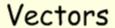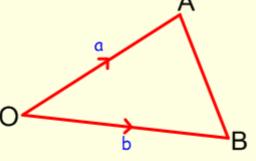# Vectors

Vectors

$\overrightarrow{OA}$ = a

$\overrightarrow{OB}$ = b
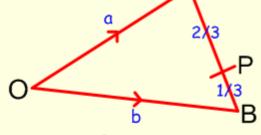
Find $\overrightarrow{AB}$ in terms of a and b

we can only go along the routes we know

we have to go back along an a to O, then forwards along b to B

$\overrightarrow{AB}$ = -a + b

Vectors

$\overrightarrow{OA}$ = a

$\overrightarrow{OB}$ = b

$\overrightarrow{AB}$ = -a + b

P is a point on AB so that AP:PB is in the ratio 2:1

Find $\overrightarrow{OP}$ in terms of a and b

we know $\overrightarrow{AP}$ is 2/3 of $\overrightarrow{AB}$ and $\overrightarrow{PB}$ is 1/3 of $\overrightarrow{AB}$

To get from O to P we can go up a to A. Then 2/3 of $\overrightarrow{AB}$.

$\overrightarrow{OP}$ = a + 2/3(-a + b)

$\overrightarrow{OP}$ = a - 2/3a + 2/3b

$\overrightarrow{OP}$ = 1/3a + 2/3b