

# Proving vectors are parallel

**A LEVEL LINKS**

Scheme of work: 5a. Definitions, magnitude/direction, addition and scalar multiplication

## Practice question

1

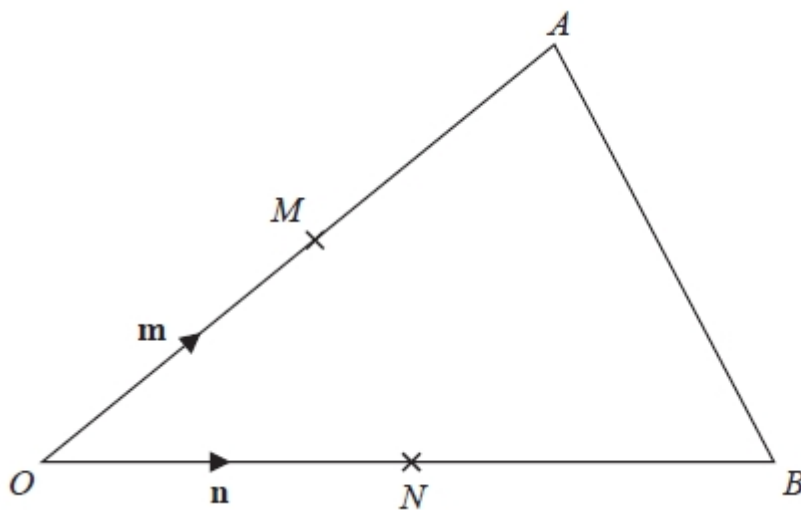


Diagram **NOT**  
accurately drawn

$OAB$  is a triangle.

$M$  is the midpoint of  $OA$ .

$N$  is the midpoint of  $OB$ .

$$\vec{OM} = \mathbf{m}$$

$$\vec{ON} = \mathbf{n}$$

Show that  $AB$  is parallel to  $MN$ .

## Answer

**1**  $MN = MO + ON (= \mathbf{n - m})$

or  $NM = OM + NO (= \mathbf{m - n})$

or  $AB = AO + OB (= \mathbf{2n - 2m})$  or  $BA = OA + BO (= \mathbf{2m - 2n})$

$MN = \mathbf{n - m}$  and  $AB = \mathbf{2n - 2m}$

$AB = 2MN$  or  $AB$  is a multiple of  $MN$