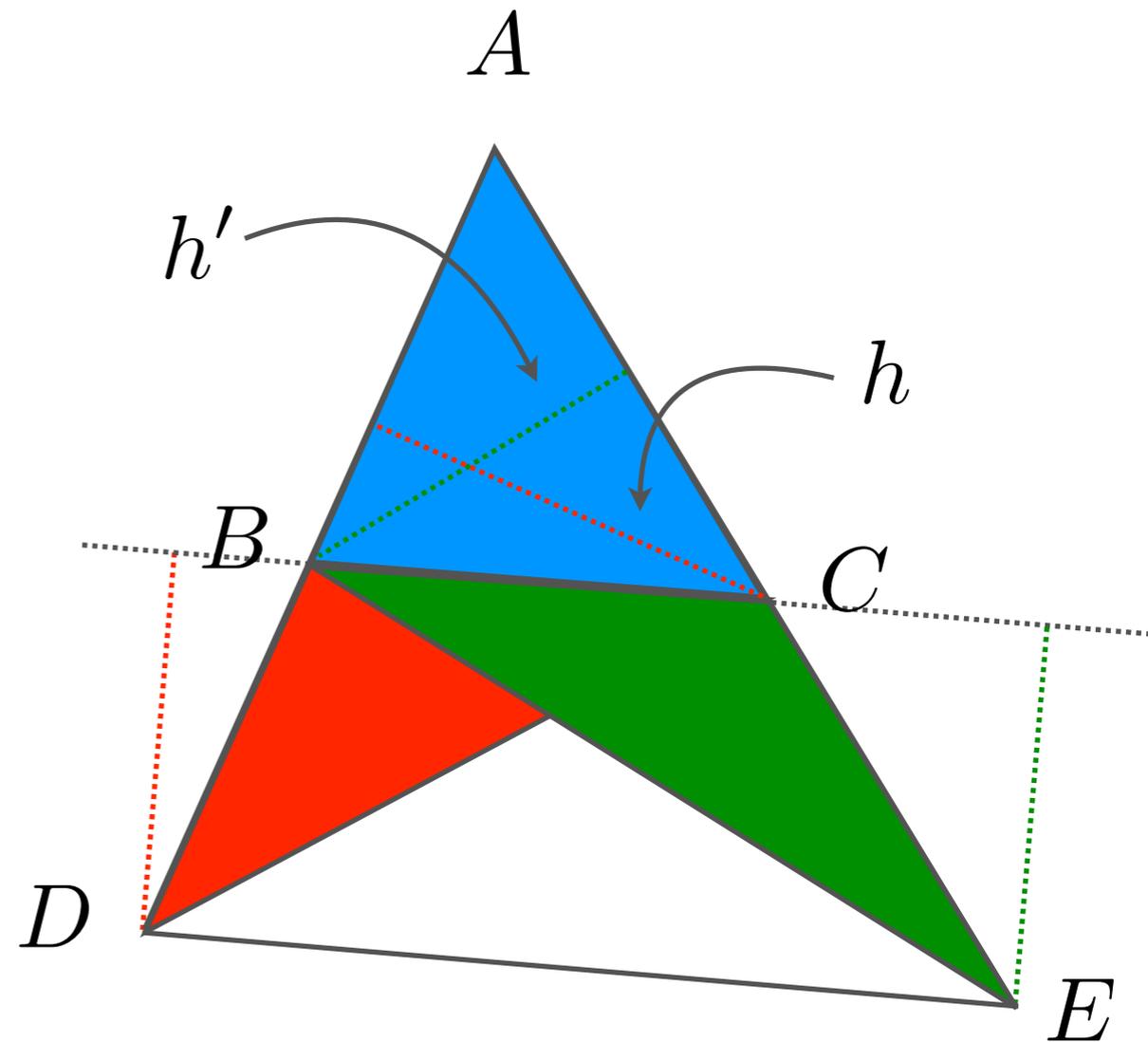
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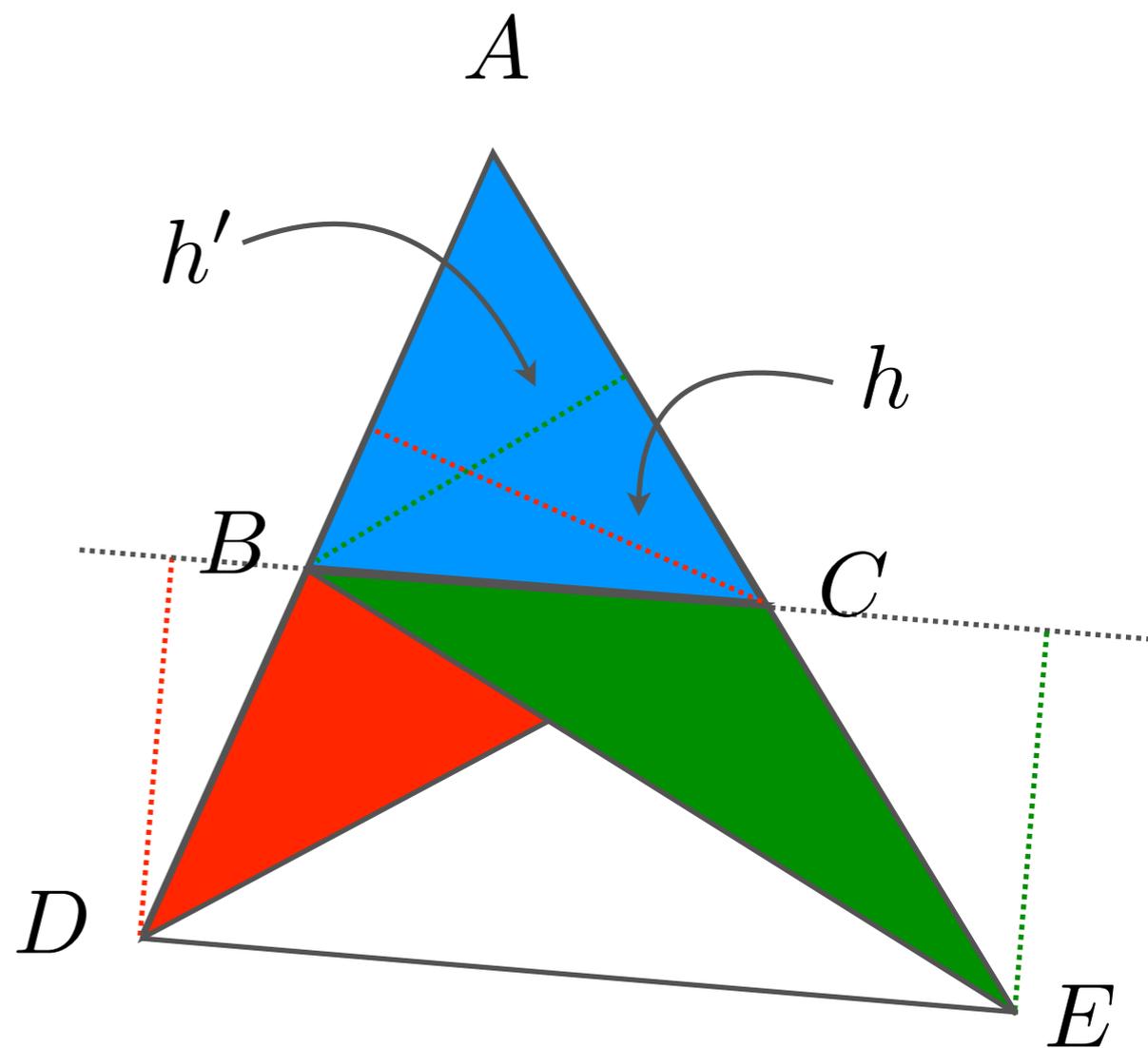
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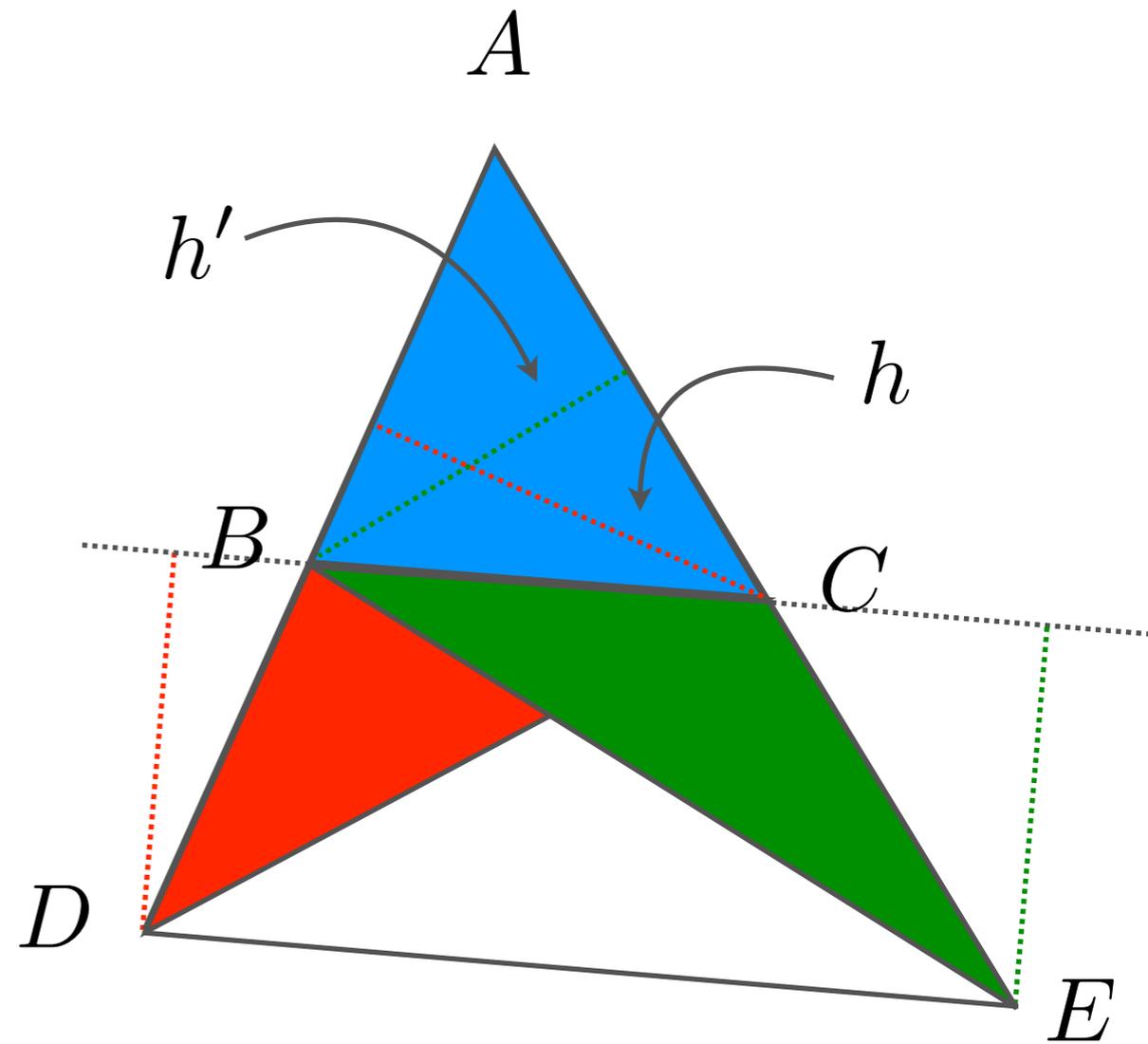
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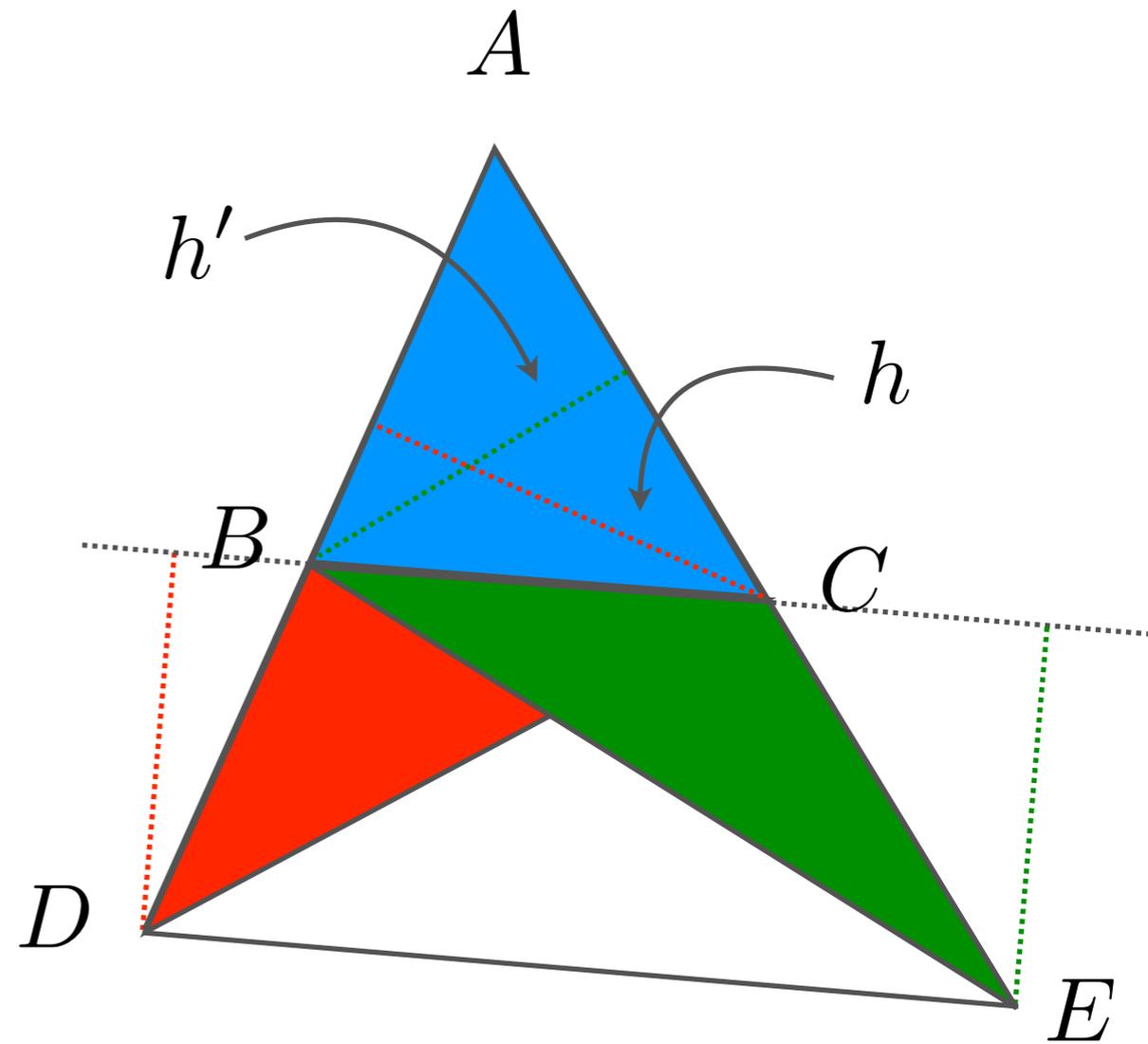
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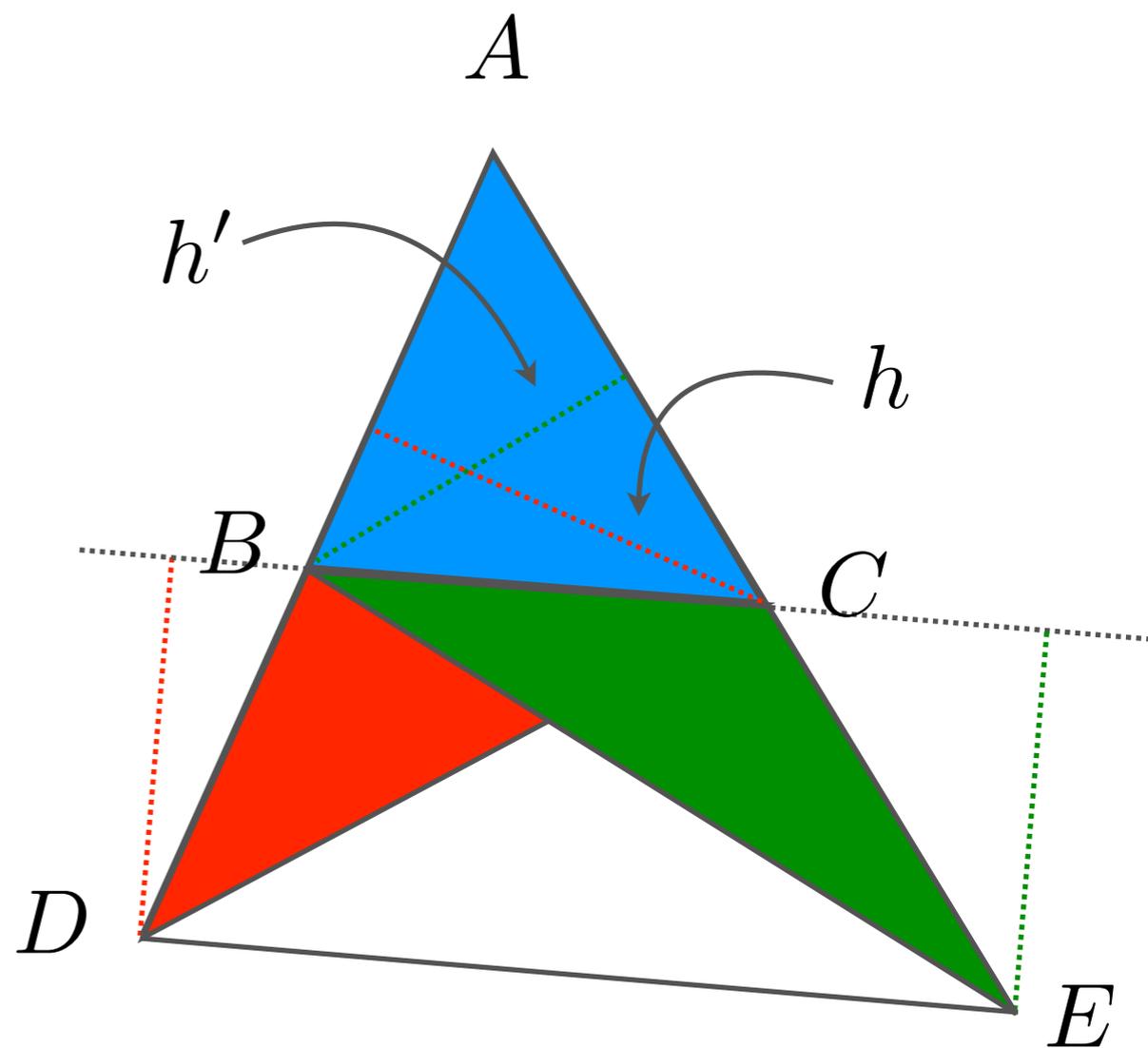
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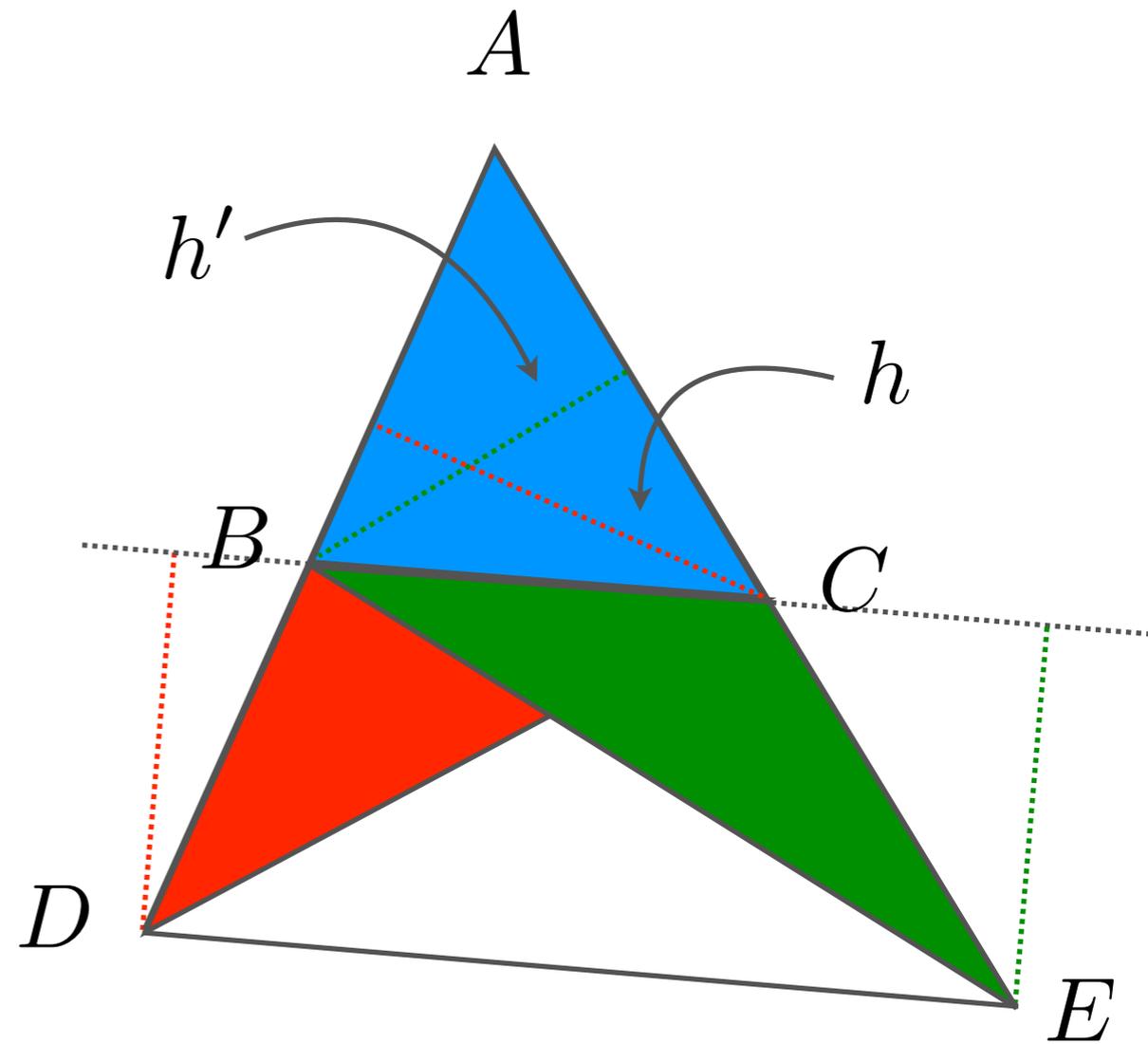
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# Théorème de Thalès

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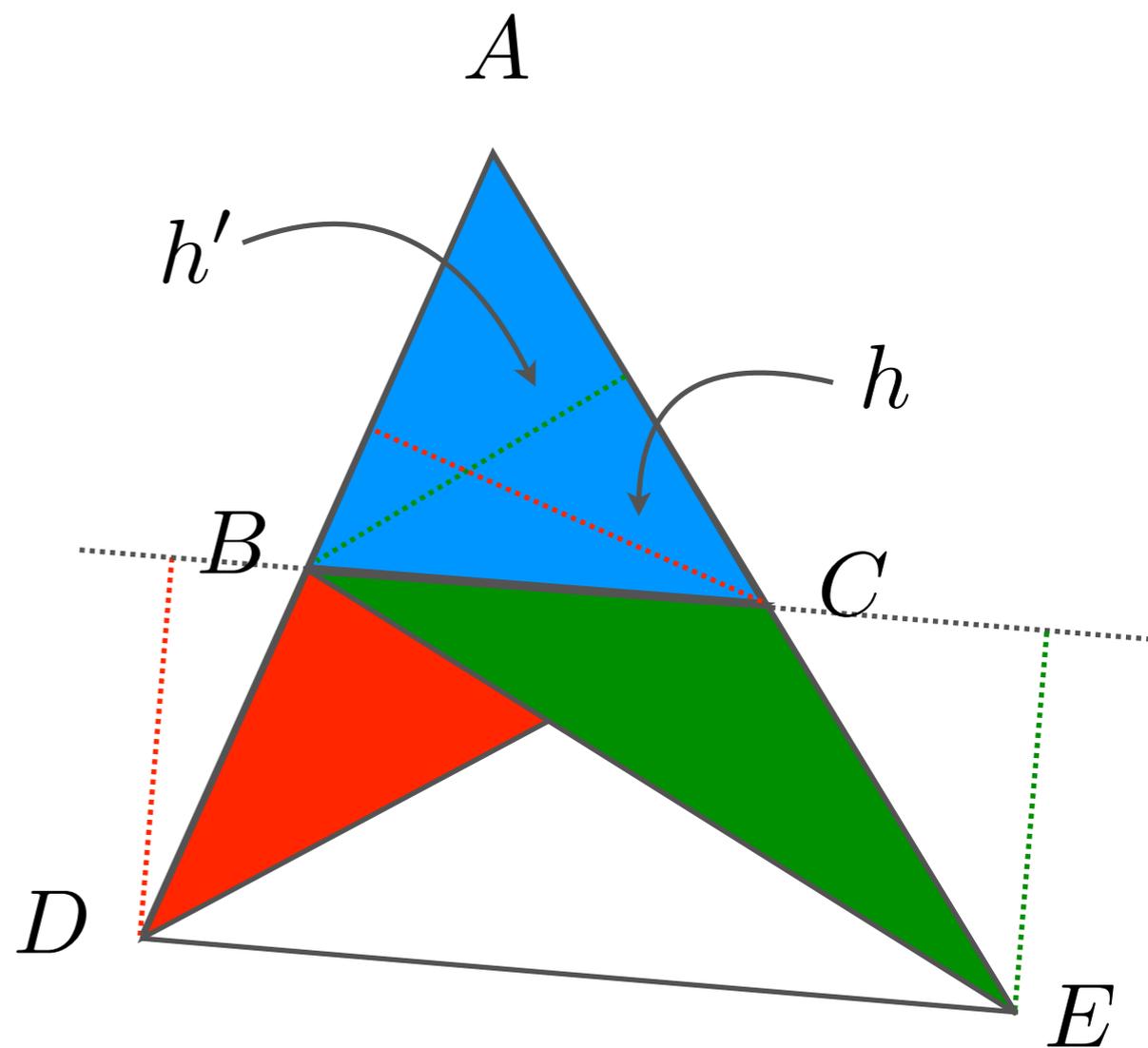
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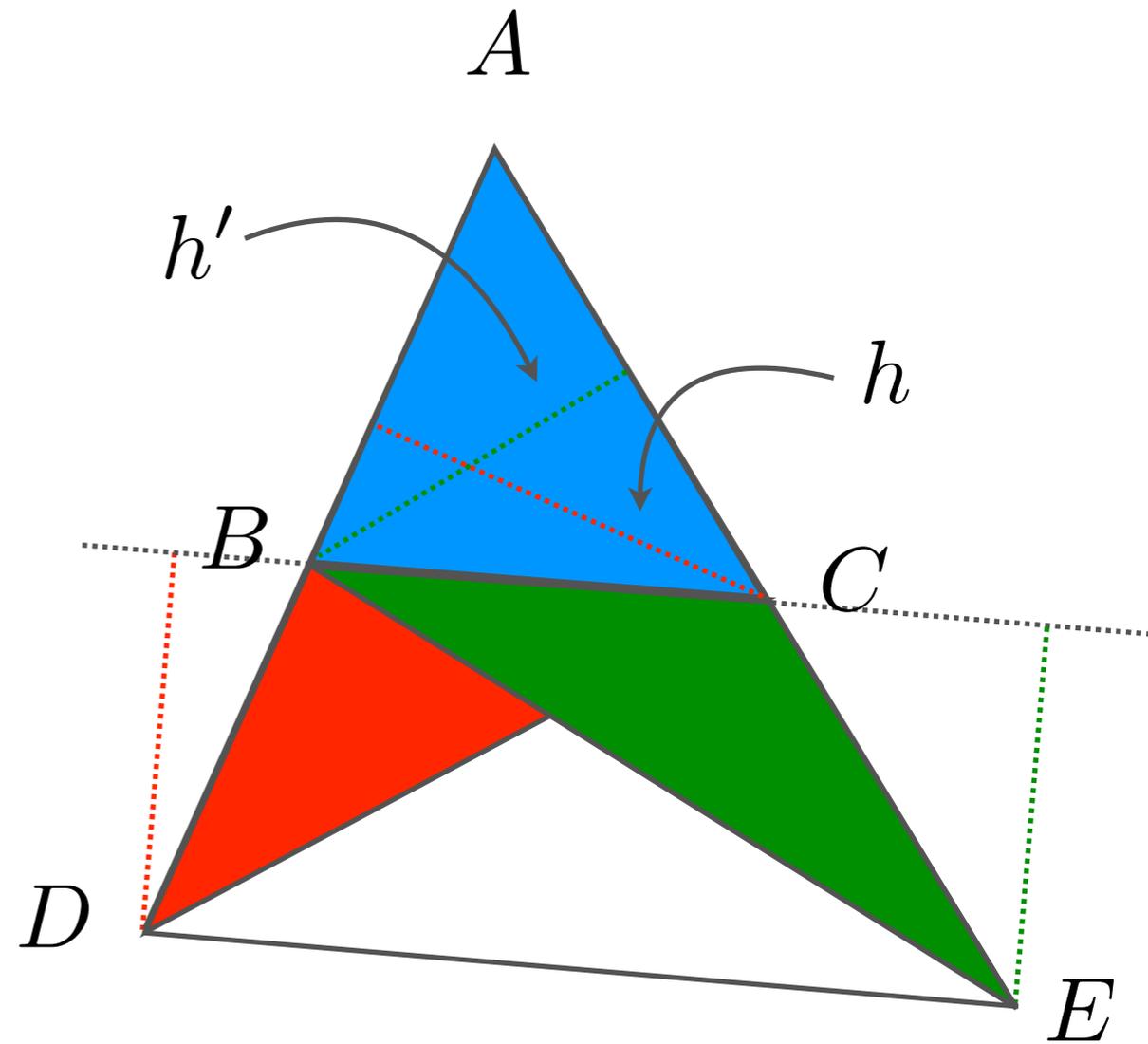
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# Théorème de Thalès

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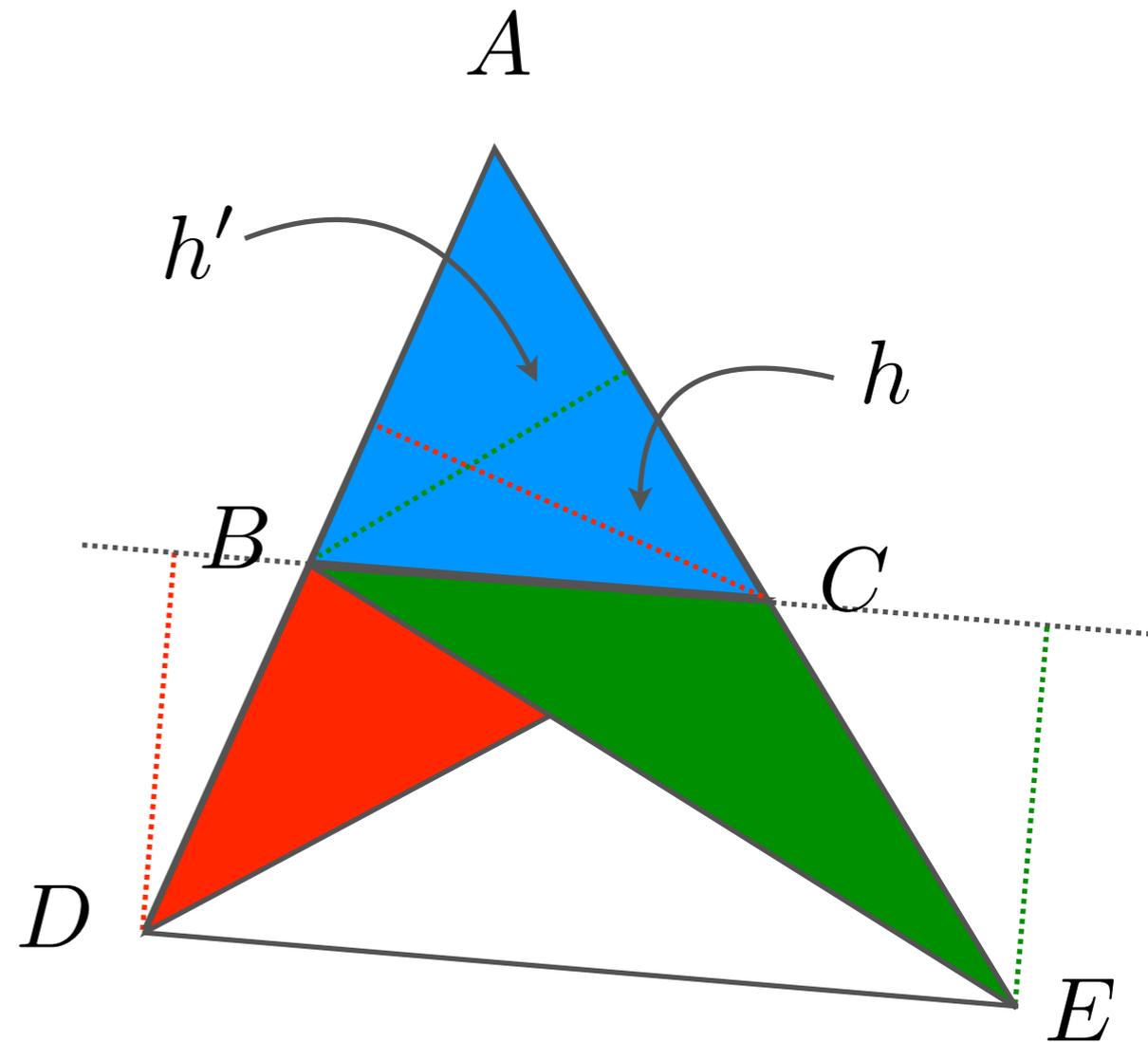
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$BC \parallel DE$

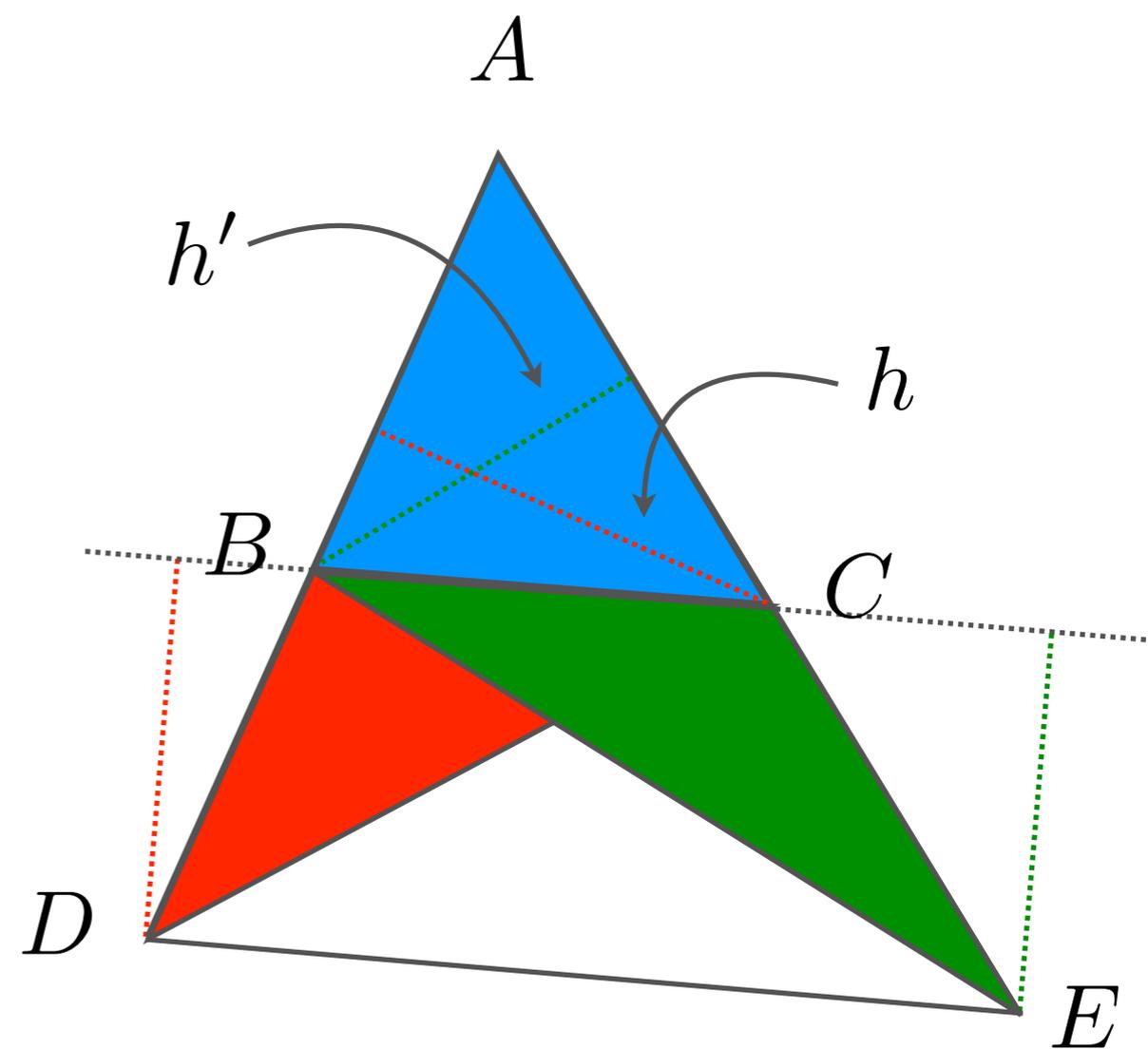
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# Théorème de Thalès

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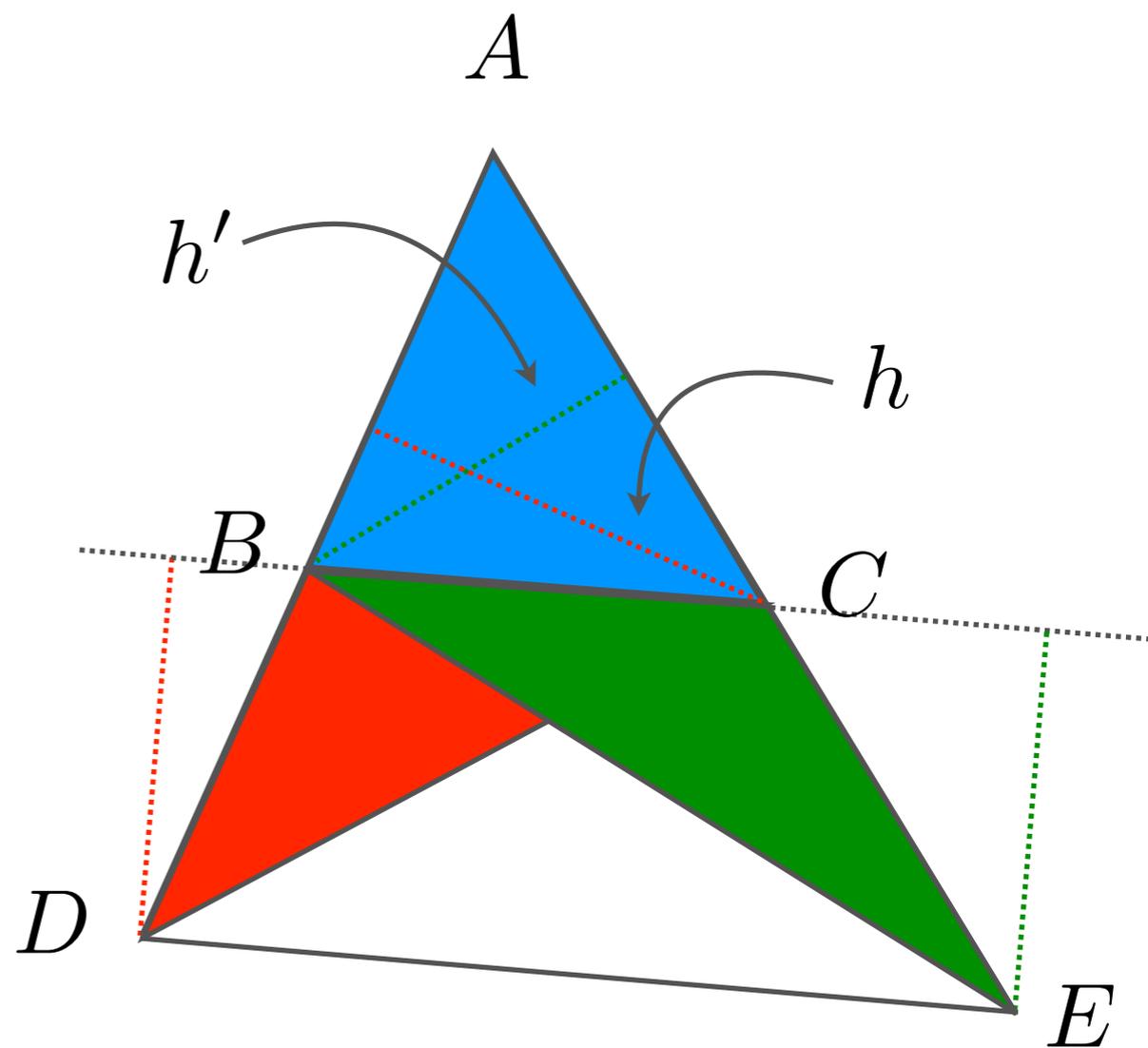
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# Théorème de Thalès

$BC \parallel DE$

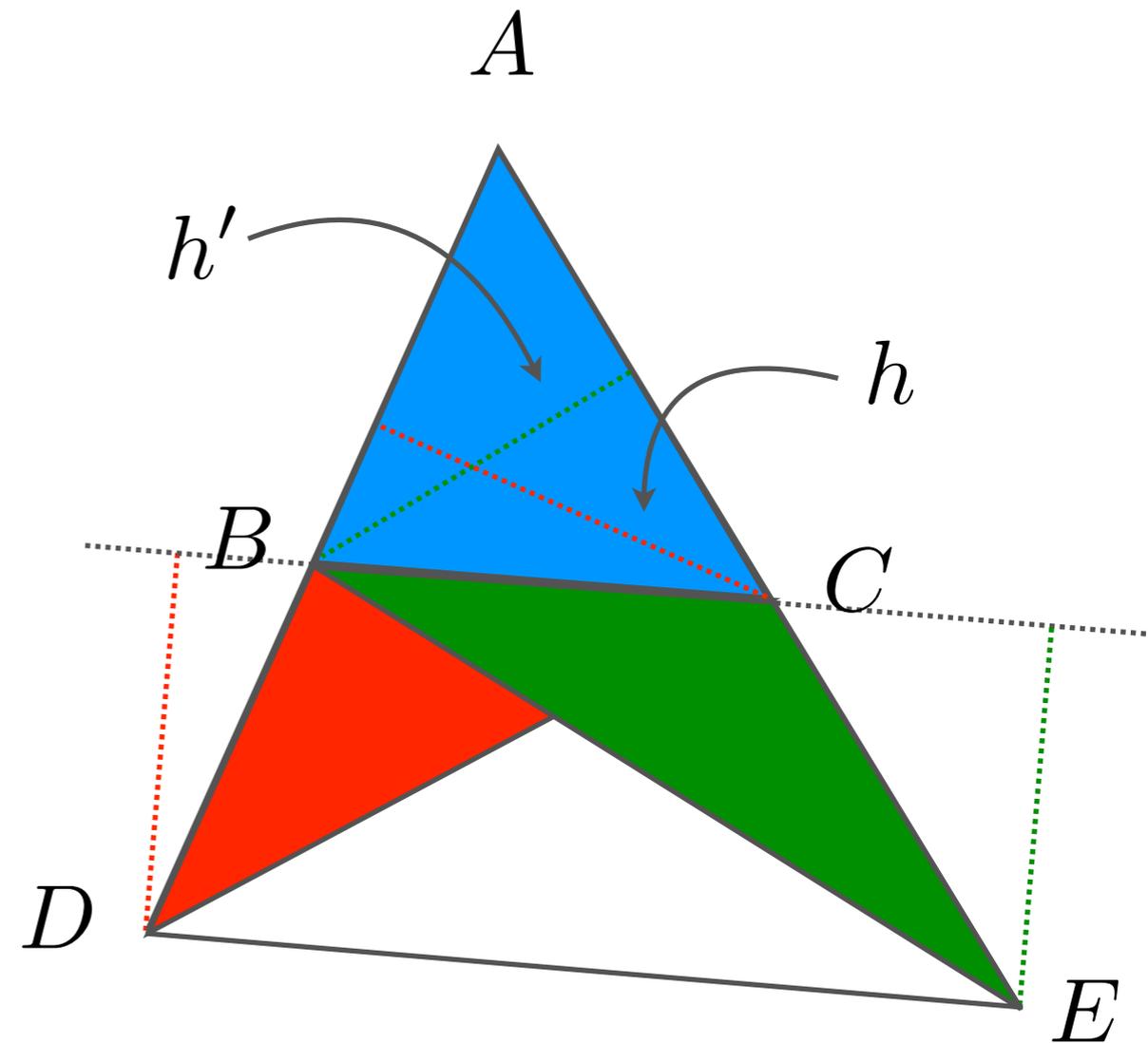
$$\text{Aire}(\triangle DCB) = \frac{BD \times h}{2}$$

$$\text{Aire}(\triangle ABC) = \frac{AB \times h}{2}$$

$$\text{Aire}(\triangle CEB) = \frac{CE \times h'}{2}$$

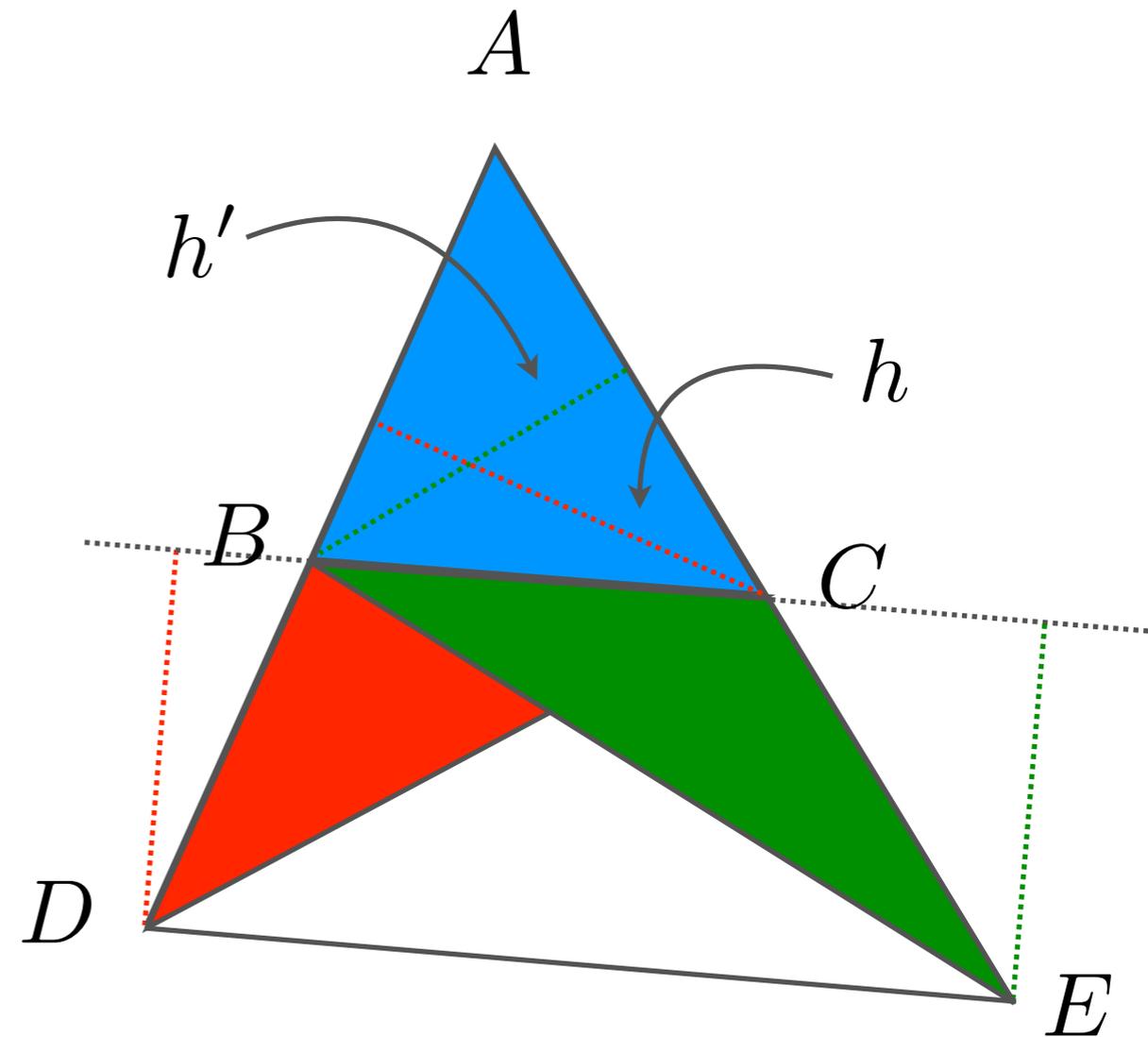
$$\text{Aire}(\triangle ABC) = \frac{AC \times h'}{2}$$

$$\frac{BD}{AB} = \frac{\frac{BD \times h}{2}}{\frac{AB \times h}{2}} = \frac{\text{Aire}(\triangle DCB)}{\text{Aire}(\triangle ABC)} = \frac{\text{Aire}(\triangle CEB)}{\text{Aire}(\triangle ABC)} = \frac{\frac{CE \times h'}{2}}{\frac{AC \times h'}{2}} =$$



# Théorème de Thalès

$BC \parallel DE$



$$\text{Aire}(\triangle DCB) = \frac{BD \times h}{2}$$

$$\text{Aire}(\triangle ABC) = \frac{AB \times h}{2}$$

$$\text{Aire}(\triangle CEB) = \frac{CE \times h'}{2}$$

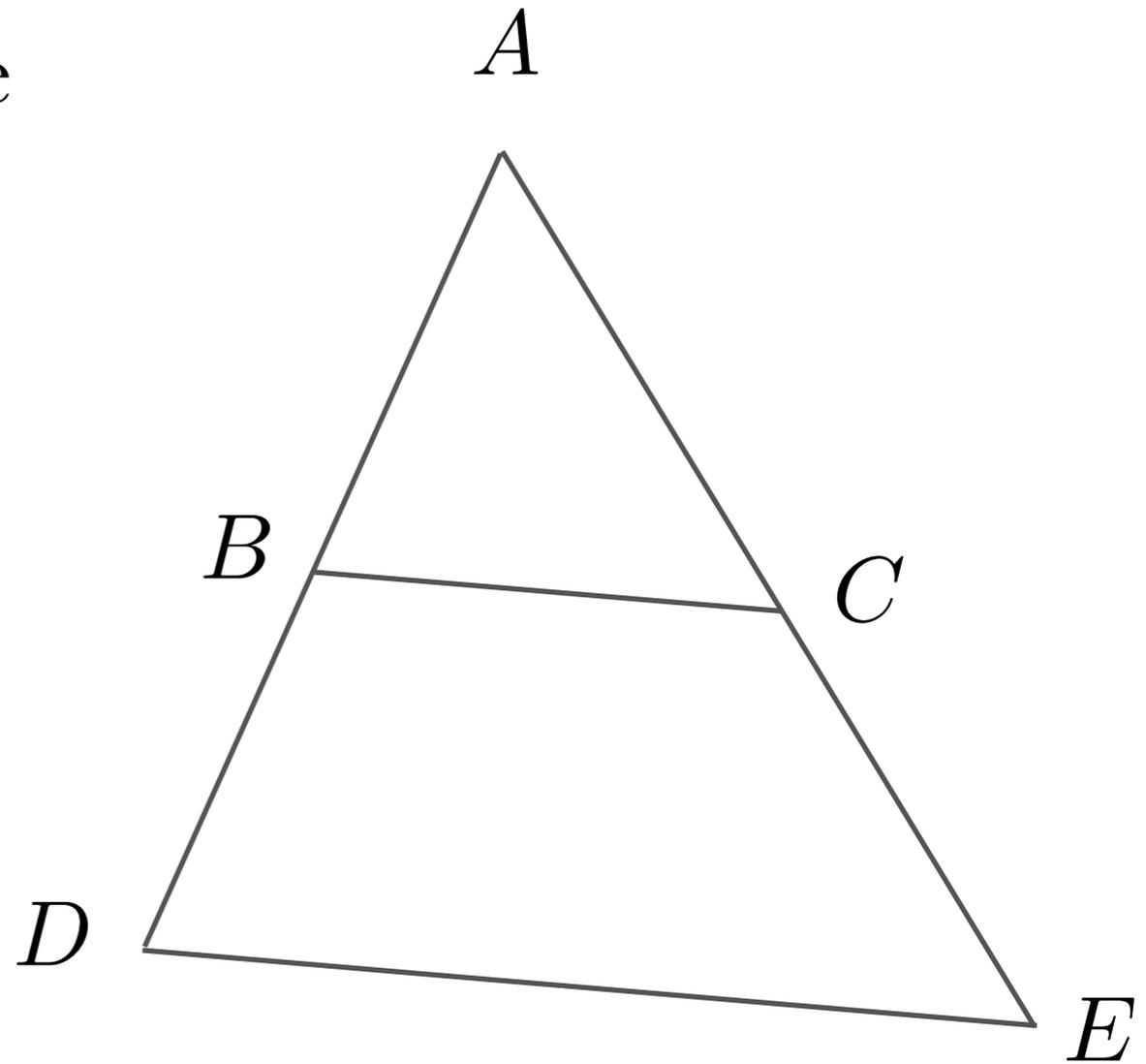
$$\text{Aire}(\triangle ABC) = \frac{AC \times h'}{2}$$

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# Théorème de Thalès

Donc le théorème de Thalès dit que

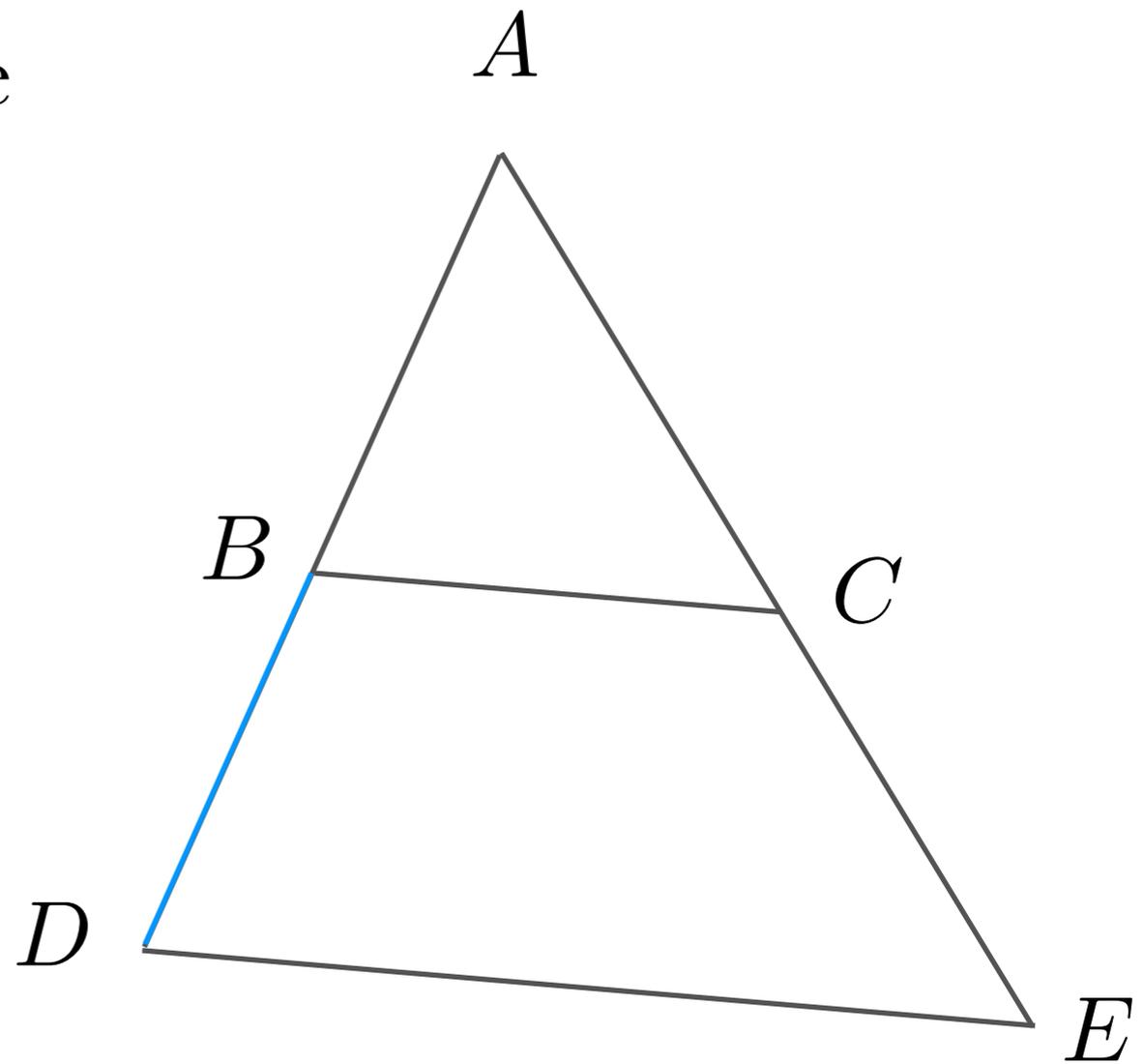
$$\frac{BD}{AB} = \frac{CE}{AC}$$



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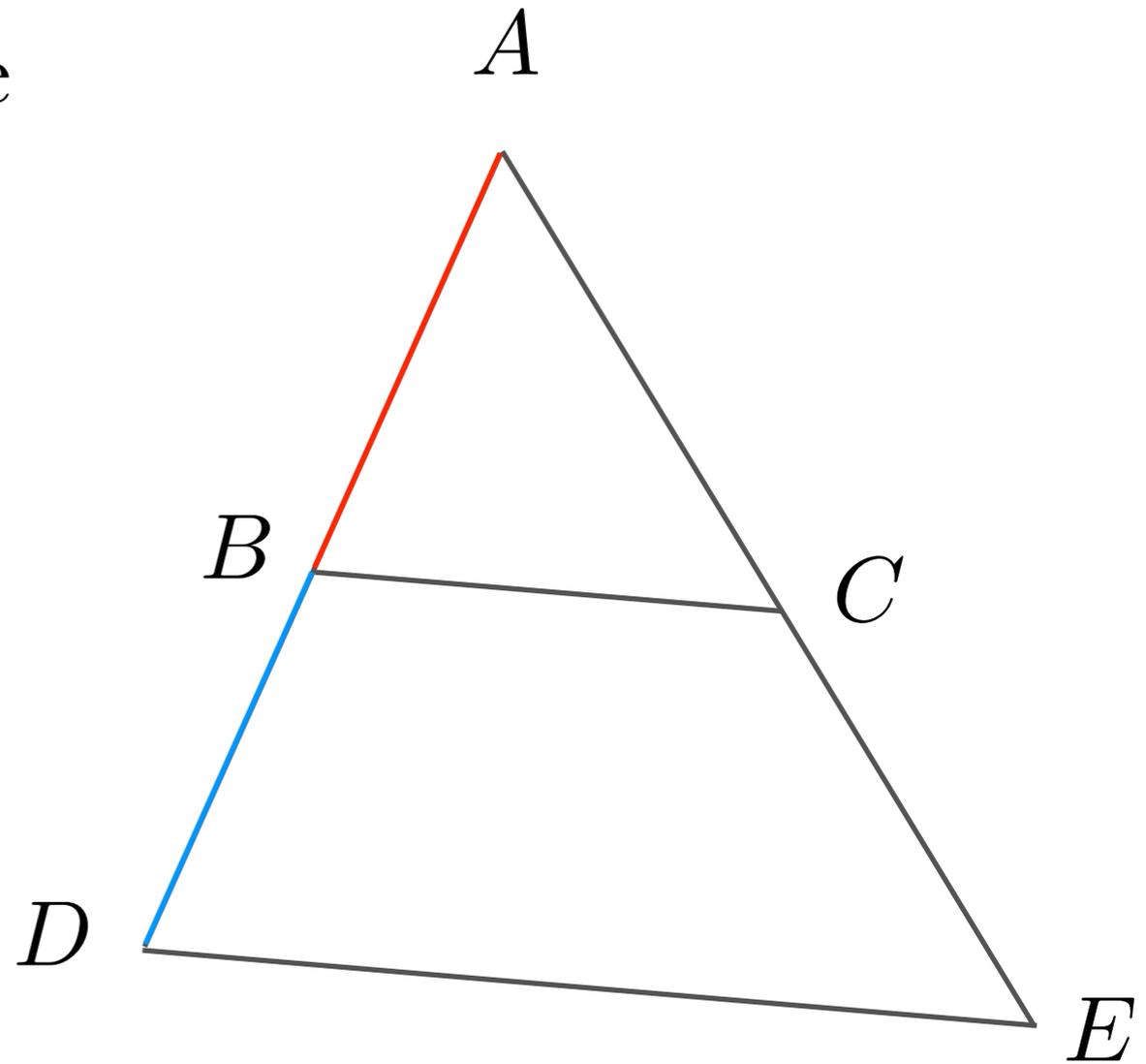
$$\frac{BD}{AB} = \frac{CE}{AC}$$



# Théorème de Thalès

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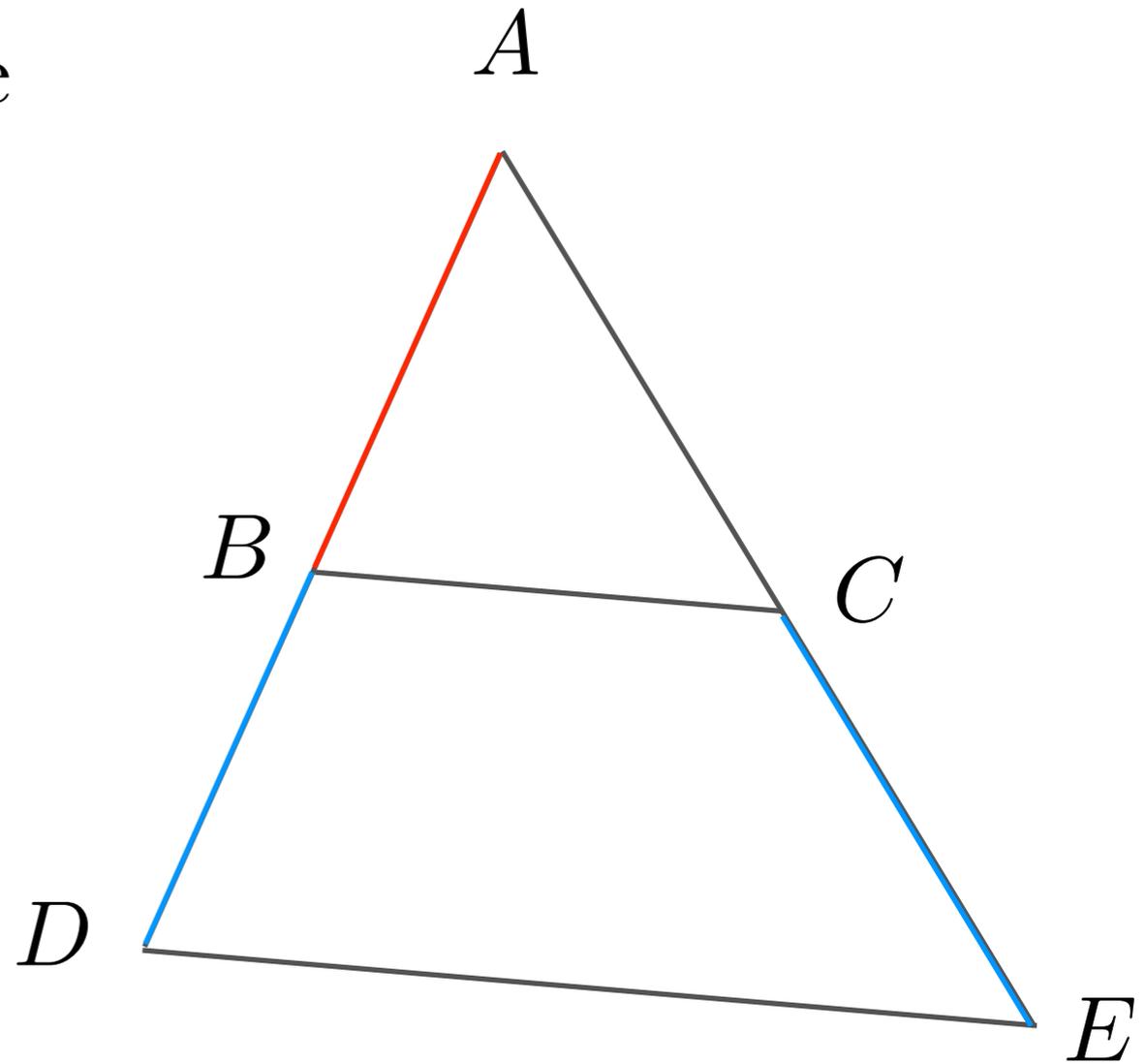
$$\frac{BD}{AB} = \frac{CE}{AC}$$



# Théorème de Thalès

Donc le théorème de Thalès dit que

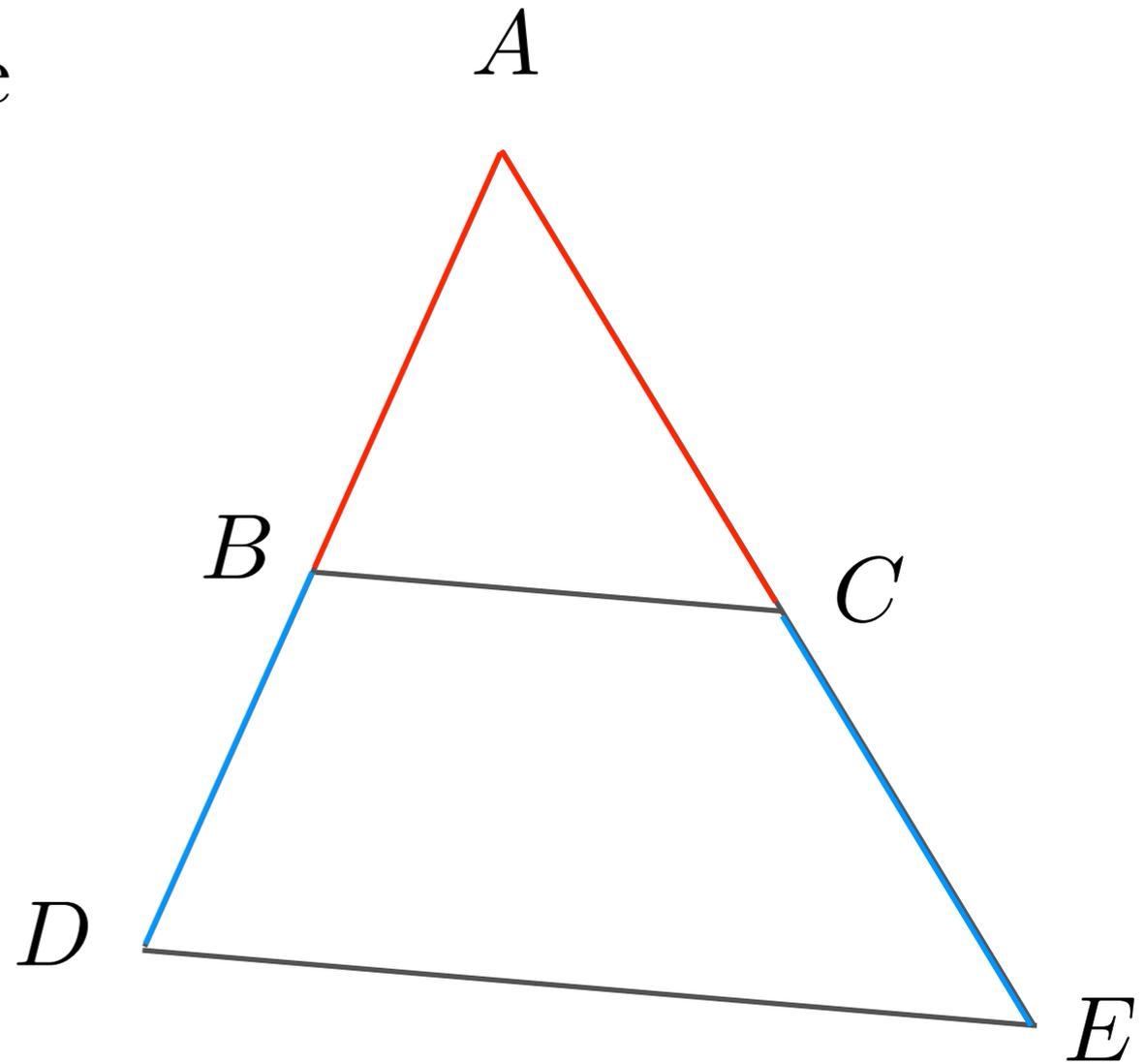
$$\frac{BD}{AB} = \frac{CE}{AC}$$



# Théorème de Thalès

Donc le théorème de Thalès dit que

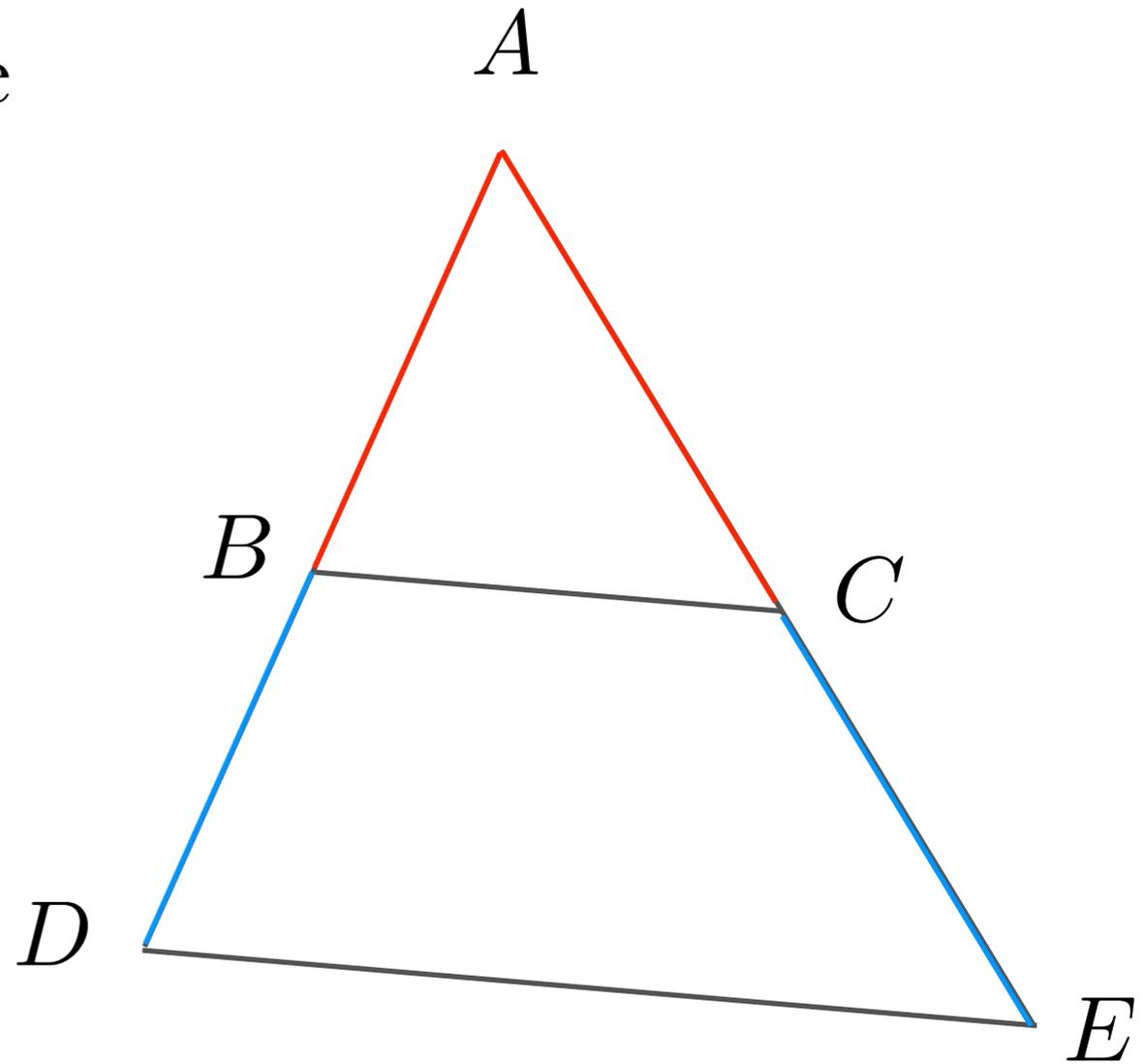
$$\frac{BD}{AB} = \frac{CE}{AC}$$



# Théorème de Thalès

Donc le théorème de Thalès dit que

$$\frac{BD}{AB} = \frac{CE}{AC}$$
$$\frac{BD}{AB} + 1 = \frac{CE}{AC} + 1$$



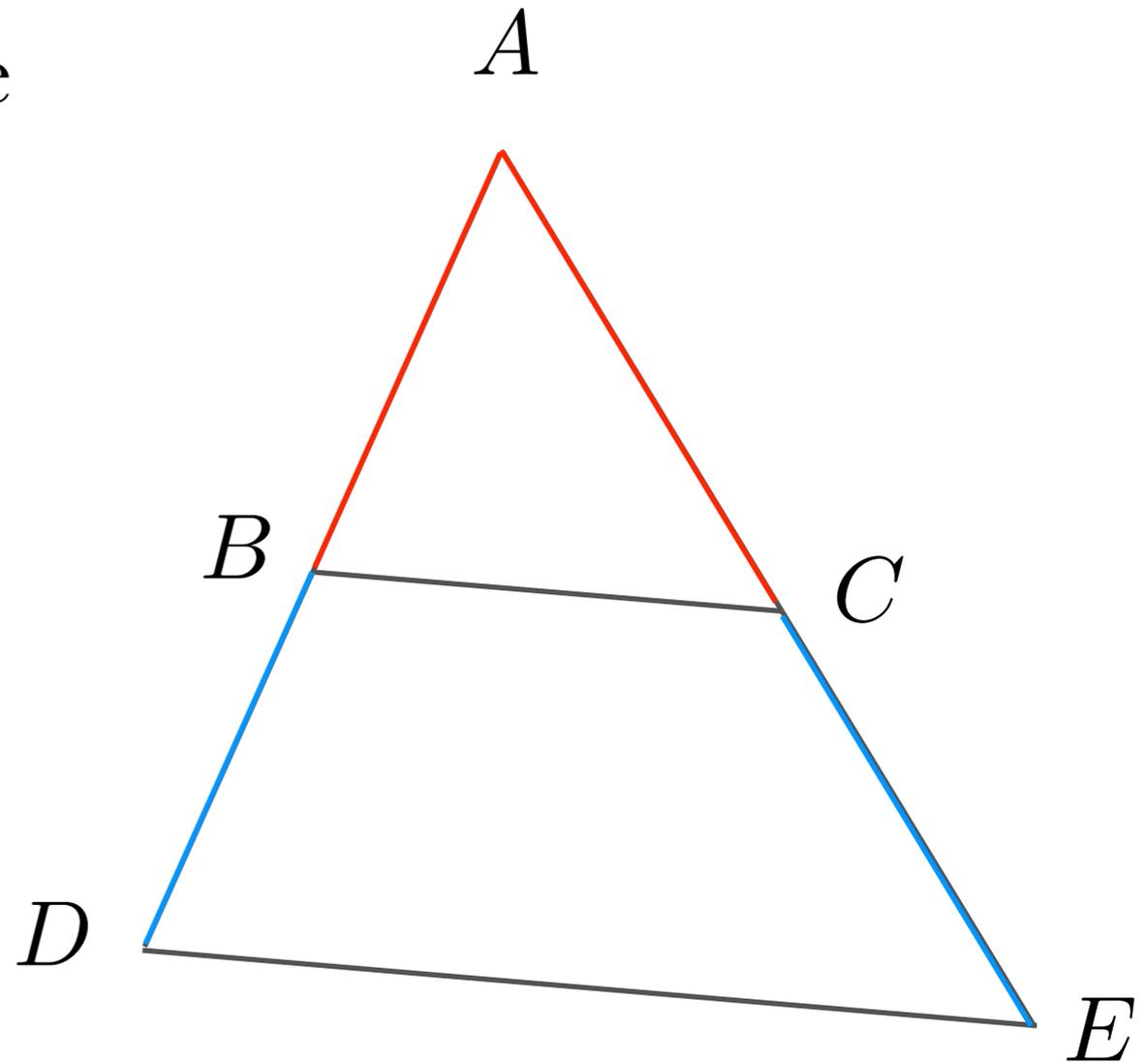
# Théorème de Thalès

Donc le théorème de Thalès dit que

$$\frac{BD}{AB} = \frac{CE}{AC}$$

$$\frac{BD}{AB} + 1 = \frac{CE}{AC} + 1$$

$$\frac{BD}{AB} + \frac{AB}{AB} = \frac{CE}{AC} + \frac{AC}{AC}$$



# Théorème de Thalès

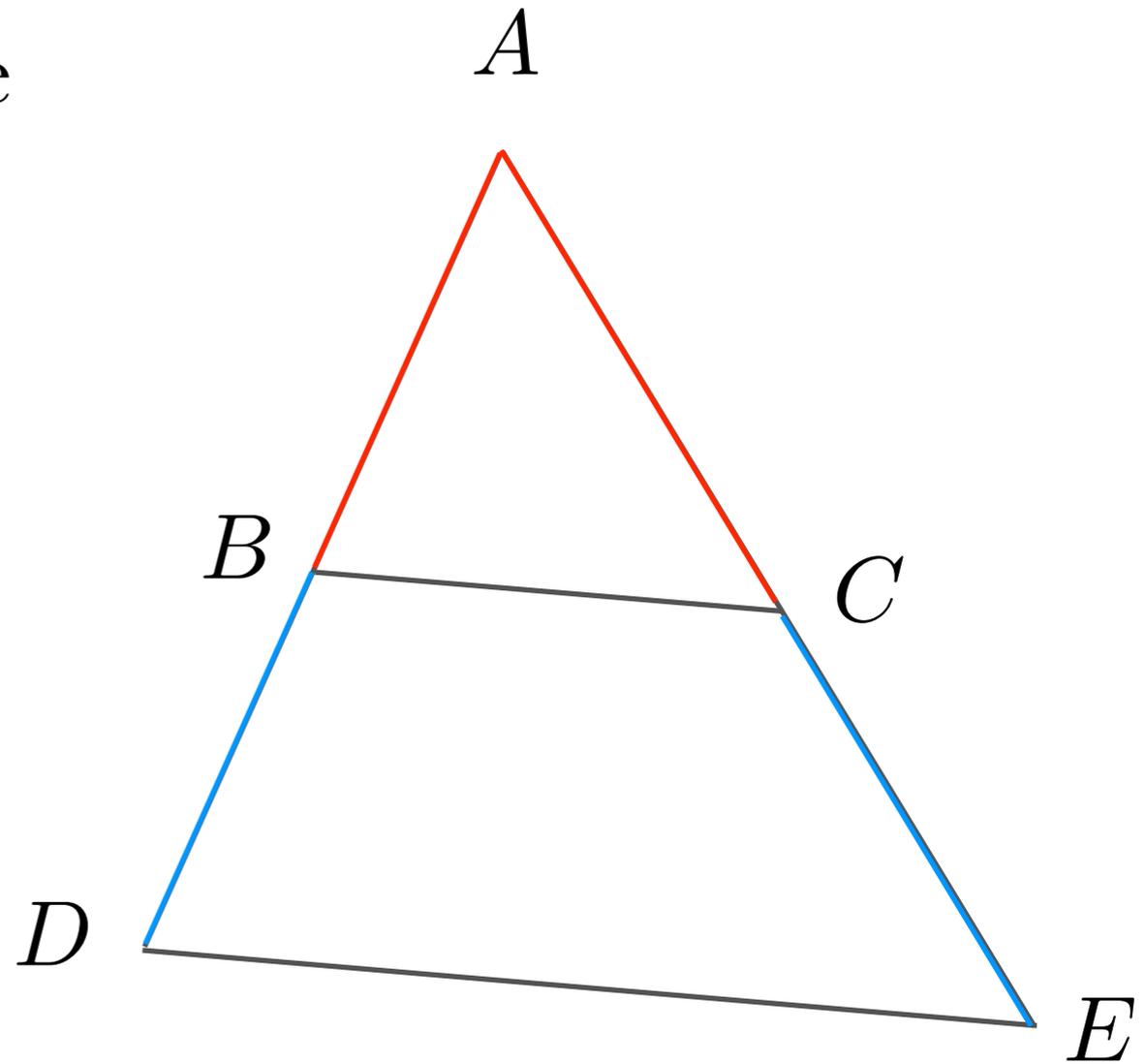
Donc le théorème de Thalès dit que

$$\frac{BD}{AB} = \frac{CE}{AC}$$

$$\frac{BD}{AB} + 1 = \frac{CE}{AC} + 1$$

$$\frac{BD}{AB} + \frac{AB}{AB} = \frac{CE}{AC} + \frac{AC}{AC}$$

$$\frac{BD + AB}{AB} = \frac{CE + AC}{AC}$$



# Théorème de Thalès

Donc le théorème de Thalès dit que

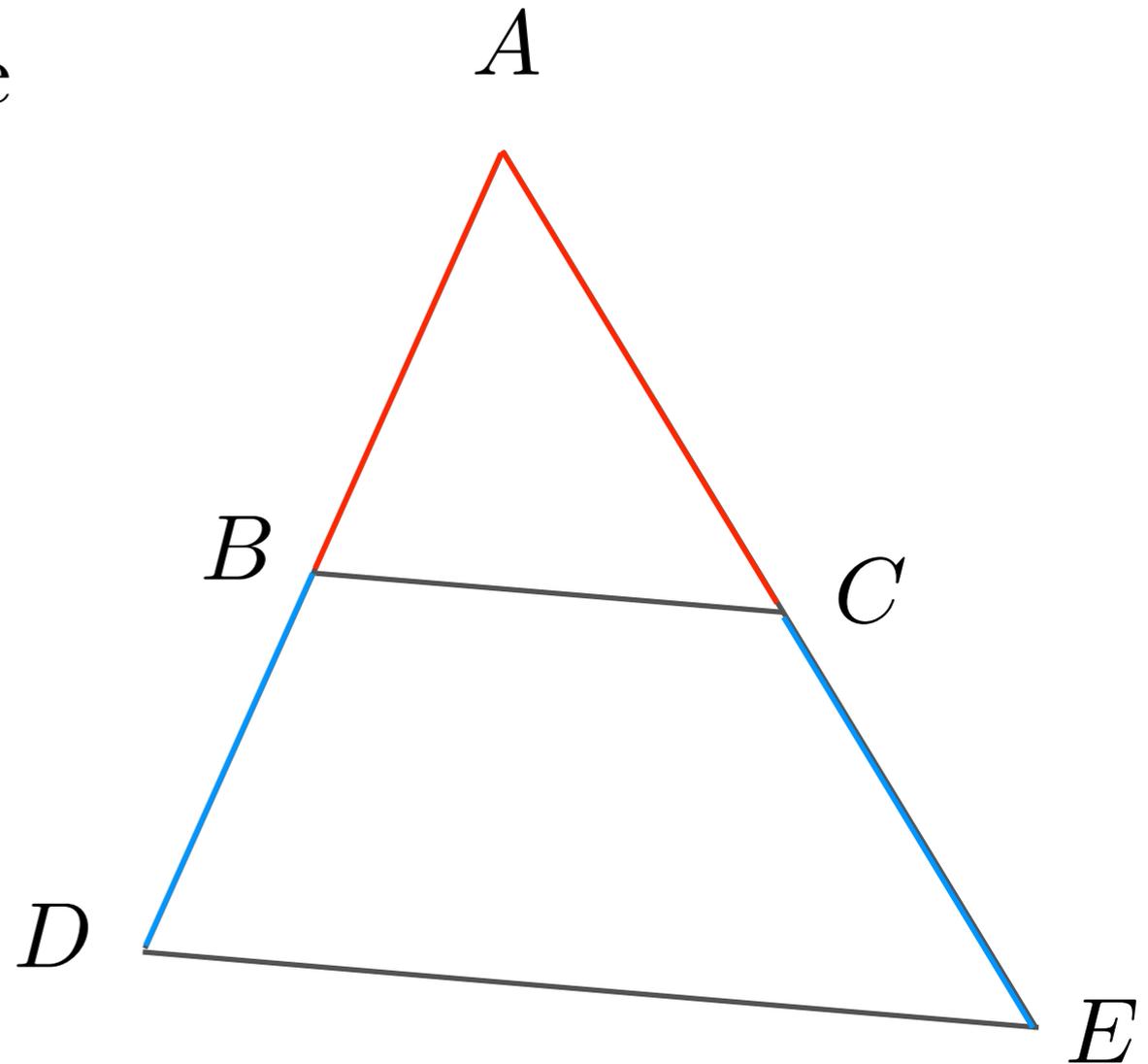
$$\frac{BD}{AB} = \frac{CE}{AC}$$

$$\frac{BD}{AB} + 1 = \frac{CE}{AC} + 1$$

$$\frac{BD}{AB} + \frac{AB}{AB} = \frac{CE}{AC} + \frac{AC}{AC}$$

$$\frac{BD + AB}{AB} = \frac{CE + AC}{AC}$$

$$\frac{AD}{AB} = \frac{AE}{AC}$$

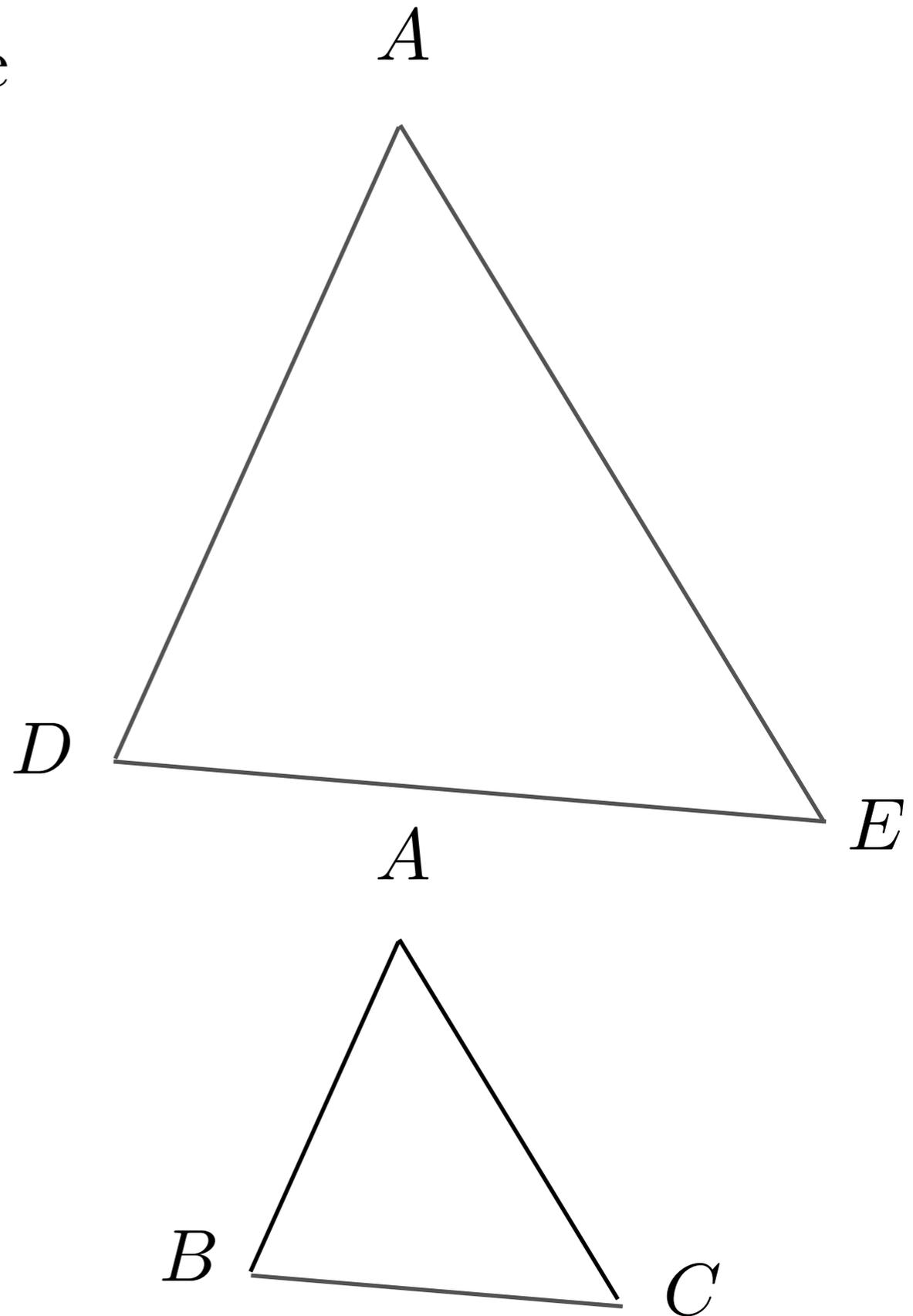


# Théorème de Thalès

Donc le théorème de Thalès dit que

$$\frac{BD}{AB} = \frac{CE}{AC}$$

$$\frac{AD}{AB} = \frac{AE}{AC}$$



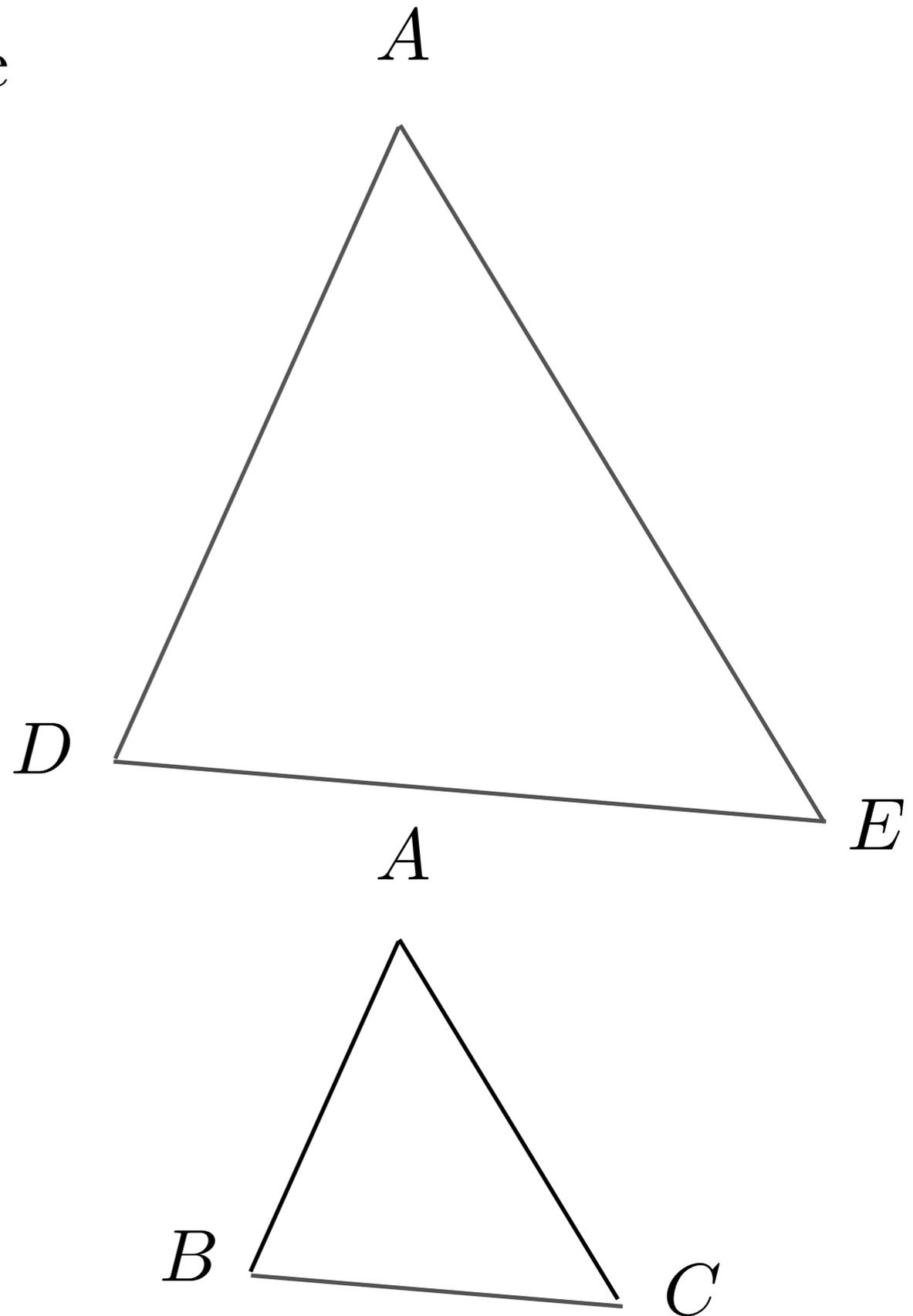
# Théorème de Thalès

Donc le théorème de Thalès dit que

$$\frac{BD}{AB} = \frac{CE}{AC}$$

$$\frac{AD}{AB} = \frac{AE}{AC}$$

Les rapports de côté homologue de figures semblables sont égaux



Devoir:

p.464 # 3 à 17