The locus of this point:	Centre	Centre	Focus
when this figure: rolls around	Circle	Ellipse	Ellipse
this one:			
Identical circle		2	3 E
		C d B D	-2 -1 0 1 2
Identical ellipse	4	5a	6a
		$\begin{array}{c} & & \\$	$\begin{array}{c} \mathbf{F} \\ \mathbf{G} \\ $
		5b	$\begin{array}{c} -14 \\ 6b \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $

In 2, 3 and 4 the circle and ellipse have the same perimeter.