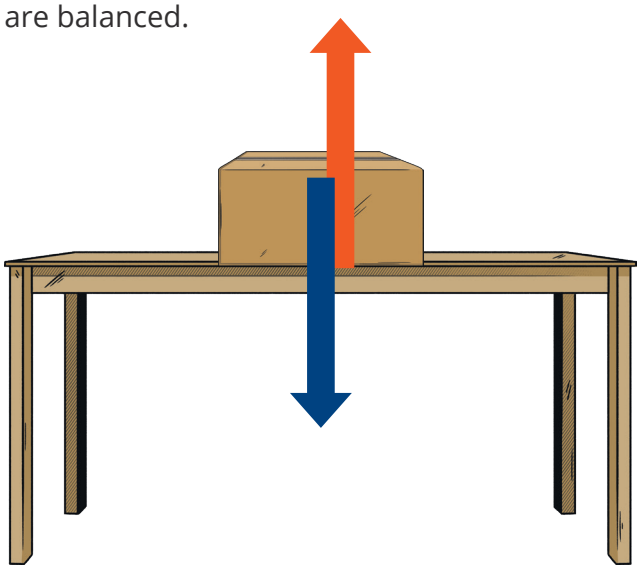
Force Diagrams

You add force arrows to a diagram to show which forces are acting. The arrows show the direction and the size of the force (the longer the arrow, the bigger the force).

The arrows must touch the object in the diagram.

If an object is stationary, or moving at a constant speed, the forces on it are balanced. Balanced forces act in opposite directions and are the same size. The forces in the diagram below are balanced.

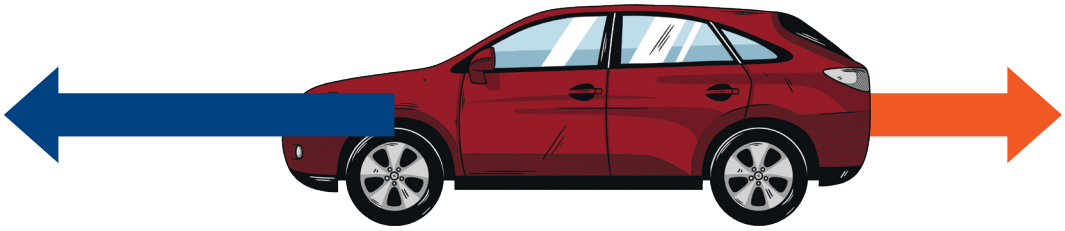


The upwards arrow represents the **reaction** force. This is the force of the table supporting the box.

The downwards arrow represents the gravitational force acting on the box, also known as **weight**. This is the force of the Earth acting on the box.

If forces acting on an object are unbalanced, the object will be speeding up (accelerating) or slowing down.

If an object is speeding up, the forward arrow will be larger.



If an object is slowing down, the backward arrow will be larger.

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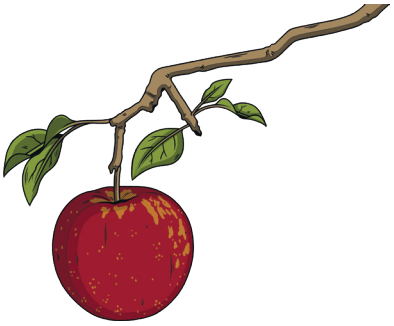
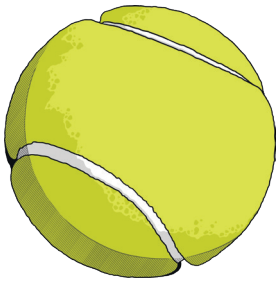
Add force arrows to the diagrams below. Label the arrows with the force and add a description that says whether the forces are balanced or unbalanced.

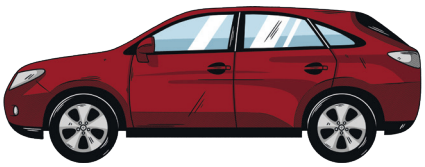
A person sitting on a chair.



An apple hanging on a tree.



A ball accelerating downwards.



A car travelling at a constant speed.

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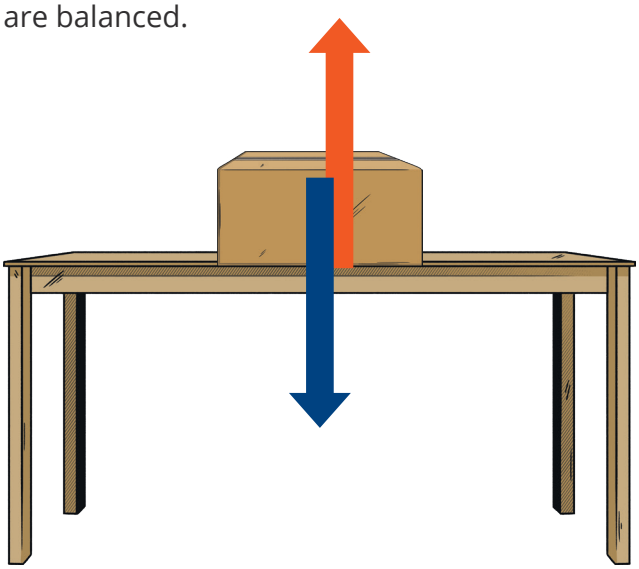

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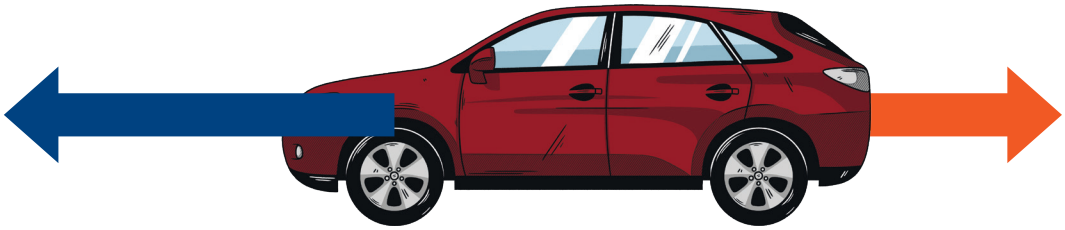
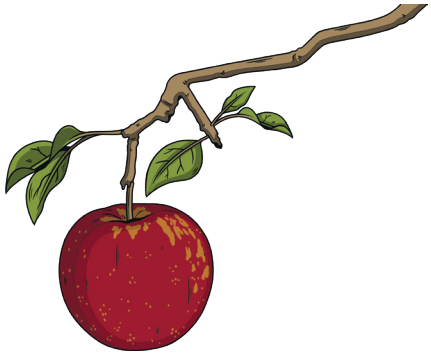


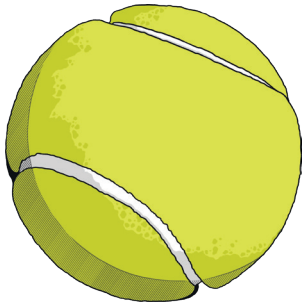
If an object is slowing down, the backward arrow will be larger.

Add force arrows to the diagrams below. Label the arrows with the force and add a description that says whether the forces are balanced or unbalanced.

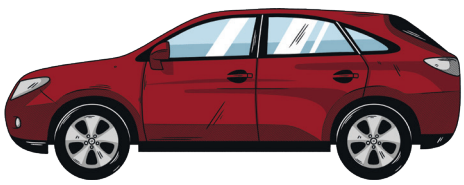
A person sitting on a chair.



An apple hanging on a tree.



A ball accelerating downwards.



A car travelling at a constant speed.