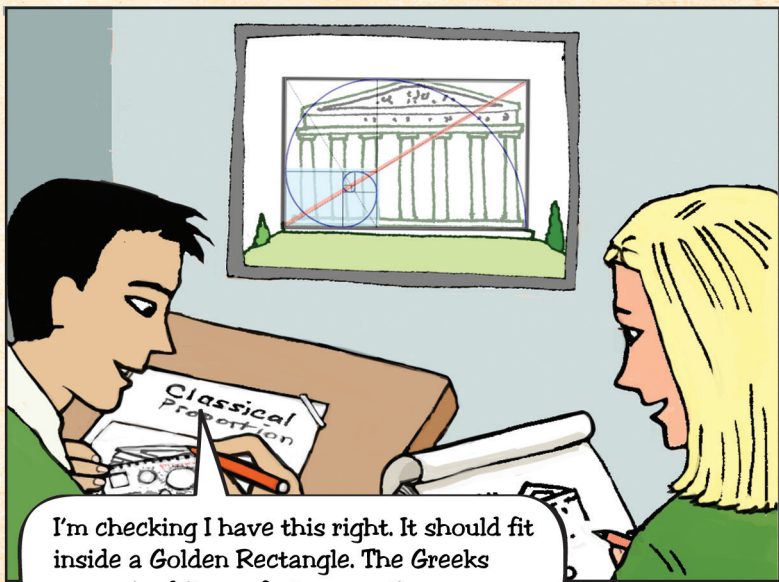
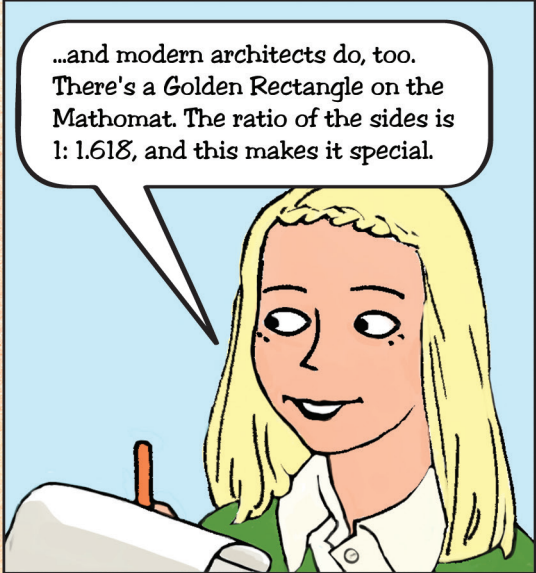


# Golden fractions

Use Mathomat to illustrate and compare fractions and explore algebra.



I'm checking I have this right. It should fit inside a Golden Rectangle. The Greeks recognised its perfect proportions...

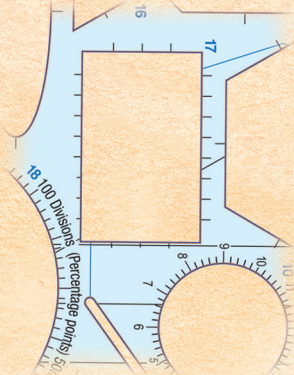


...and modern architects do, too. There's a Golden Rectangle on the Mathomat. The ratio of the sides is 1: 1.618, and this makes it special.



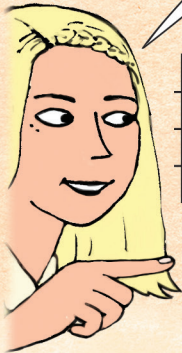
Did you know it can be used to illustrate loads of fractions?

There are markings that can divide the rectangle into different equal parts. If you draw a grid of the marks, there are 36 rectangles.



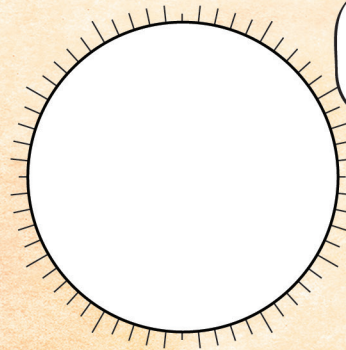
 $\frac{1}{2}$	 $\frac{1}{3}$	 $\frac{1}{4}$	 $\frac{1}{6}$	 $\frac{1}{9}$
 $\frac{1}{12}$	 $\frac{1}{18}$	 $\frac{1}{36}$	<p><b>Can you complete these diagrams to show each fraction? Use the markings on the Mathomat shape.</b></p>	

Diagrams are useful for illustrating fractions...

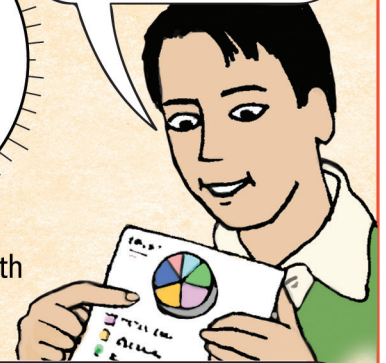


Compare  $\frac{5}{18}$  and  $\frac{2}{9}$ .  
Which is bigger?

How many unit fractions can you make with the 60 divisions on circle 10?



...and the circles on the Mathomat are great for making pie charts.



Algebraic expressions can also be shown with Mathomat shapes.



Can you write in the algebraic expressions for these shapes? The first two are done.



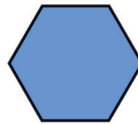
$2m$



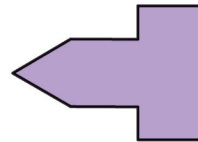
$2m + y$



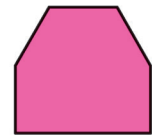
\_\_\_\_\_



\_\_\_\_\_



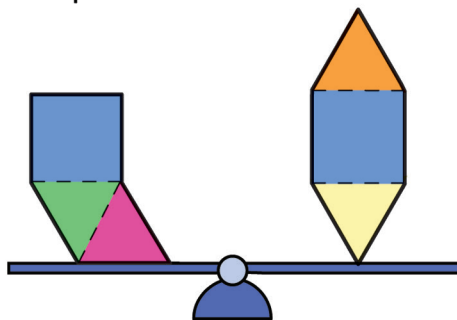
\_\_\_\_\_



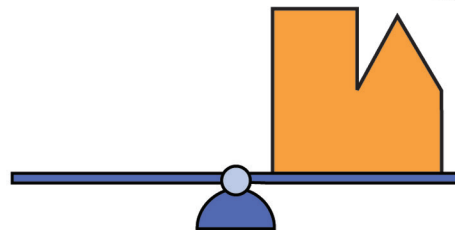
\_\_\_\_\_

### Balancing

Write in the equations and draw in the missing shapes. The first one is done.

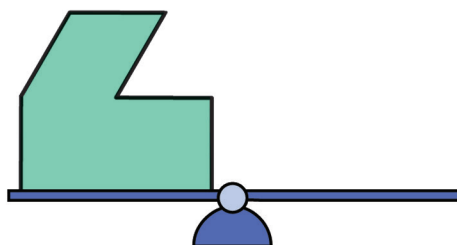


$2m + y = 2m + y$

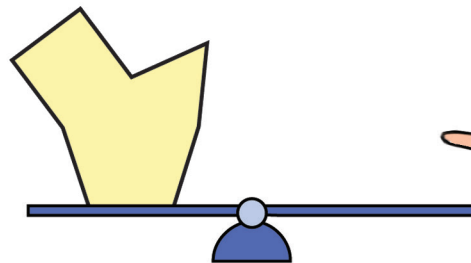


$= m + 3y$

I used these see-saws to demonstrate equations.



$=$



$a + m + y =$

