

SMART EXAM RESOURCES

CAMBRIDGE PRIMARY STAGE 6 PHYSICS

TOPIC: MASS AND WEIGHT

1

This question is about gravity, mass and weight.
 Look at the table showing the mass and weight of an object on different planets.

planet	mass of object in	weight of object in
W	20	200
X	20	2000
Y	1000
Z	20

(a) Complete the table headings by writing the name of the unit for:

- mass
- weight.

[2]

(b) Mass and weight have different units.

Write down **one other** difference between mass and weight.

.....
 [1]

(c) What is the mass of the object on planet Y?

Write your answer in the table.

[1]

(d) The force of gravity on planet Z is half the force of gravity on planet W.

What is the weight of the object on planet Z?

Write your answer in the table.

[1]

MARK SCHEME:

(a)	<p>mass – grams or g or kilograms or kg</p> <p>weight – newtons or N or kN</p>	<p>2</p> <p>each correct answer = 1 mark</p> <p>Accept mg or Mg or tonnes etc.</p> <p>Accept MN etc.</p> <p>Do not accept n</p> <p>Accept any indication of correct answer, e.g. written next to question, but answers in the table take precedence</p>
(b)	<p>any one from</p> <p>mass does not change (when gravity changes) or weight changes (when gravity changes)</p> <p>weight is a force</p> <p>mass is the amount of stuff (an object has)</p>	<p>1</p> <p>Ignore they have different units</p>
(c)	20	<p>1</p> <p>Ignore units</p> <p>Accept any indication of correct answer, e.g. written next to question, but answers in the table take precedence</p>
(d)	100	<p>1</p> <p>Ignore units</p> <p>Accept any indication of correct answer, e.g. written next to question, but answers in the table take precedence</p>

2

Water has mass and weight.

Describe the difference between mass and weight.

.....

.....

..... [2]

MARK SCHEME:

- **Mass is the amount of matter in an object**
- **Mass is measured in kilograms [kg]**
- **Mass of an object stays the same , irrespective of where it is being measured.**

Weight:

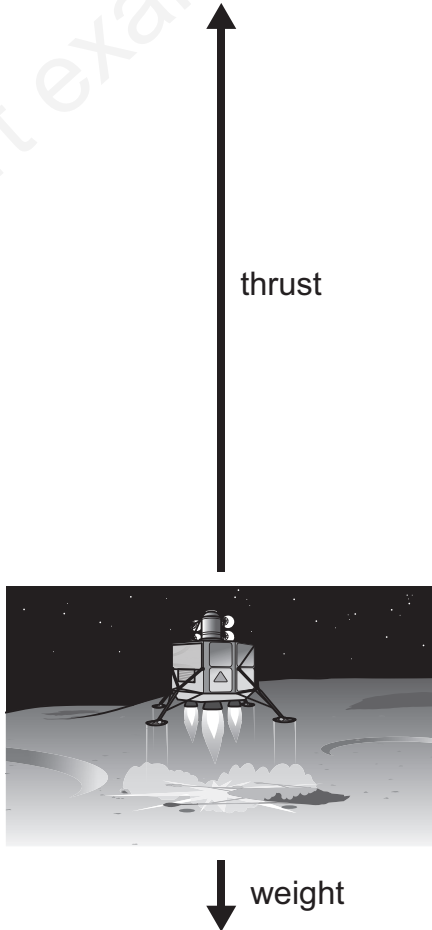
- **Weight is the pull of Earths gravity on an object**
- **Weight is measured in Newton [N]**
- **Weight of an object changes with a change in the gravitational force experienced by the object.**

3

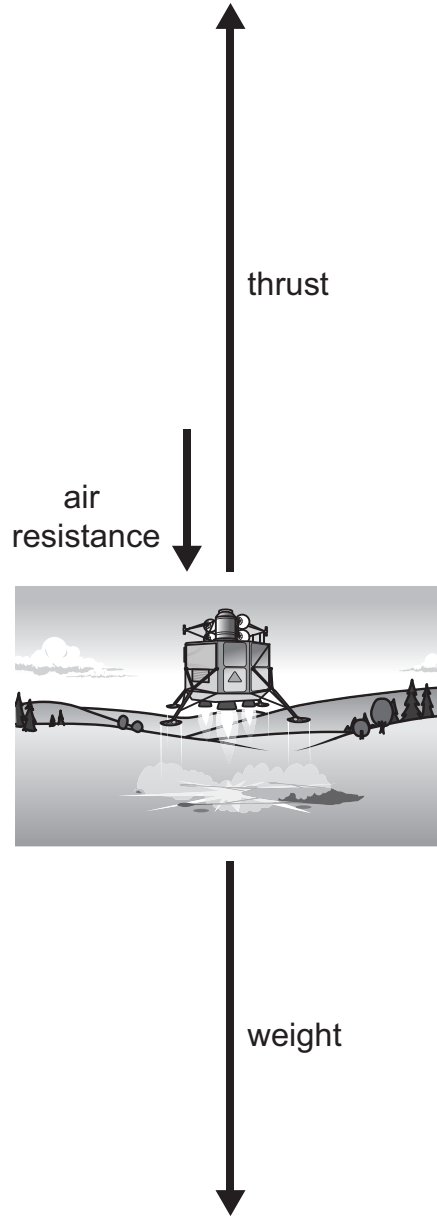
Look at these two force diagrams for a spacecraft.

One diagram shows the spacecraft leaving the surface of the Moon.

The other diagram shows the spacecraft leaving the surface of the Earth.



leaving the surface
of the Moon



leaving the surface
of the Earth

(a) In both diagrams the mass of the spacecraft is the same.

What is the name for the unit of mass?

..... [1]

(b) The weight of the spacecraft on the Moon is different from its weight on the Earth.

Explain why.

.....
..... [1]

(c) What is the name for the unit of weight?

..... [1]

(d) Explain why the spacecraft leaving the Moon moves upwards faster than when it leaves the Earth.

Use the force diagrams to give **two** reasons.

reason 1

.....

reason 2

.....

[2]

MARK SCHEME:

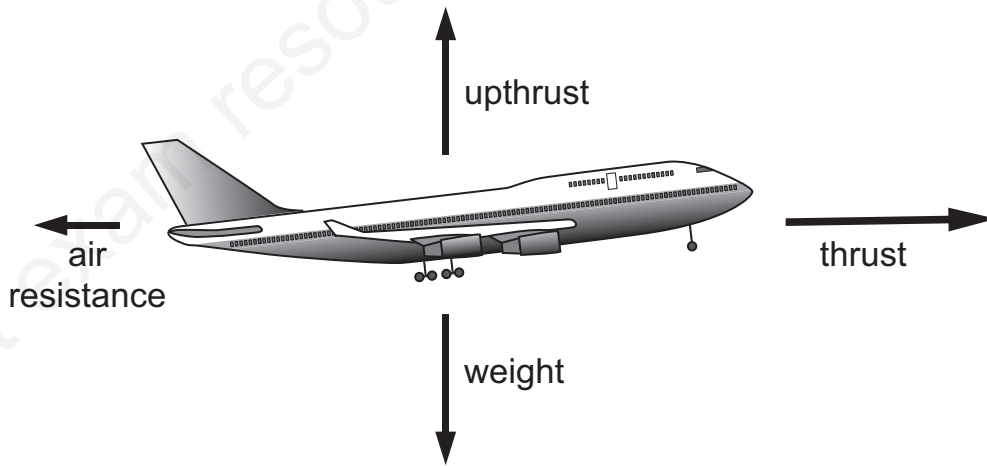
(a) kilogram(kg)

(b) The weight of the spacecraft on the Moon is different from its weight on the moon because the force of gravity experienced by the spacecraft on Moon and the Earth are different.

(c) Newton (N)

(d) The spacecraft leaving the Moon moves upwards faster than when it leaves the Earth. This is because the Moon's gravitational force is less compared to that of the Earth. Secondly, Air resistance is an additional force experienced by the spacecraft while leaving the Earth. The air resistance is absent on the Moon. Hence, with the same upthrust, the spacecraft leaves the Moon faster.

4 The diagram shows the forces acting on an aeroplane.



(a) Which force is the effect of gravity on the mass of the aeroplane?

[1]

MARK SCHEME:

Weight

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