

**AQA, OCR, Edexcel**

**GCSE**

# GCSE Maths

## Vectors Questions

Name:

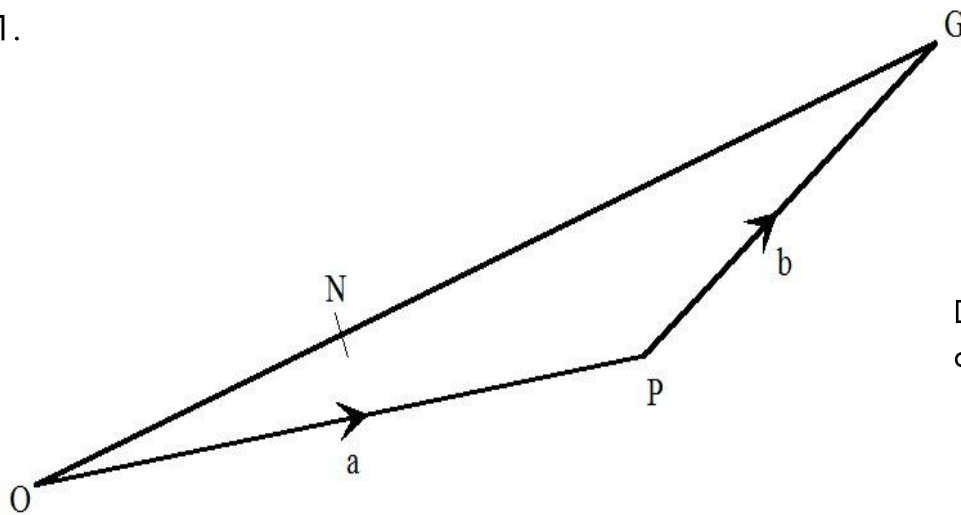
**M M E**

Mathsmadeeasy.co.uk

Total Marks: /24

## Vectors

1.



$OPG$  is a triangle.

$N$  is a point on  $OG$  such that  $ON : NG = 2 : 3$

$$\overrightarrow{OP} = a$$

$$\overrightarrow{PG} = b$$

a) Express  $\overrightarrow{OG}$  in terms of  $a$  and  $b$ .

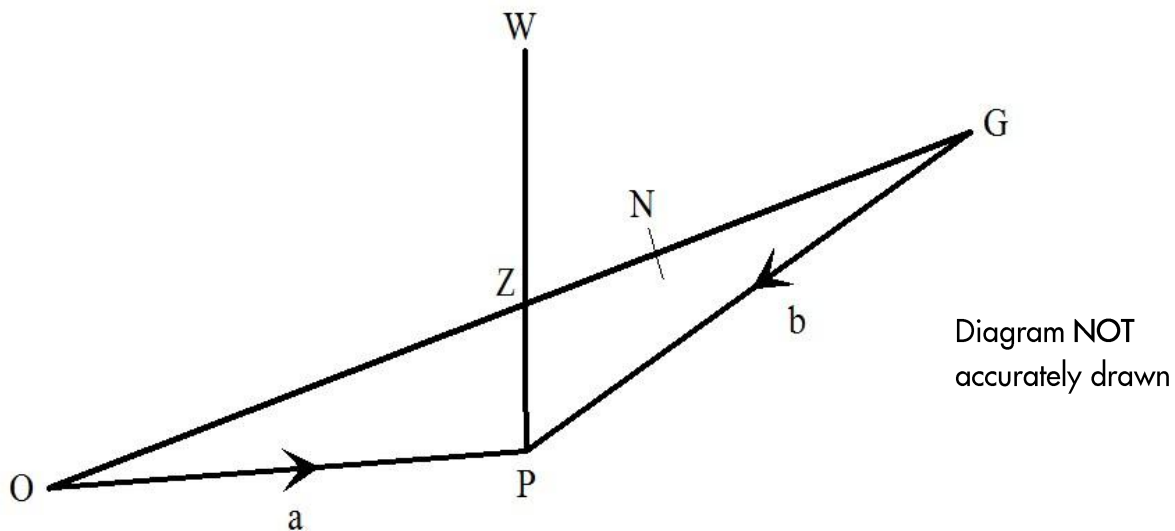
(1 Mark)

b) Express  $\overrightarrow{ON}$  in terms of  $a$  and  $b$ . Give your answer in its simplest form.  
(3 Marks)

a) Express  $\overrightarrow{PN}$  in terms of  $a$  and  $b$ . Give your answer in its simplest form.

(4 Marks)

2.



In the diagram,

$$\overrightarrow{OP} = a \text{ and } \overrightarrow{GP} = b$$

$N$  is a point on  $\overrightarrow{OG}$  such that  $\overrightarrow{ON} : \overrightarrow{NG} = 3 : 1$

a) Express  $\overrightarrow{OG}$  in terms of  $a$  and  $b$ .

(1 Mark)

b) Express  $\overrightarrow{ON}$  in terms of  $a$  and  $b$ .

(2 Marks)

$\overrightarrow{PZ} = \overrightarrow{GN}$ ,  $Z$  is a point on  $\overrightarrow{PW}$  such that  $\overrightarrow{PZ} : \overrightarrow{ZW} = 1 : 2$

b) Express  $\overrightarrow{OW}$  in terms of  $a$  and  $b$ . Give your answer in its simplest form. **(Hard)**

(3 Marks)

3.

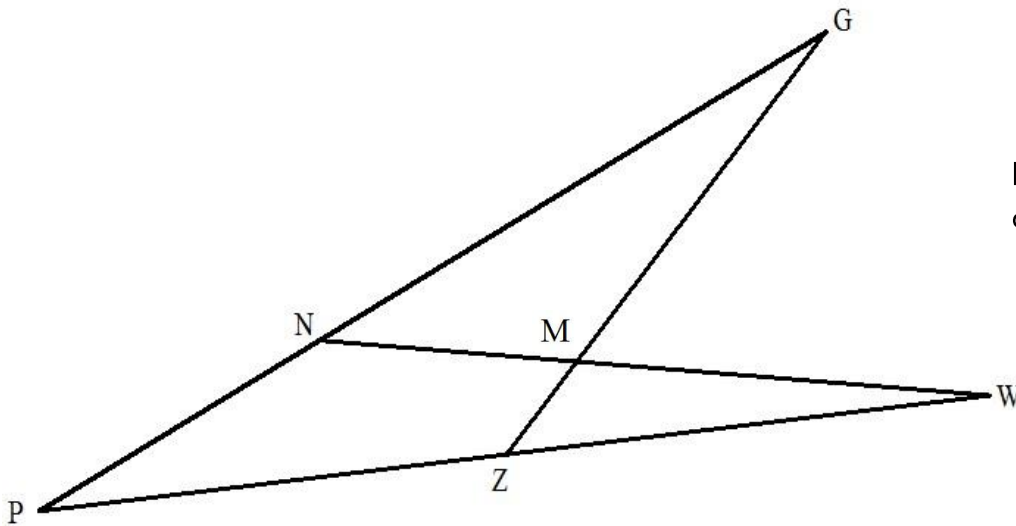


Diagram NOT  
accurately drawn

In the diagram,

$$\overrightarrow{PZ} = 2a \text{ and } \overrightarrow{PN} = 3b$$

Z is a point on  $\overrightarrow{PW}$  such that  $\overrightarrow{PZ} : \overrightarrow{ZW} = 1:3$

N is a point on  $\overrightarrow{PG}$  such that  $\overrightarrow{PN} : \overrightarrow{NG} = 1:2$

a) Express  $\overrightarrow{PW}$  in terms of  $a$ .

(1 Mark)

b) Express  $\overrightarrow{PG}$  in terms of  $a$  and  $b$

(1 Mark)

c) Express  $\overrightarrow{WN}$  in terms of  $a$  and  $b$ . Give your answer in its simplest form.

(2 Marks)

Visit <http://www.mathsmadeeasy.co.uk/> for more fantastic resources.

$M$  is a point on  $\overrightarrow{GZ}$  such that  $\overrightarrow{GM} : \overrightarrow{MZ} = 2:1$

$M$  is a point on  $\overrightarrow{WN}$  such that  $\overrightarrow{WM} : \overrightarrow{MN} = 3:2$

d) Show that  $\overrightarrow{GM} = \frac{1}{3}(-18b + 4a)$

(3 Marks)

e) Show that  $\overrightarrow{MN} = \frac{1}{5}(-16a + 6b)$

(3 Marks)