1. **Connected Particles**

When we have multiple connected objects moving in the same straight line, **they can be considered either as two separate particles, or as a single particle**, but **all forces** acting on the particle must be considered.

What assumptions are made?

**Example** *(EdExcel M1 June 2009 Q6)*



**Test Your Understanding**



**Vertical Example**

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**Example – Using Newton’s 3rd Law for Stacked Objects**

Newton’s 3rd Law: For every action there is an equal and opposite reaction

*Therefore when two bodies* $A$ *and* $B$ *are in contact, if body* $A$ *exerts a force on body* $B$*, then body* $B$ *exerts a force on body* $A$ *that is equal in magnitude and acts in the opposite direction.*

*[Textbook]* A light scale-pan is attached to a vertical light inextensible string. The scale-pan carries two masses $A$ and $B$. The mass of $A$ is 400g and the mass of $B$ is 600g. $A$ rests on top of $B$, as shown in the diagram.

The scale-pan is raised vertically, using the string, with acceleration 0.5 ms-2.

1. Find the tension in the string.
2. Find the force exerted on mass $B$ by mass $A$.
3. Find the force exerted on mass $B$ by the scale-pan.

**Test Your Understanding – Motion of a Lift** *(EdExcel M1 May 2013 Q2)*



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