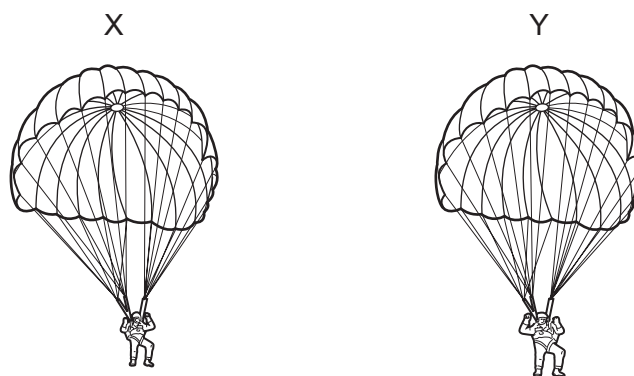


- 9 The diagram shows two parachutists, X and Y, moving vertically downwards.



The total mass of parachutist Y and his parachute is twice the total mass of parachutist X and his parachute. At this moment, the air resistance on parachute Y is twice the air resistance on parachute X. Neither parachutist has reached his constant (terminal) velocity.

Which statement describes the acceleration of Y compared with the acceleration of X?

- A The acceleration of Y is half the acceleration of X.
 - B The acceleration of Y is the same as the acceleration of X.
 - C The acceleration of Y is more than the acceleration of X, but less than twice the value.
 - D The acceleration of Y is twice the acceleration of X.
- 10 The table shows four different collisions between two blocks, each of mass 0.50 kg.

Which collision is perfectly elastic?

	before collision		after collision	
A	$4.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	0.0 m s^{-1} <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	$2.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	
B	$2.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	$\leftarrow 2.0 \text{ m s}^{-1}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	0.0 m s^{-1} <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	
C	$2.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	$\leftarrow 1.0 \text{ m s}^{-1}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	$\leftarrow 2.0 \text{ m s}^{-1}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	$3.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>
D	$4.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	$1.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	$1.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>	$4.0 \text{ m s}^{-1} \rightarrow$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">0.50 kg</div>