

Question 1

Which statement about gravitational field strength g is correct?

- A $g = \frac{\text{mass}}{\text{weight}}$
- B $g = \text{mass} \times \text{weight}$
- C g is defined as the mass per unit force
- D g is equal to the acceleration of free fall

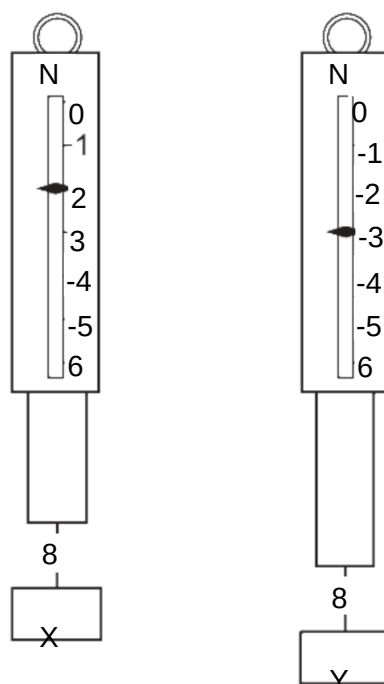
Question 2

Which property of an object **cannot** be changed by applying forces?

- A mass
- B shape
- C speed
- D volume

Question 3

The diagrams show two metal blocks, X and Y, suspended from identical force meters. X and Y have identical dimensions.



Which statement about X and Y is correct?

- A** They have different volumes and different weights.
- B** They have different volumes and equal weights.
- C** They have equal volumes and equal weights.
- D** They have equal volumes and different weights.

Question 4

Diagram 1 shows a piece of flexible material that contains many pockets of air. Diagram 2 shows the same piece of flexible material after it has been compressed so that its volume decreases.

diagram 1
(before compression)

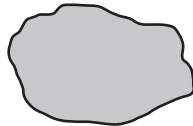
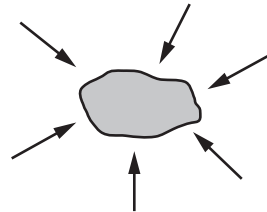


diagram 2
(after compression)



What happens to the mass and to the weight of the flexible material when it is compressed?

	mass	weight
A	increases	increases
B	increases	no change
C	no change	increases
D	no change	no change

Question 5

Students are asked for a statement about the weight of an object.

Three of the statements are listed.

- 1 The weight is the quantity of matter in the object.
- 2 The weight is the effect of a gravitational field on the object.
- 3 The weight is the force of attraction between the object and the Earth.

Which statements describe the weight of the object?

A 1, 2 and 3 B 1 and 2 only C 1 and 3 only D 2 and 3 only

Question 6

Which unit is a unit of weight?

- A** kilogram
- B** kilojoule
- C** kilometre
- D** kilonewton

Question 7

A sphere P, made of steel, has a weight of 10 N on Earth.

Another sphere Q, also made of steel, has a weight of 10 N on Mars.

The gravitational field strength on Earth is greater than the gravitational field strength on Mars.

Which statement is correct?

- A** The mass of sphere P is the same as the mass of sphere Q.
- B** The mass of sphere P is less than the mass of sphere Q.
- C** On Mars, the weight of sphere P is more than 10 N.
- D** On Earth, the weight of sphere Q is less than 10 N.

Question 8

Which statement about the mass of an object is correct?

- A** It changes when the object is lifted further from the ground.
- B** It is the gravitational force on the object.
- C** It is zero if the object is in orbit around the Earth.
- D** It resists any change in motion of the object.

Question 9

Which statement about mass and weight is correct?

- A** Mass is a property that causes change in motion.
- B** Mass is caused by a gravitational field acting on a weight.
- C** Weight is a property that resists change in motion.
- D** Weight is caused by a gravitational field acting on a mass.

Question 10

Which statement describes the relationship between mass and weight?

- A** Mass is the effect of a gravitational field on a weight.
- B** Mass is the effect of a magnetic field on a weight.
- C** Weight is the effect of a gravitational field on a mass.
- D** Weight is the effect of a magnetic field on a mass.

Question 11

The table gives information about some of the planets in our Solar System.

planet	mass compared with the Earth	average density	gravitational field strength at surface
		g/cm^3	N/kg
Earth	1.0	5.5	9.8
Jupiter	320	1.3	25
Mercury	0.060	5.4	3.8
Uranus	15	1.3	10

Which statement about these planets is correct?

- A** As the mass compared with the Earth increases, the average density increases.
- B** As the mass compared with the Earth increases, the gravitational field strength increases.
- C** As the average density increases, the gravitational field strength decreases.
- D** The average density is directly proportional to the gravitational field strength.