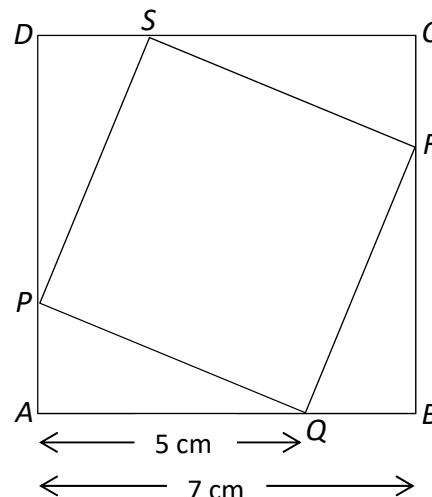**Question 5** **(25 marks)**
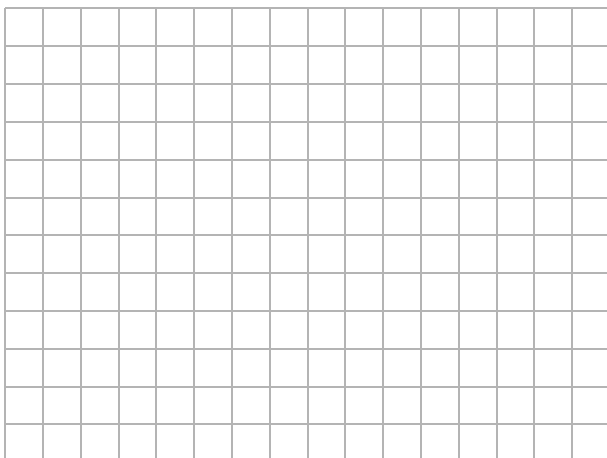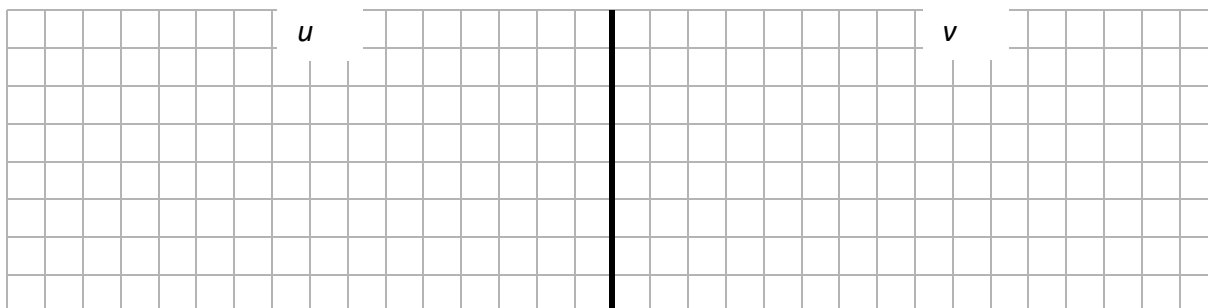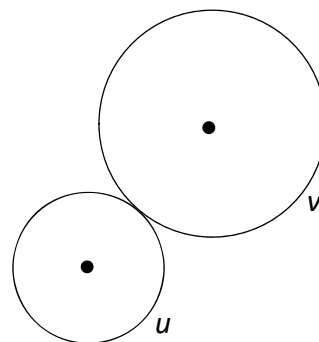
(a) The square *ABCD* has sides of length 7 cm.
The vertices of the square *PQRS* lie on the perimeter
of *ABCD*, as shown in the diagram, with |*AQ*| = 5 cm.
Find the area of the square *PQRS*.

(b) The circles *u* and *v* represent two wheels that are
free to rotate about their centres, as shown.
The radius of *u* is 4 cm and the radius of *v* is 6 cm.
(i) Find the length of the circumference of **each** circle.
Give your answers in cm in terms of π.

u   *v*

(ii) The wheels *u* and *v* are in non-slip contact and therefore the rotation of one causes the
other to rotate. Find the number of complete rotations wheel *u* makes
if wheel *v* completes 100 rotations.