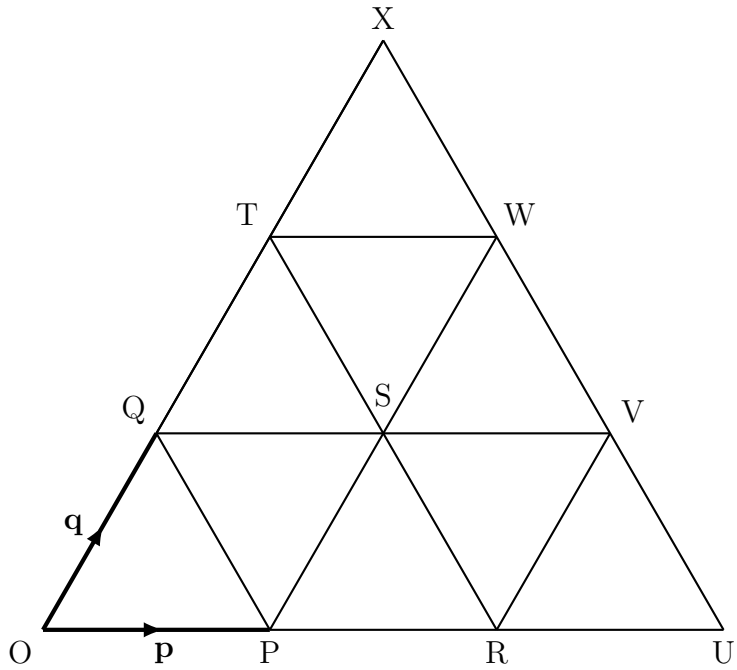
1. The diagram below shows 9 congruent triangles.



$\overrightarrow{OP} = \mathbf{p}$ {Handwriting **bold** is hard to do so mathematicians write $\underline{\text{p}}$ instead of $\mathbf{p}$}

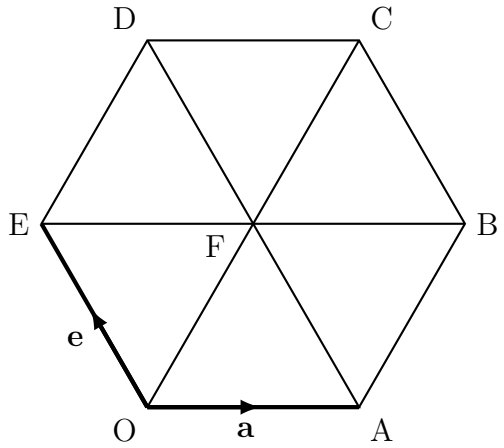
$\overrightarrow{OQ} = \mathbf{q}$ {and write $\underline{\text{q}}$ instead of $\mathbf{q}$}

Find in terms of $\mathbf{p}$ and $\mathbf{q}$ the vectors

(i) $\overrightarrow{QX}$ = ...

(ii) $\overrightarrow{RU}$ = ...

2. The diagram below shows regular hexagon OBCDEF



$\overrightarrow{OA} = \mathbf{a}$ {Handwriting **bold** is hard to do so mathematicians write $\underline{a}$ instead of **a**}

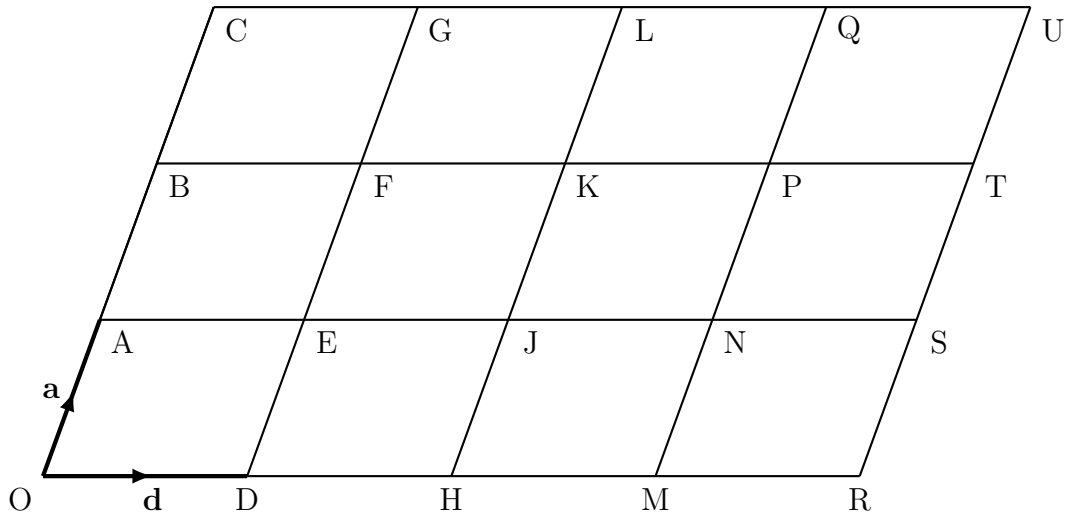
$\overrightarrow{OE} = \mathbf{e}$ {and write $\underline{e}$ instead of **e**}

Write an expression, in terms of **a** and **b** for

(i) $\overrightarrow{AD}$ = ...

(ii) $\overrightarrow{FB}$ = ...

3. The diagram below shows 12 congruent parallelograms.



$\overrightarrow{OA} = \mathbf{a}$ {Handwriting **bold** is hard to do so mathematicians write $\underline{a}$ instead of **a**}

$\overrightarrow{OB} = \mathbf{d}$ {and write $\underline{d}$ instead of **d**}

Find in terms of **a** and **d** the vectors

(i) $\overrightarrow{AC}$ = ...

(ii) $\overrightarrow{GU}$ = ...

Answers

1. (i) 2q (ii) p
2. (i) 2e (ii) a
3. (i) 2a (ii) 3d