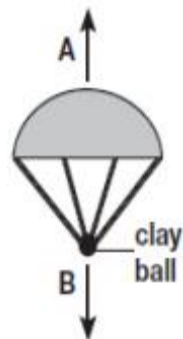


Parachutes

- (a) Jamie has a parachute. The two arrows on the diagram below show two forces (**A** and **B**) acting on the falling parachute.

Label forces **A** and **B** on the diagram below.



(i) Force **A** is

(ii) Force **B** is

2 marks

- (b) Tick **ONE** box to show the effect force **A** has on the parachute.

It makes the parachute fall faster.

It makes the parachute heavier.

It makes the parachute fall slower.

It makes the parachute lighter.

1 mark

- (c) Jamie wants to find out if changing the material of the parachute affects the time it takes to fall to the ground. The table shows some of the variables in Jamie's investigation.

Complete the table to show how Jamie should do his investigation. Tick **ONE** box in each row.

Complete the table to show how Jamie should do his investigation. Tick **ONE** box in each row.

Variable	Variable to be changed	Variable to be measured	Variable to be kept the same
height of drop			
mass of modelling clay			
size of parachute			
material of parachute			
time taken to fall to the ground			

2 marks

- (d) Jamie decides to test each of his parachutes three times. He records his results in the table below.

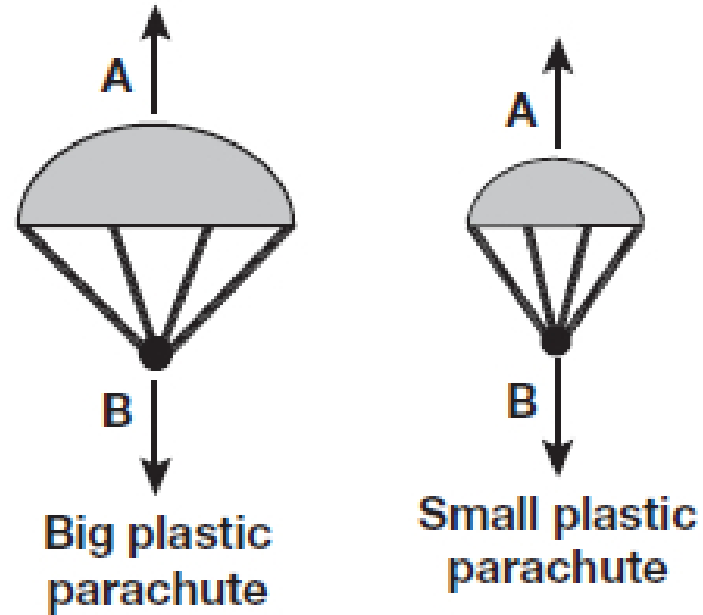
One of the times in his results table looks wrong.

Circle **ONE** time in the results table that Jamie should check.

Parachute material	Time taken to reach the ground (seconds)		
	test 1	test 2	test 3
plastic	2.4	2.4	2.5
bubble wrap	2.1	2.0	2.0
netting	2.9	1.0	1.0

1 mark

(e) Jamie makes a **smaller** parachute made of **plastic**.



Predict the time it will take the **smaller plastic** parachute to fall to the ground.



..... seconds

1 mark

(a) (i) Award **ONE** mark for:

- air resistance.

ONE mark may be awarded for:

- friction
- drag.

Do not give credit for an insufficient response, e.g.

- upthrust
- resistance
- an upward push.

(ii) Award **ONE** mark for:

- gravity.

ONE mark may be awarded for:

- gravitational attraction.

ONE mark may be awarded for:

- weight.

(b) Award **ONE** mark for:

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

- It makes the parachute fall slower.

<input checked="" type="checkbox"/>	<input type="checkbox"/>
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Do not give credit if more than one box has been ticked.

(c) Award **TWO** marks for the table completed correctly:

Variable	Variable to be changed	Variable to be measured	Variable to be kept the same
height of drop			✓
mass of modelling clay			✓
size of parachute			✓
material of parachute	✓		
time taken to fall to the ground		✓	

Do not give credit for a row where more than one box has been ticked.

or

If you are unable to award two marks, award **ONE** mark for correctly completing **any four** rows of the table.

(d) Award **ONE** mark for 2.9 circled (for netting).

Do not give credit for an insufficient response in which 'netting' or 'test 1' is circled.

(e) Award **ONE** mark for a prediction that is greater than 0 but less than 2.4 seconds (0–2.4 exclusive), e.g.

- 1.5 seconds.

Do not give credit for an incorrect response giving 2.4 or greater.