

1. A car is traveling at a steady speed of 70 mph along a motorway.



- 1 (a) What is the resultant force on the car?

zero or 0 [1]

Explain your answer.

The forward force is the same as [1]
air resistance/friction [1]

OR Forces are balanced for 1 mark

If you just say the 'forces are balanced', you get 1 mark for this section.
Command word is **explain** - give reasons why...

(3 marks)

- 1 (b) The car approaches traffic and the driver applies the brakes. The forces acting on the car change.



Describe and explain the change in motion in terms of the new resultant force.

The car decelerates/slows down [1]

The resultant force is backward/to the left [1]

The backward force/friction is bigger/greater than the forward force [1]

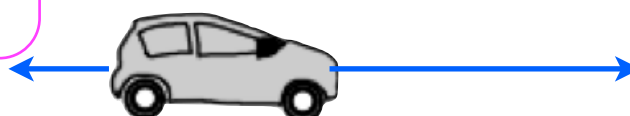
You can't say the air resistance gets bigger. Only the backward force or friction.

(3 marks)

- 1 (c) The car comes to a standstill. It then begins to accelerate. Draw arrows on the diagram to show the forward force and air resistance, while it accelerates.

Any sized arrows, as long as the forward one is bigger.

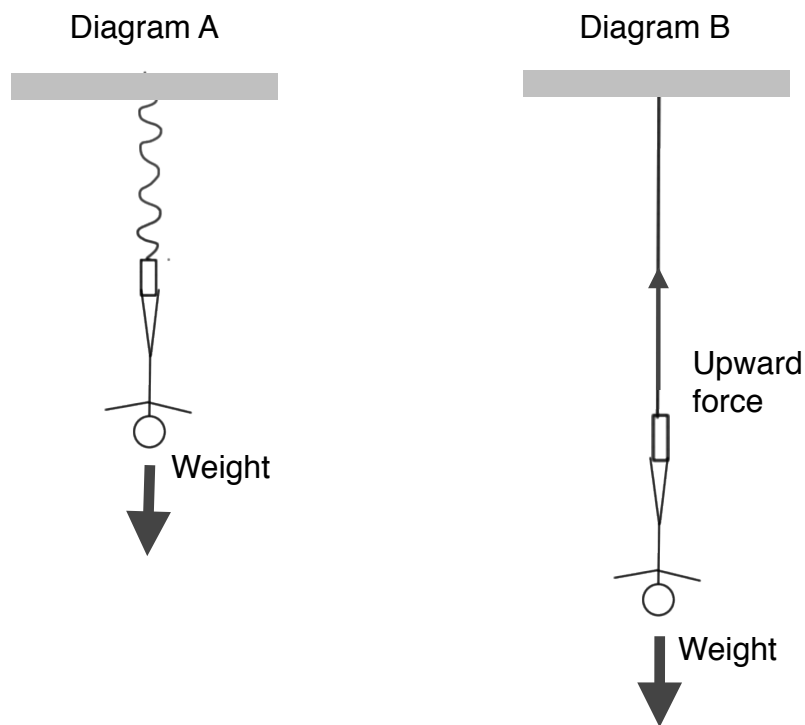
(2 marks)



(Total 8 marks)

Turn over for the next question

- 2 A bungee jumper jumps from the edge of a bridge. The bungee jumper has an elastic cord tied to him and the bridge. The diagrams show different stages of the jump and the forces acting on the jumper.



- 2 (a) In diagram A, the bungee jumper is accelerating rapidly downwards.

Explain why in terms of the forces acting on him.

Downward force/weight is greater than
(is greater than) upward force

(2 marks)

- 2 (b) In diagram B the bungee jumper is decelerating.

Describe the changes in the forces acting on the jumper to cause this change in acceleration.

The upward force becomes greater than [1]
(becomes greater than) the weight/downward force. [1]

(2 marks)

You can call the upward force
'tension'.

(Total 4 marks)