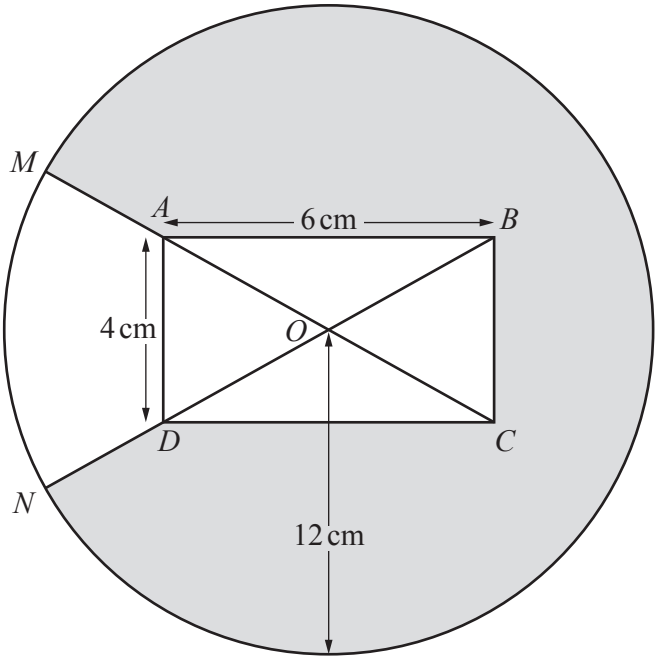
9



The diagram shows a circle, centre O, radius 12 cm, and a rectangle $ABCD$. The diagonals AC and BD intersect at O. The sides AB and AD of the rectangle have lengths 6 cm and 4 cm respectively. The points M and N lie on the circumference of the circle such that MAC and NDB are straight lines.

(a) Show that angle AOD is 1.176 radians correct to 3 decimal places. [2]

(b) Find the perimeter of the shaded region. [4]

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(c) Find the area of the shaded region. [3]