



Accelerations



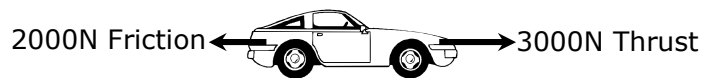
Task 1 – Acceleration

Use the words in the box to complete the sentences below.

force **acceleration** **resultant** **speed** **direction**

We know that if a resultant _____ acts on an object, then that object will move in the _____ of the force. In fact, as long as the _____ force continues to act on the object, its _____ will increase in that direction. This increase in speed is called an _____.

e.g.



The car will accelerate in the direction of the 3000N force

Task 2

Describe what will happen in each of the situations below. Use the term 'accelerate', as well as mentioning the names and directions of the forces involved.

Example: ***A stone is released over a cliff.***

Answer: ***The weight of the stone will cause it to accelerate downwards.***

- a. The fuse of a firework rocket is lit _____

- b. A ping-pong ball is released under water _____

- c. The throttle of a motorbike is opened up _____

- d. A helicopters rotor blades stop in mid-air _____

- e. A ball is thrown in the air _____

- f. A skydiver opens a parachute _____



Accelerations Answers



Task 1 – Acceleration

We know that if a resultant **force** acts on an object, then that object will move in the **direction** of the force. In fact, as long as the **resultant** force continues to act on the object, its **speed** will increase in that direction. This increase in speed is called an **acceleration**.

Task 2

- a. The rocket will accelerate upwards because the thrust created is bigger than its weight.
- b. The ping-pong ball will accelerate upwards because the upthrust is bigger than its weight.
- c. The motorbike will accelerate forward because of the thrust created by the engine.
- d. The helicopter will come down because its weight is bigger than the uplift.
- e. The ball will accelerate downwards as its weight is the only major force acting (its speed is always changing in a downward direction, even whilst it is moving upward).
- f. The skydiver will accelerate upwards, as the air resistance is bigger than the weight (note that the movement is always in a downwards direction, but it is **changing** in an upward direction i.e. the skydiver decelerates).