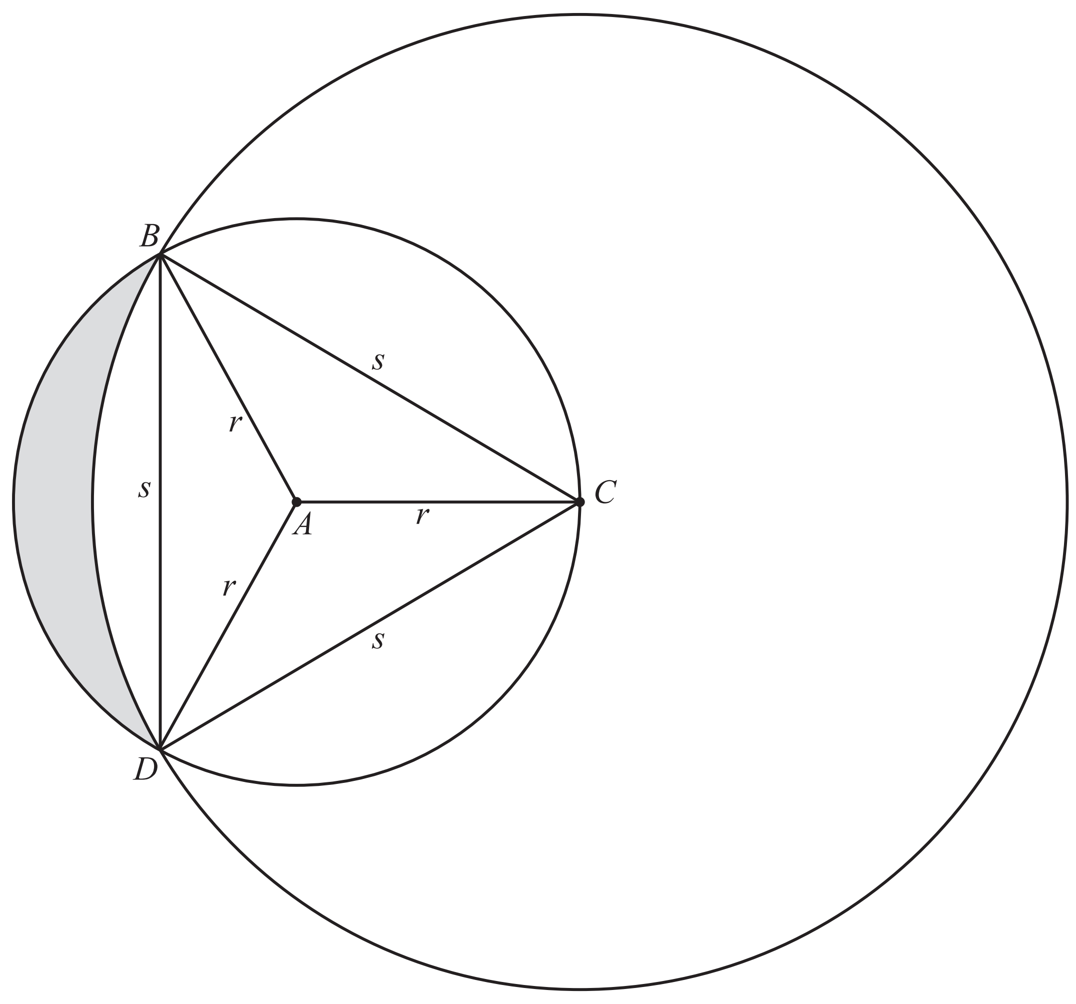

The diagram shows a circle with centre A and radius r passing through points B, C and D. A larger circle of radius s has centre C and passes through B and D. The length BD is also s.

(a) Show that $s = \sqrt{3}r$. [2]

(b) Find an expression for the area of the shaded region. Give your answer in the form $(a + b\pi)r^2$, where a and b are constants to be found. [7]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.