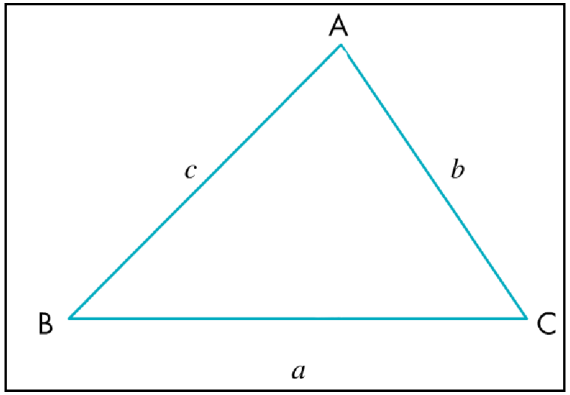
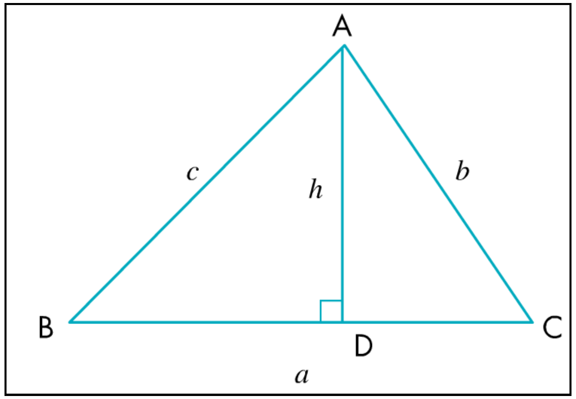
The Sine Rule

Your task is to put the 12 cards into the correct order to give the sine rule.

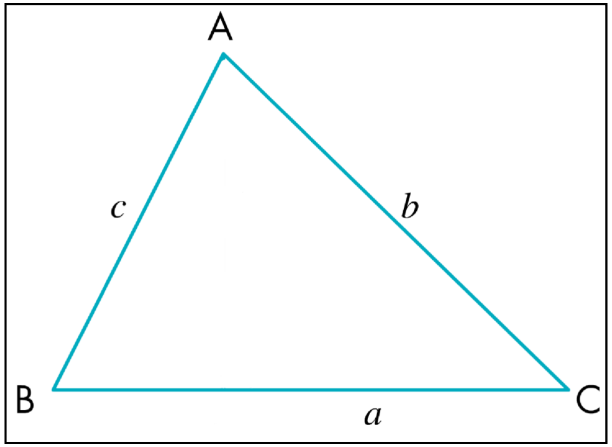


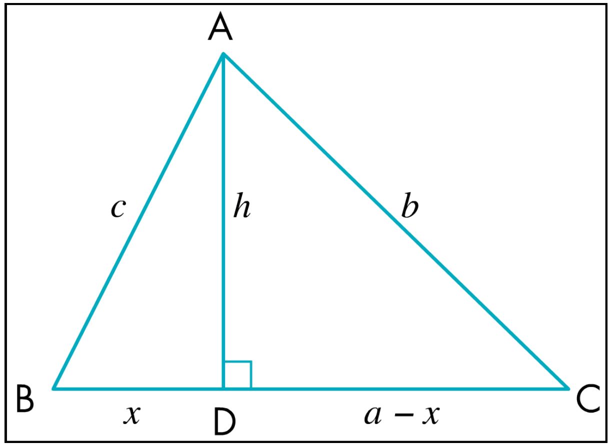


Therefore	$h = b\sin(C)$
For the right-angled triangle ABD	$h = c\sin(\mathrm{B})$
Which can be rearranged to give	$\sin(B) = \frac{c}{h}$
Rearrange both expressions for sine to make h the subject.	$\frac{b}{\sin(B)} = \frac{c}{\sin(C)}$
With the triangle ABC, split it into two right angle triangles by creating point D,	$b\sin(C) = c\sin(\mathrm{B})$
For the right-angled triangle ACD	$\sin(\mathrm{C}) = \frac{b}{h}$

The Cosine Rule

Your task is to put the 16 cards into the correct order to give the sine rule.





$b^2 - a^2 + 2ax - x^2 = c^2 - x^2$	Therefore
Using Pythagoras' Theorem on the right-angled triangle ABD	$b^2 = a^2 + c^2 + 2ax$
$b^2 = a^2 + c^2 + 2ab\cos(\mathrm{B})$	$h^2 = c^2 - x^2$ $h^2 = b^2 - (a-x)^2$
Rearrange both expressions to make h the subject.	$b^2 - (a-x)^2 = c^2 - x^2$
With the triangle ABC, split it into two right angle triangles by creating point D, perpendicular to BC.	$b^2 = h^2 + (a-x)^2$
Using Pythagoras' Theorem on the right-angled triangle ACD	$b^2 - a^2 + 2ax = c^2$
For the right-angled triangle ABD	$x = c\cos(B)$
$b^2 = a^2 + c^2 + 2ac\cos(B)$	$c^2 = h^2 + x^2$