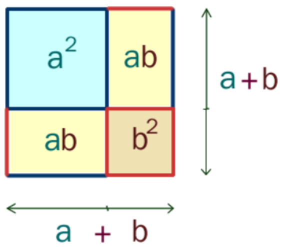
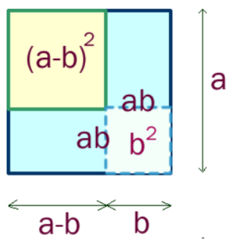
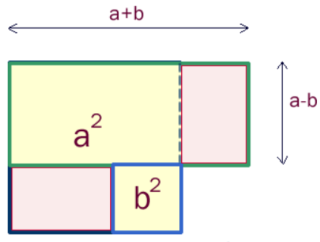
Identités remarquables. Cours.

<table>
<tr><th colspan="4">Identités remarquables.</th></tr>
<tr><td rowspan="3">Propriété</td><td colspan="3">Pour tous nombres réels a et b, on a :</td></tr>
<tr><td colspan="3">• $(a+b)^2 \underset{\xleftarrow[\textcircled{2}]{}}{\overset{\xrightarrow{\textcircled{1}}}{=}} a^2+2ab+b^2$ • $(a-b)^2 \underset{\xleftarrow[\textcircled{2}]{}}{\overset{\xrightarrow{\textcircled{1}}}{=}} a^2-2ab+b^2$ • $(a+b)(a-b) \underset{\xleftarrow[\textcircled{2}]{}}{\overset{\xrightarrow{\textcircled{1}}}{=}} a^2-b^2$</td></tr>
<tr><td colspan="3">Dans le sens 1, c'est un développement, dans le sens 2 c'est une factorisation.</td></tr>
<tr><td>Preuve</td><td colspan="3">$(a+b)^2 = (a+b)(a+b) = a^2+ab+ba+b^2 = a^2+2ab+b^2$
$(a-b)^2 = (a-b)(a-b) = a^2-ab-ba+b^2 = a^2-2ab+b^2$
$(a-b)(a+b) = a^2+ab-ab-b^2 = a^2-b^2$</td></tr>
<tr><td>Exemple</td><td colspan="3">• $(x+3)^2 = x^2+3^2+2x*3 = x^2+9+6x$
• $(x-3)^2 = x^2+3^2-2x*3 = x^2+9-6x$
• $(x+3)(x-3) = x^2-9$</td></tr>
<tr><td rowspan="2">Illustrations géométriques</td><td></td><td></td><td></td></tr>
<tr><td>$(a+b)^2 = a^2+2ab+b^2$</td><td>$(a-b)^2 = a^2-2ab+b^2$</td><td>$(a+b)(a-b) = a^2-b^2$</td></tr>
</table>