

- 1 An object has a mass of 50 kg.

The gravitational field strength on Earth is 10.0 N/kg.

The gravitational field strength on a distant planet is 4.0 N/kg.

What is the weight of the object on Earth, and what is its weight on the distant planet?

	on Earth	on the distant planet
<b>A</b>	5.0 kg	12.5 kg
<b>B</b>	5.0 N	12.5 N
<b>C</b>	500 kg	200 kg
<b>D</b>	500 N	200 N

- 2 An astronaut in an orbiting spacecraft experiences a force due to gravity. This force is less than when she is on the Earth's surface.

Compared with being on the Earth's surface, how do her mass and her weight change when she goes into orbit?

	mass in orbit	weight in orbit
<b>A</b>	decreases	decreases
<b>B</b>	decreases	unchanged
<b>C</b>	unchanged	decreases
<b>D</b>	unchanged	unchanged

- 3 A car travels 100 km. The journey takes two hours. The highest speed of the car is 80 km/h, and the lowest speed is 40 km/h.

What is the average speed for the journey?

- A** 40 km/h      **B** 50 km/h      **C** 60 km/h      **D** 120 km/h

4 Weight is an example of which quantity?

- A acceleration
- B force
- C mass
- D pressure

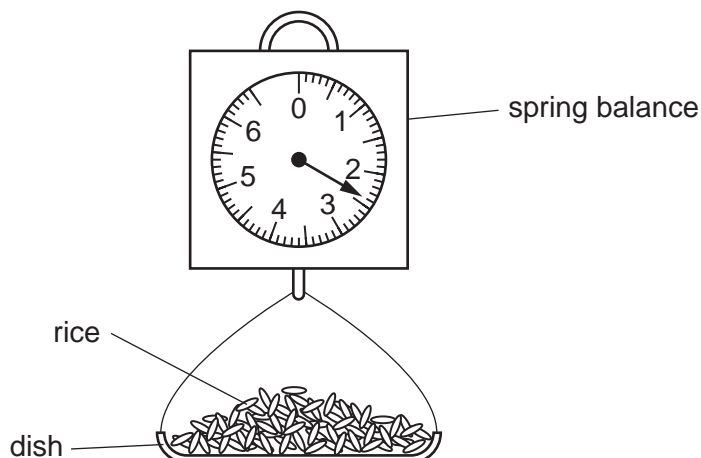
5 The mass of an object is measured on Earth. The mass is 5.0 kg.

The object is taken to the Moon. The mass of the object is measured on the Moon.

What is the mass of the object on the Moon?

- A 0 kg
  - B more than 0 kg, but less than 5.0 kg
  - C 5.0 kg
  - D more than 5.0 kg
- 6 Which statement about mass or weight is correct?
- A Mass is a force.
  - B Mass is measured in newtons.
  - C Weight is a force.
  - D Weight is measured in kilograms.
- 7 What is the weight of an object?
- A the force of gravity on the object
  - B the gravitational potential energy of the object
  - C the internal energy of the object
  - D the mass of the object

- 8 Which instrument is used to compare the masses of objects?
- A a balance
  - B a barometer
  - C a manometer
  - D a measuring cylinder
- 9 A customer goes to a market and buys some rice. The stallholder pours rice into a dish that hangs from a spring balance. He records the reading on the spring balance.



The customer then buys some pasta and the stallholder notices that the reading on the spring balance, with just pasta in the dish, is the same as it was with just rice in the dish.

The rice and the pasta must have the same

- A density.
- B temperature.
- C volume.
- D weight.

10 The mass of an astronaut is 70 kg on the Moon.

What is the mass of the astronaut on the Earth?

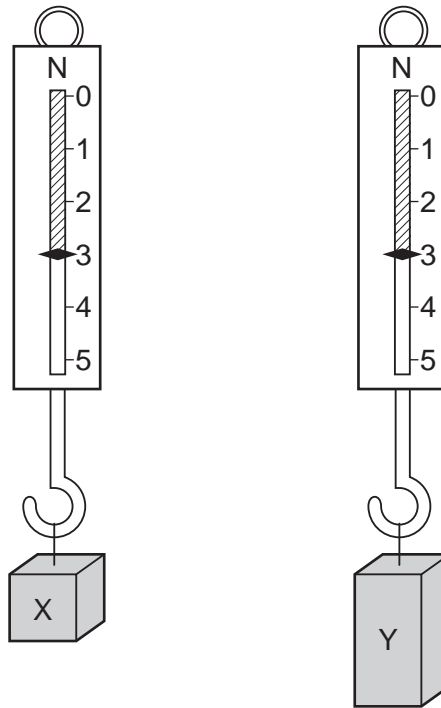
- A 7 kg                      B 70 kg                      C 80 kg                      D 700 kg

11 A 1 kg sample of aluminium is stored in a laboratory. In a different laboratory, in the same town, there is a 1 kg sample of iron.

Which quantity must these two samples **always** have in common?

- A the same density  
B the same temperature  
C the same volume  
D the same weight

- 12 Two blocks of metal X and Y hang from spring balances, as shown in the diagrams.



What does the diagram show about X and Y?

- A** They have the same mass and the same volume but different weights.
  - B** They have the same mass and the same weight but different volumes.
  - C** They have the same mass, the same volume and the same weight.
  - D** They have the same weight and the same volume but different masses.
- 13 A student stands with both feet on some scales in order to measure his weight.  
 The reading on the scales is 500 N. He lifts one foot off the scales and keeps it lifted.  
 What is the new reading on the scales?

- A** 0                      **B** 250 N                      **C** 500 N                      **D** 1000 N

- 14 A child sits on a rubber ball and bounces up and down on the ground.



What stays the same when the ball hits the ground?

- A** the acceleration of the ball
  - B** the mass of the ball
  - C** the shape of the ball
  - D** the velocity of the ball
- 15 Which is the unit for force and which is the unit for weight?

	force	weight
<b>A</b>	kg	kg
<b>B</b>	kg	N
<b>C</b>	N	kg
<b>D</b>	N	N

16 A cup contains hot liquid.

Some of the liquid evaporates.

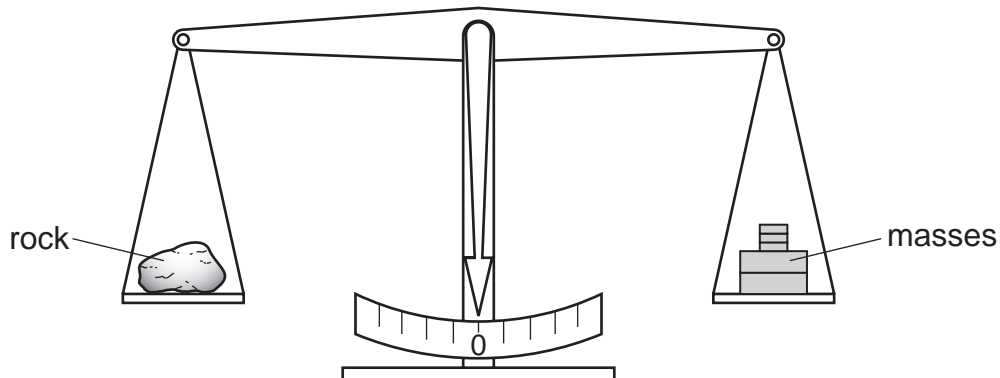
What happens to the mass and to the weight of the liquid in the cup?

	mass	weight
<b>A</b>	decreases	decreases
<b>B</b>	decreases	stays the same
<b>C</b>	stays the same	decreases
<b>D</b>	stays the same	stays the same

17 Which quantity is measured in newtons?

- A** density
- B** energy
- C** pressure
- D** weight

18 A geologist places a small rock on the left-hand pan of a balance. The two pans are level as shown when masses with a total weight of 23 N are placed on the right-hand pan. Take the weight of 1.0 kg to be 10 N.



What is the mass of the small rock?

- A** 0.023 kg
- B** 2.3 kg
- C** 23 kg
- D** 230 kg

19 Which statement about mass and weight is correct?

- A** Mass and weight are both forces.
- B** Neither mass nor weight is a force.
- C** Only mass is a force.
- D** Only weight is a force.

20 A cup contains hot liquid.

Some of the liquid evaporates.

What happens to the mass and what happens to the weight of the liquid in the cup?

	mass	weight
<b>A</b>	decreases	decreases
<b>B</b>	decreases	stays the same
<b>C</b>	stays the same	decreases
<b>D</b>	stays the same	stays the same

21 A concrete post is carried up a very high mountain. At the top of the mountain, the gravitational field is slightly weaker than at the bottom.

What is the effect of this weaker field on the mass and on the weight of the post at the top of the mountain?

	mass	weight
<b>A</b>	is less	is less
<b>B</b>	is less	is unchanged
<b>C</b>	is unchanged	is less
<b>D</b>	is unchanged	is unchanged



- 22 An astronaut in an orbiting spacecraft experiences a force due to gravity. This force is less than when she is on the Earth's surface.

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	mass in orbit	weight in orbit
<b>A</b>	decreases	decreases
<b>B</b>	decreases	unchanged
<b>C</b>	unchanged	decreases
<b>D</b>	unchanged	unchanged