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| **Vectors and Midpoints** |
| **(a)** | **(b)** |
| In the triangle $OAB$, $\vec{OA}=2a$ and $\vec{OB}=4b$. $C$ is the midpoint of the line $AB$.Express the following in terms of $a $and $b$: | $OABC$ is a trapezium, where $\vec{OA}=a$ and $\vec{AB}=b$. $D$ is the midpoint of $BC$ and $\vec{OC}=2\vec{AB}$.Express the following in terms of $a $and $b$: |
| (a) $\vec{AB}$ | (b) $\vec{BA}$ | (a) $\vec{OC}$ | (b) $\vec{CB}$ |
| (c) $\vec{AC}$ | (d) $\vec{BC}$ | (c) $\vec{BC}$ | (d) $\vec{BD}$ |
| (e) $\vec{OC}$ | (f) $\vec{CO}$ | (e) $\vec{AD}$ | (f) $\vec{DO}$ |
|  **(c)** | **(d)** |
| In the parallelogram $OABC$, $\vec{OA}=a$ and $\vec{OC}=c$.$X$ is the midpoint of the line $OB$.Express the following in terms of $a $and $c$: | $OABC$ is a quadrilateral. $\vec{OX}=a,$ $\vec{OC}=c$and $\vec{CB}=b$.$X$ is the midpoint of $OA$ and $Y$ is the midpoint of $AB$. Express the following in terms of $a, b $and $c$: |
| (a) $\vec{CB}$ | (b) $\vec{BA}$ | (a) $\vec{OA}$ | (b) $\vec{OB}$ |
| (c) $\vec{OB}$ | (d) $\vec{XB}$ | (c) $\vec{CA}$ | (d) $\vec{AB}$ |
| (e) $\vec{XC}$ | (f) $\vec{AX}$ | (e) $\vec{AY}$ | (f) $\vec{XY}$ |
| What do the answers to (e) and (f) tell us about the points $C, X$ and $A$? | What do the answers to (b) and (f) tell us about vectors $\vec{OB}$ and $\vec{XY}$? |