A Level Mathematics

Chapter 10 - Mechanics

Forces and Motion

Chapter Overview

1. Force Diagrams

2. Forces as Vectors

3. Forces and Acceleration

4. Motion in 2 Dimensions

5. Connected Particles

6. Pulleys



1. **Force Diagrams**

Recall Newton’s laws of motion:

1. An object will remain at rest or continue to move **in a straight line at a constant speed** unless it is acted upon by a **resultant force**
2. The force needed to accelerate a particle is equal to the product of its mass and the acceleration of the particle: **F = ma**
3. Every action has an equal and opposite reaction

When drawing a force diagram, make sure you include **all** of the forces which might be acting on an object (see Chapter 8). Consider the forces acting on each object, one at a time. You can draw the resultant force and describe the motion of the object.



$$R\left(\uparrow \right):$$

$$R\left(\rightarrow \right):$$

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