

A Level Physics Taster Questions – Forces and Motion.

Q1.

Which of the following is a scalar quantity?

- A** kinetic energy
- B** momentum
- C** force
- D** acceleration

(Total 1 mark)

Q2.

Which row correctly states whether momentum, mass and velocity are scalar or vector quantities?

	Momentum	Mass	Velocity	
A	scalar	scalar	vector	<input type="checkbox"/>
B	vector	scalar	scalar	<input type="checkbox"/>
C	scalar	vector	scalar	<input type="checkbox"/>
D	vector	scalar	vector	<input type="checkbox"/>

(Total 1 mark)

Q3.

A girl is bouncing on a trampoline.

Assuming that air resistance is negligible, her acceleration

- A** is zero when she is at maximum height.
- B** is constant when she is in the air.
- C** changes direction as she rises and then falls.
- D** is maximum just before she lands on the trampoline.

(Total 1 mark)

Q4.

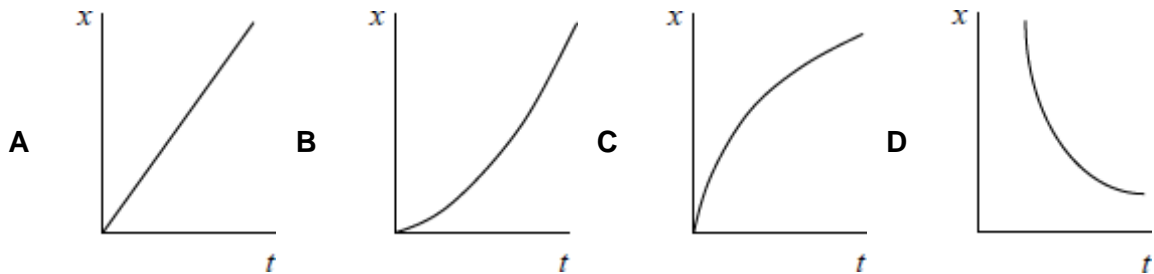
A firework is fired vertically up into the air and subsequently falls to the ground.

Which quantity relating to the motion of the rocket is never zero before it hits the ground?
Assume that air resistance is negligible.

- A acceleration
- B velocity
- C momentum
- D kinetic energy

(Total 1 mark)

Q5. A car accelerates uniformly from rest along a straight road. Which graph shows the variation of displacement x of the car with time t ?



- A
- B
- C
- D

(Total 1 mark)

Q6.

A roller coaster car is raised to a height of 65 m and released from rest.

What is the maximum possible speed of the car?

- A 11 m/s
- B 25 m/s
- C 36 m/s
- D 130 m/s

(Total 1 mark)

Q7.

A car exerts a driving force of 500 N when travelling at a constant speed of 72 km/h on a level track. What is the work done in 5 minutes?

- A 3.0×10^6 J
- B 2.0×10^6 J
- C 2.0×10^5 J
- D 1.1×10^5 J

(Total 1 mark)

Q8.

Immediately after take-off from the surface of the Earth, a rocket of mass 12 000 kg accelerates vertically upwards at 1.4 m/s^2

What is the thrust produced by the rocket motor?

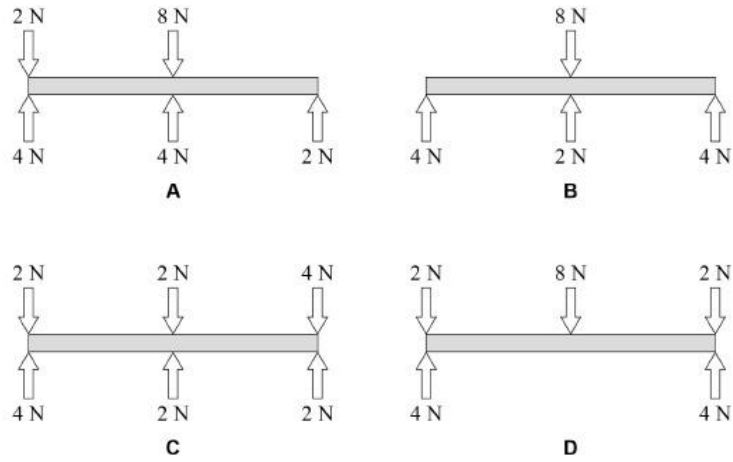
- A 1.7×10^4 N
- B 1.0×10^5 N
- C 1.3×10^5 N
- D 1.6×10^5 N

(Total 1 mark)

Q9.

A light uniform rigid bar is pivoted at its centre. Forces act on the bar at its ends and at the centre.

Which diagram shows the bar in equilibrium?

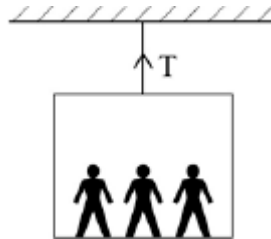


- A
- B
- C
- D

(Total 1 mark)

Q10.

A lift and its passengers with a total mass of 500 kg accelerates upwards at 2 m/s^2 as shown. Assume that $g = 10 \text{ N/kg}$.



What is the tension in the cable?

- A 1000 N
- B 4000 N
- C 5000 N
- D 6000 N

(Total 1 mark)

Mark schemes

- Q1.
A [1]

- Q2.
D [1]

- Q3.
B [1]

- Q4.
A [1]

- Q5.
B [1]

- Q6.
C [1]

- Q7.
A [1]

- Q8.
C [1]

- Q9.
A [1]

- Q10.
D [1]