

Forces and terminal velocity

1. Choose words from this list to complete the sentences below.

- | | | |
|----------|-------------|---------|
| balanced | electricity | gravity |
| joules | magnetism | newtons |

When you drop something it falls.

This is because it is pulled to the Earth by

We measure forces in units called

When a falling object reaches the ground, it stops moving.

This means that the forces acting on it are now

(Total 3 marks)

2. (a) Two skydivers jump from a plane. Each holds a different position in the air.



A



B

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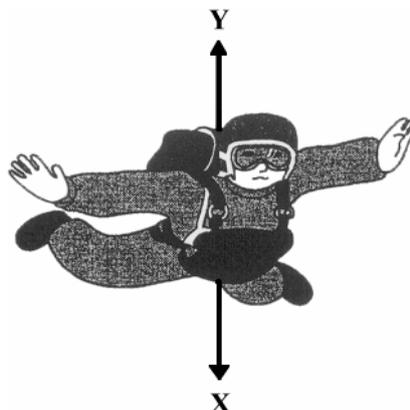
Complete the following sentence.

Skydiver will fall faster because.....

.....

(2)

The diagram shows the direction of the forces acting on one of the skydivers.



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(b) In the following sentences, cross out in each box the **two** lines that are wrong.

(i) Force **X** is caused by air resistance
friction
gravity (1)

(ii) Force **Y** is caused by air resistance
gravity
weight (1)

(iii) When force **X** is bigger than force **Y**, the speed of the skydiver will go up
stay the same
go down (1)

(iv) After the parachute opens, force **X** goes up
stays the same
goes down (1)

(c) How does the area of an opened parachute affect the size of force **Y**?

.....
.....

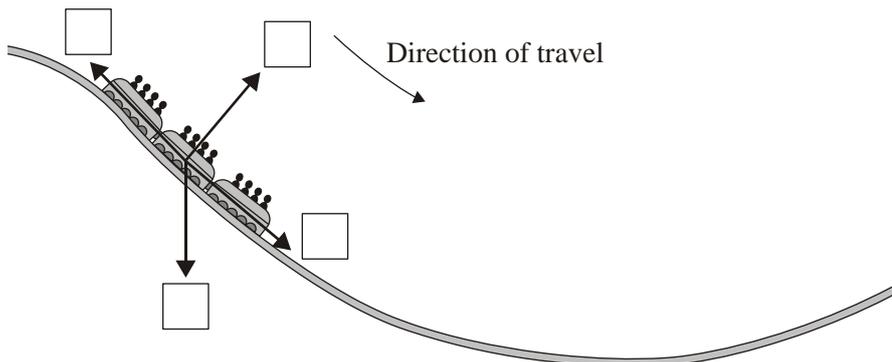
(1)

(Total 7 marks)

3. The diagram shows the passenger train on part of a rollercoaster ride.

(a) Which arrow shows the direction of the resultant force acting on the passenger train?

Put a tick (✓) in the box next to your choice.



(1)

Unit P2, P2.1.4

- (b) For part of the ride, the maximum gravitational field strength acting on the passengers seems 3 times bigger than normal.

Normal gravitational field strength = 10 N/kg

- (i) Calculate the maximum gravitational field strength that seems to act on the passengers during the ride.

.....
.....

Maximum gravitational field strength = N/kg

(1)

- (ii) One of the passengers has a mass of 80 kg.

Use the equation in the box to calculate the maximum weight this passenger seems to have during the ride.

weight = mass × gravitational field strength
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Show clearly how you work out your answer.

.....
.....

Maximum weight = N

(2)

(Total 5 marks)