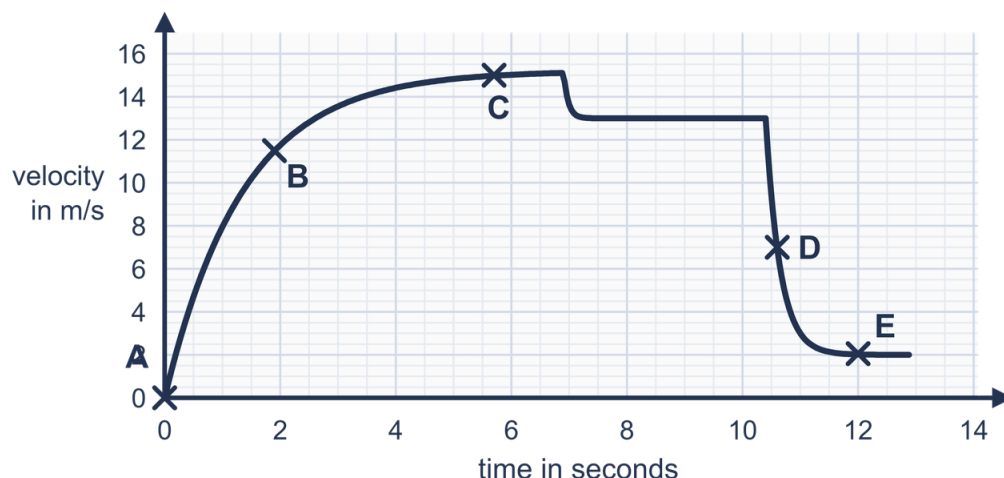


Terminal Velocity



$$F = m \times a$$

resultant force = mass $\times$ acceleration

For every stage you must say what the **resultant force** is doing and what the **acceleration** is doing.

1 For each point, draw a force diagram showing the **2 forces** on the parachutist.

A

B

C

D

E

2 For each stage: compare the forces, comment on the resultant force, comment on the acceleration.

A WORKED EXAMPLE

Compare the forces: Weight only — air resistance is zero

Resultant force: Resultant force is downwards (large)

Acceleration: Acceleration is downwards, at its maximum

Air resistance increases with **speed**

D

Compare the forces: _____

Resultant force: _____

Acceleration: _____

decreases with _____

E

Compare the forces: _____

Resultant force: _____

Acceleration: _____

WORDS TO USE

air resistance

weight

greater than

less than

equal

speed

constant

C

Compare the forces: _____

Resultant force: _____

Acceleration: _____

decreases with _____

Exam-Style Question

[4 marks]

A skydiver jumps from a helicopter. She falls and reaches terminal velocity. She then opens her parachute, and soon reaches a new, lower terminal velocity.

Explain, in terms of the forces acting on her, why opening the parachute makes her reach a new, lower terminal velocity.
