O Level Pure Physics MCQs

Mass, Weight and Density Test 1.0

Q1

A big cube is formed by 27 identical small cubes. The small cubes are made of the same material and the density of each cube is 2.0 g/cm³. Fig. 8.1 shows a new arrangement when one small cube is removed from the big cube.
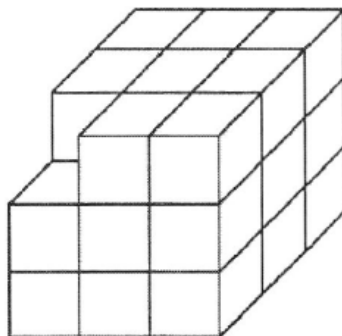

Fig. 8.1

What will be the change(s) to its density and inertia as compared to the original big cube (if any)?

	density of the new arrangement	inertia of the new arrangement
A	remains unchanged	decreases
B	increases	remains unchanged
C	remains unchanged	remains unchanged
D	decreases	decreases

Q2

2 000 kg of iron is melted and mixed with 3.0 m³ of molten zinc. If the density of molten iron and zinc are 7 500 kg/m³ and 7 100 kg/m³ respectively, what is the approximate density of the mixture?

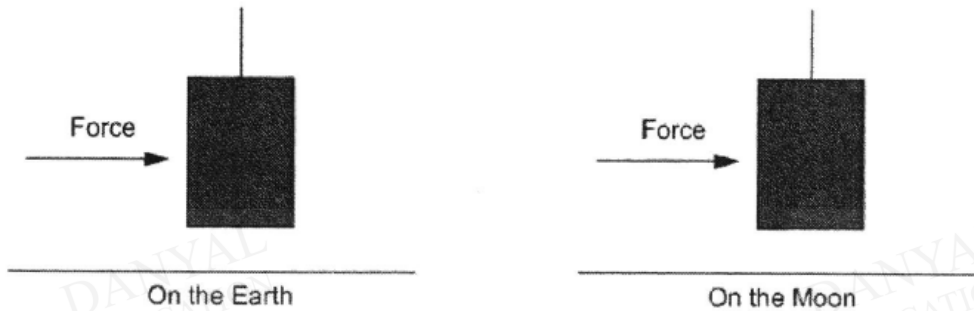|			
A	71.33 kg/m³	B	73.33 kg/m³
C	7133 kg/m³	D	7300 kg/m³

Q3

A block of concrete is hung on a rope close to the surface of the Earth. An identical piece of concrete is hung in the same way close to the surface of the moon. A sideway force is applied to both blocks of concrete.

On the Earth   On the Moon

Compared to the block of concrete hanging on Earth, the block of concrete on the Moon moves

A   more easily, as it has less mass
B   more easily, as it has less weight
C   with the same ease, as it has the same mass
D   with the same ease, as it has the same weight

Q4

Which statement is correct?

A   1 kg of iron is heavier than 1 kg of air.

B   Mass and weight for matter can both be zero.

C   Gravitational field is a region in which a mass experiences a force due to gravitational attraction or repulsion.

D   Gravitational field strength is the gravitational force acting per unit mass.

Q5

An alloy is made from two metals A and B.

The mass of metals A and B are 14 g and 23.5 g respectively.
The volume of metal A is 1.1 cm^3 and the alloy has a density of 15 g/cm^3.

What is the volume of metal B?

A   0.8 cm^3

B   1.4 cm^3

C   2.2 cm^3

D   2.5 cm^3

2

Q6

Two balances X and Y are used on the Moon to measure the weight and the mass of two different loads as shown in the diagrams below. Balance X reads 60 N and balance Y needs one piece of 1 kg mass to balance the load.

balance X

balance Y

one piece of
1 kg mass
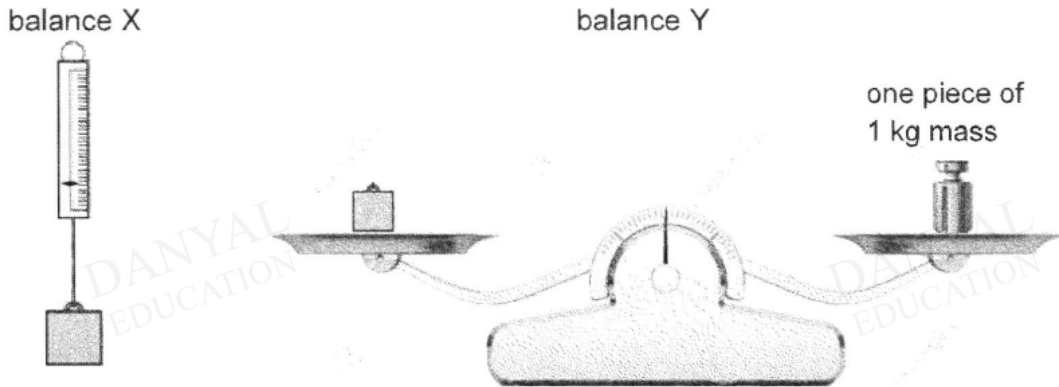
If these measurements were to be repeated on Earth, where the gravitational field strength is 6 times more than that on the Moon, what will be the correct readings?
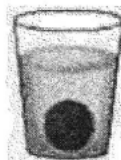
|	reading on balance X / N	number of 1 kg mass to balance the load in balance Y
A	60	one
B	60	six
C	360	one
D	360	six

Q7

Hye Kyo and Joong Ki were attending a Physics lesson. They were given two balls made of the same material as shown below.

Hye Kyo puts the larger ball in a beaker of water and watches it sink as shown.

Joong Ki removes the larger ball and places the smaller ball in the same glass of water. Which diagram shows the correct position of the smaller ball?

A   B   C   D
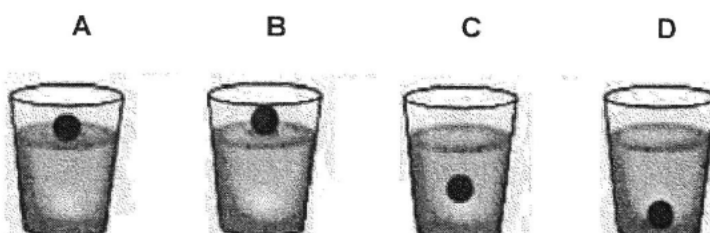
Q8

Paper is sold in packets labelled 80 g/m². A sheet of this paper of area 10 000 cm² has a mass of 80 g.
The thickness of each sheet is 0.11 mm.
What is the density of the paper?

A   0.073 g/cm³
B   0.088 g/cm³
C   0.73 g/cm³
D   0.88 g/cm³

Q9

9.   The weight of a rock on the earth is 20 N. If the gravitational field strength on the moon is approximately 1.7 N kg⁻¹, what is its weight on the moon?

A   2.0 N
B   3.4 N
C   12 N
D   20 N

Q10

10.   Because of inertia, a moving object tends to _____.

A   be at rest
B   move at a constant speed
C   accelerate in a straight line
D   accelerate in a curved line

Answers

Mass, Weight and Density Test 1.0

Q1 A

Q2 C

Q3 C

Q4 D

Q5 B

Q6 C

Q7 D

Q8 C

Q9 B

Q10 B