Rolls-Royce

# Forces and Air Resistance

**For pupils aged 7-11**

# Activity sheet



This Activity Sheet is provided by Rolls-Royce plc as part of our continuing commitment to education

# Forces and Air Resistance

When a football is kicked into the air, as it starts to fall back down two forces are present.






**Gravity** pulls the ball down towards the ground but as the ball falls the air pushes back against the ball. This force is called **Air Resistance**.

These forces are shown on the picture above by arrows.

The arrows show the direction of the forces. A longer arrow means a larger force.

Air resistance always pushes in the opposite direction to the way the object is moving.

The air resistance pushing back on an object can be changed by changing the shape of the object. For example the shape of a parachute traps the air which pushes back to give a high air resistance.

# Forces and Air Resistance

For each pair of the following pictures use arrows to show the direction and size of the air resistance. Under each pair write a sentence to say what the air resistance does. Say whether you think the air resistance is useful or is a problem.

### Bike with high handle bars



### Bike with low handle bars



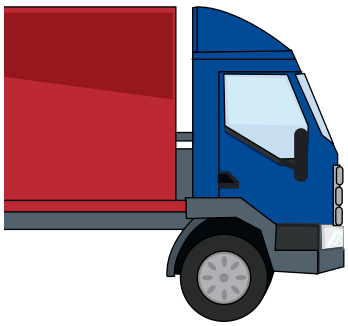
### Parachutist. Chute is NOT open



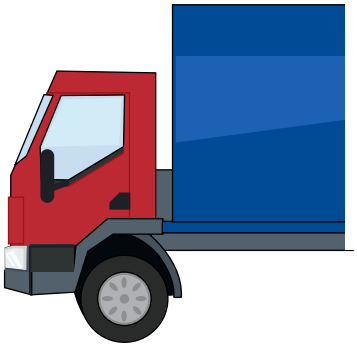
### Parachutist. Chute IS open



### Lorry with shaped cab

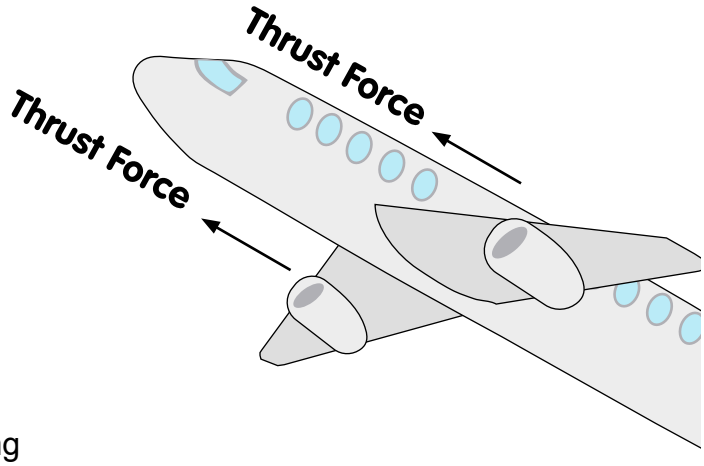


### Lorry with square cab

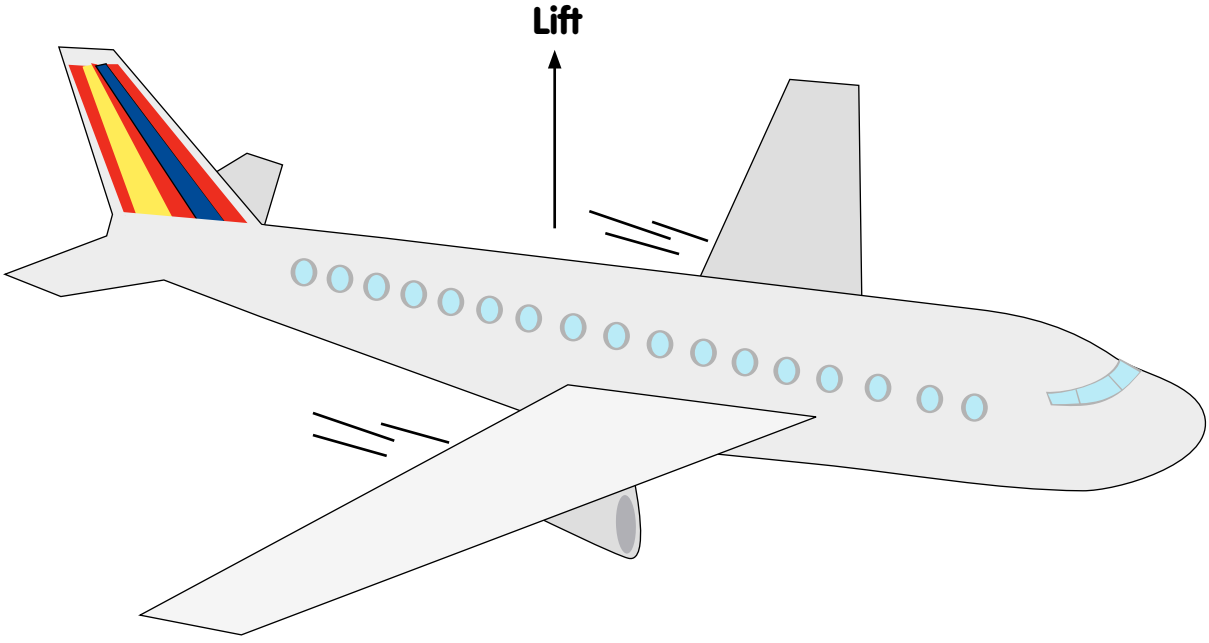


# Forces and Air Resistance

As an aeroplane takes off the force pushing it forward comes from the powerful gas turbine engines. This force is called **thrust**.




The picture below shows an aeroplane flying level. The force acting upwards is called lift. This force happens because of the special shape of the aeroplane wings.




On the picture use arrows to show the direction of three other forces:

- The thrust from the engines
- The air resistance
- The force of gravity.