10

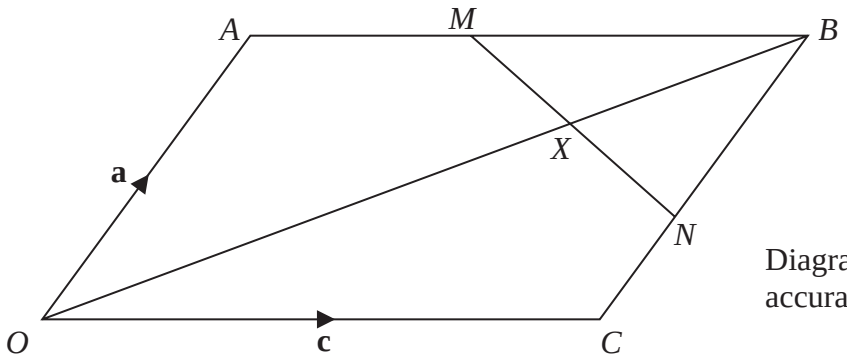

Diagram **NOT** accurately drawn

Figure 3

Figure 3 shows the parallelogram $OABC$

$$\overrightarrow{OA} = \mathbf{a} \qquad \overrightarrow{OC} = \mathbf{c}$$

The midpoint of AB is M and the midpoint of BC is N.

The line OB intersects MN at the point X.

(a) Find in terms of **a** and **c**,

(i) $\overrightarrow{OB}$

(ii) $\overrightarrow{MN}$

(2)

Given $\overrightarrow{MX} = \lambda\overrightarrow{MN}$ and that $\overrightarrow{OX} = \mu\overrightarrow{OB}$,

(b) use a vector method to find the value of λ and the value of μ.

(8)

(c) Hence find, in its simplest form, the ratio

Area of quadrilateral $OXNC$: Area of parallelogram $OABC$.

(3)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 10 continued

Question 10 continued

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 10 continued

(Total for Question 10 is 13 marks)