OCR A LEVEL PHYSICS A · MODULE 3

Mechanics Definitions

Learn them word for word: the highlighted words are the ones the examiner looks for.

1 **Scalar**	A scalar quantity has **magnitude only**.
2 **Vector**	A vector quantity has both **magnitude and direction**.
3 **Resultant force**	The resultant force is the **single force** that has the **same effect** as **all the forces acting together**.
4 **Newton's First Law**	An object will remain at **rest** or move with **constant velocity** unless acted upon by a **resultant force**.
5 **Newton's Second Law**	The **resultant force** acting on an object is equal to the **rate of change of momentum** of the object. (For constant mass: force is proportional to acceleration.)
6 **Newton's Third Law**	When two objects interact, if object A exerts a force on object B, then B exerts a force on A that is **equal in magnitude** and **opposite in direction**.
7 **Momentum**	Momentum is the **product of mass and velocity**.
8 **Principle of conservation of momentum**	The **total momentum** of a system remains **constant** provided that **no external forces** act on the system.
9 **Impulse**	Impulse is the **change in momentum** of an object.
10 **Work done**	Work done is the **energy transferred** when a force causes a **displacement in the direction of the force**.
11 **Power**	**Rate** of **work done**.
12 **Moment of a force**	The moment is the **product of the force and the perpendicular distance** from the pivot to the **line of action** of the force.
13 **Principle of moments**	For an object in **equilibrium**, the **sum of the clockwise moments** about a point **equals** the **sum of the anticlockwise moments** about that point.
14 **Equilibrium**	An object is in equilibrium when the **resultant force is zero** and the **resultant moment is zero**.
15 **Centre of mass**	The centre of mass is the **single point** at which the **entire mass** of an object may be considered to be **concentrated** for the purposes of **motion**.
16 **Centre of gravity**	The centre of gravity is the **single point** through which the **resultant weight** of an object **acts**.
17 **GPE**	**Energy gained** when an object with **mass** is **raised** above the ground.

📌 **Stick me by your desk.** Read me every time you sit down. Cover the right-hand column and say each one out loud. Practise online: **physicswithkate.com/ocr-a-level-mechanics-definitions**