1.3 Massand weight

01. 0625_m22_qp_22 Q: 4

The gravitational field strength is 8.8 N / kg on Venus and 3.8 N / kg on Mars.

An object has a weight of 42 N on Venus.

What are the mass and the weight of the object on Mars?

	mass / kg	weight / N
A	4.8	18
B	4.8	42
C	11	42
D	11	97

---

02. 0625_m21_qp_22 Q: 4

Which statement about mass is correct?

A A mass of 10 kg weighs 1 N near the Earth's surface.

B Mass is a gravitational force.

C Mass increases when the gravitational field strength increases.

D The greater the mass of a body, the more it resists a change in its motion.

---

03. 0625_s21_qp_21 Q: 4

An object of mass 2.0 kg is taken from the Earth, where the gravitational field strength is 10 N / kg, to the Moon, where the gravitational field strength is 1.6 N / kg.

Which row is correct?

	weight on the Earth / N	weight on the Moon / N
A	0.20	0.80
B	0.20	3.2
C	20	0.80
D	20	3.2

---

04. 0625_s21_qp_22 Q: 4

What is the best description of the meaning of the 'mass' of an object?

A the space occupied by the object

B the force that gravity exerts on the object

C the resistance of the object to changes in motion

D the closeness of packing of the molecules in the object

---

05. 0625_s21_qp_23 Q: 4

An object is on the surface of the Earth.

Which statement describes the weight of the object?

A the quantity of material that the object contains

B the quantity of space that the object takes up

C the gravitational force acting on the object

D the object's resistance to a change in its motion

---

06. 0625_w21_qp_21 Q: 3

An object has a weight of 6.4 N on the Earth where the gravitational field strength is 10 N / kg.

Which row states the mass and the weight of the object on the Moon where the gravitational field strength is 1.6 N / kg?

	mass / kg	weight on the Moon / N
A	0.64	1.0
B	0.64	6.4
C	4.0	1.0
D	4.0	6.4

---

07. 0625_w21_qp_22 Q: 3

In which situation does object X have a greater mass than object Y?

A Object X is in a larger gravitational field than object Y and both have the same weight.

B Object X shows a greater resistance to change in motion than object Y and both experience the same resultant force.

C Object X has a lower density than object Y and both occupy the same volume.

D Object X moves at a greater speed than object Y and both possess the same kinetic energy.

---

08. 0625_w21_qp_23 Q: 3

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.

09. 0625_m20_qp_22 Q: 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.

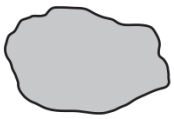


diagram 1
(before compression)

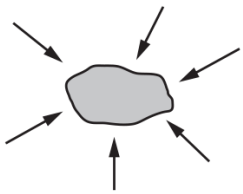


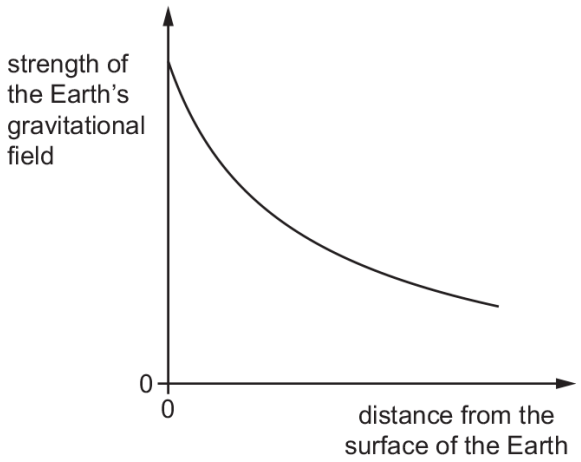
diagram 2
(after compression)

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

10. 0625_m20_qp_22 Q: 5

The graph shows how the strength of the Earth's gravitational field varies as the distance from the Earth's surface increases.



Which row describes the effect that this has on the mass and on the weight of an object as it moves further away from the Earth's surface?

	mass of object	weight of object
A	decreases	decreases
B	decreases	unchanged
C	unchanged	decreases
D	unchanged	unchanged

---

11. 0625_p20_qp_20 Q: 4

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
A	decreases	decreases
B	decreases	unchanged
C	unchanged	decreases
D	unchanged	unchanged

---

12. 0625_s20_qp_21 Q: 5

A mass of 6.0 kg rests on the surface of a planet.

On this planet, g = 20 N / kg.

What is the weight of the object?

A 0.30 N **B** 0.60 N **C** 60 N **D** 120 N

---

13. 0625_s20_qp_22 Q: 5

A space probe is taken from the Earth to Mars.

The force of gravity on the surface of Mars is less than the force of gravity on the surface of the Earth.

How do the weight and the mass of a space probe on the surface of Mars compare to their values when the probe is on the surface of the Earth?

	weight on Mars	mass on Mars
A	decreased	decreased
B	decreased	unchanged
C	unchanged	decreased
D	unchanged	unchanged

---

14. 0625_s20_qp_23 Q: 5

Which row gives the correct weight for the mass shown?

The value of g is 10 N / kg.

	mass / kg	weight / N
A	2	20
B	10	1
C	10	10
D	20	2

---

15. 0625_w20_qp_21 Q: 4

Which quantity is weight an example of?

A acceleration

B force

C mass

D pressure

---

16. 0625_w20_qp_21 Q: 5

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.

---

17. 0625_w20_qp_22 Q: 4

Which quantity is weight an example of?

A acceleration

B force

C mass

D pressure

---

18. 0625_w20_qp_22 Q: 5

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.

---

19. 0625_w20_qp_23 Q: 4

Which quantity is weight an example of?

A acceleration

B force

C mass

D pressure

---

20. 0625_w20_qp_23 Q: 5

An object of mass 1.0 kg is at rest on Earth. An identical object is at rest on a planet with a gravitational field strength of twice that on Earth.

Which row correctly compares the object on the planet to the object on Earth?

	its weight	its acceleration when the same horizontal force is applied
A	double	equal to that on Earth
B	double	half that on Earth
C	half	equal to that on Earth
D	half	half that on Earth

---

21. 0625_s19_qp_21 Q: 4

A body is moved from place X to place Y where the gravitational field strength is different.

What happens to its mass and to its weight due to the move?

	mass	weight
A	changes	changes
B	changes	stays the same
C	stays the same	changes
D	stays the same	stays the same

---

22. 0625_s19_qp_22 Q: 4

Four students make statements about the mass of an object.

Which statement is correct?

A The mass of an object depends on the gravitational field which acts on the object.

B The mass of an object divided by its weight is equal to the acceleration with which it falls freely.

C The mass of an object increases when the temperature of the object increases.

D The mass of an object resists change in motion of the object.

---

23. 0625_w19_qp_21 Q: 4

Which quantity is a force due to a gravitational field?

A density

B mass

C weight

D volume

---

24. 0625_w19_qp_23 Q: 4

Which equation shows the relationship between the weight W and the mass m of an object?

A $W = \frac{m}{g}$

B $W = mg$

C $W = m + g$

D $W = \frac{g}{m}$

---

25. 0625_m18_qp_22 Q: 5

The gravitational field strength on the Moon is 1.6 N / kg.

An astronaut has a mass of 75 kg.

What is the weight of the astronaut on the Moon?

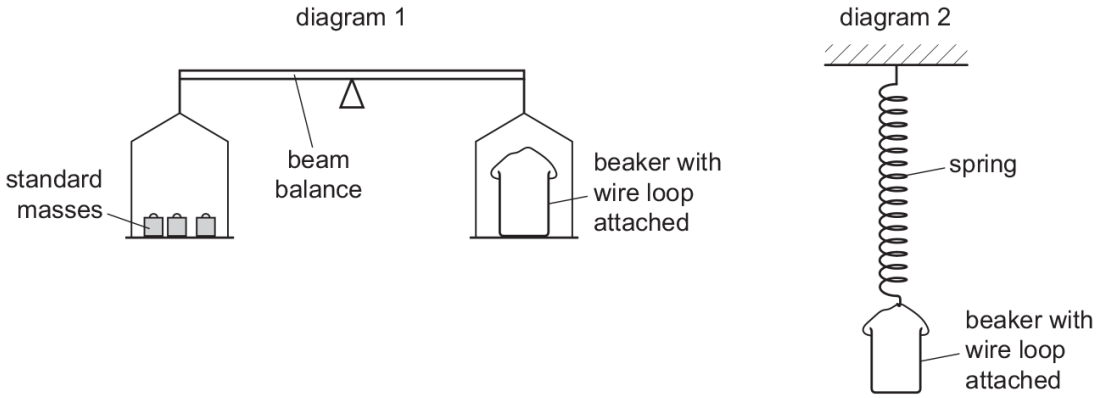
A 47 N **B** 75 N **C** 120 N **D** 750 N

---

26. 0625_s18_qp_21 Q: 4

Diagram 1 shows a beam balance. A beaker with a wire loop balances the standard masses.

The beaker is then removed and hung from a spring. The spring extends by 5.0 cm, as in diagram 2.



The experiment is repeated with the same apparatus on the Moon, where the acceleration of free fall is less than on Earth.

Which statement describes what happens on the Moon?

A The beam balance is balanced and the spring extends by 5.0 cm.

B The beam balance is balanced and the spring extends by less than 5.0 cm.

C The right-hand balance pan is higher and the spring extends by 5.0 cm.

D The right-hand balance pan is higher and the spring extends by less than 5.0 cm.

---

27. 0625_s18_qp_21 Q: 5

An object always has mass but does not always have weight.

What must be present and acting on the mass for it to have weight?

A a gravitational field

B a set of scales

C displaced water

D friction due to air resistance

---

28. 0625_s18_qp_22 Q: 4

Which statement about the mass and the weight of an object is correct?

A They are both affected by changes in the acceleration of free fall.

B They are both forces.

C They have different units.

D Weight is calculated by dividing mass by the acceleration of free fall.

---

29. 0625_s18_qp_22 Q: 5

Which statement about the mass of an object is correct?

A It is equal to the density divided by the volume.

B It is equal to weight multiplied by the gravitational field strength.

C It is the effect of a gravitational field on the object.

D It is the property that resists a change in velocity.

---

30. 0625_s18_qp_23 Q: 4

A person steps onto a bathroom scales.

The bathroom scales records both mass and weight.

Which row shows the readings on the scales?

	mass	weight
A	60 N	600 kg
B	60 kg	600 N
C	600 kg	60 N
D	600 N	60 kg

---

31. 0625_s18_qp_23 Q: 5

An object has a weight of 7600 N in a gravitational field of strength 100 N / kg.

What is the mass of the object?

A 76 kg **B** 760 N **C** 7600 g **D** 76 000 N

---

32. 0625_m17_qp_22 Q: 4

Which statement about the masses and weights of objects on the Earth is correct?

A A balance can only be used to compare weights, not masses.

B Heavy objects always have more mass than light ones.

C Large objects always have more mass than small ones.

D Mass is a force but weight is not.

---

33. 0625_m17_qp_22 Q: 5

An object in a space probe above the Earth weighs 3.5 N. The gravitational field strength at the height of the space probe is 7.0 N/kg.

The gravitational field strength on the Earth's surface is 10 N/kg.

What are the mass and the weight of the object on the Earth's surface?

	mass/kg	weight/N
A	0.50	3.5
B	0.50	5.0
C	2.0	3.5
D	2.0	20

---

34. 0625_s17_qp_21 Q: 4

A piece of steel is taken from the Earth to the Moon for an experiment. The gravitational field strength on the Moon is smaller than on the Earth.

Which statement about the piece of steel is correct?

A It has less mass on the Moon than on the Earth.

B It has more mass on the Moon than on the Earth.

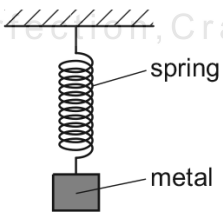
C It weighs less on the Moon than on the Earth.

D It weighs more on the Moon than on the Earth.

---

35. 0625_w17_qp_21 Q: 4

A spring is stretched by hanging a piece of metal from it.



Which name is given to the force that stretches the spring?

A friction

B mass

C pressure

D weight

---

36. 0625_w17_qp_21 Q: 5

Which object has the greatest weight?

A an object of mass 10 kg in a 15 N / kg gravitational field

B an object of mass 15 kg in a 13 N / kg gravitational field

C an object of mass 20 kg in a 9.0 N / kg gravitational field

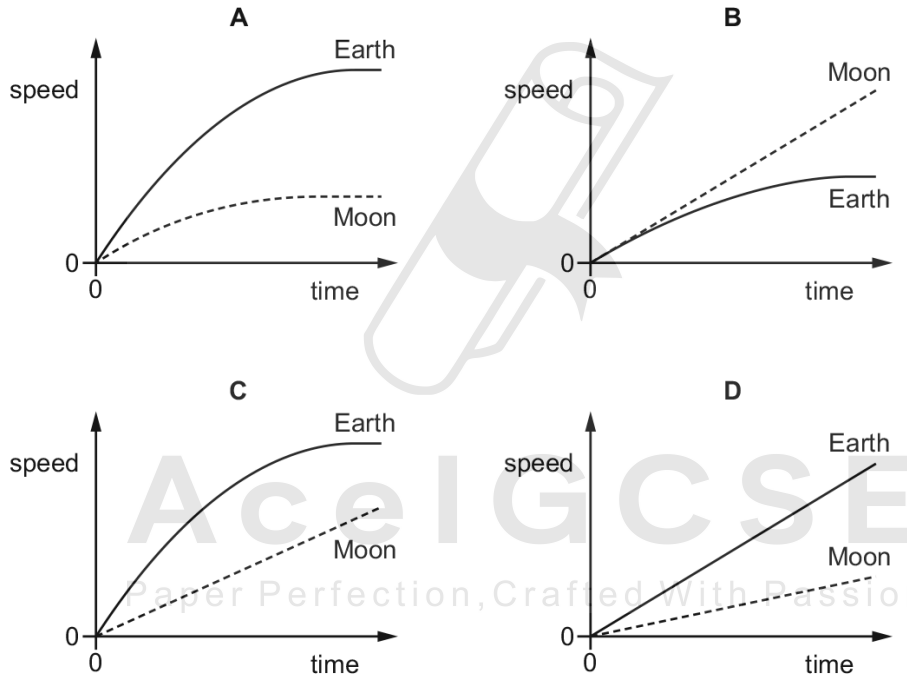
D an object of mass 50 kg in a 3.0 N / kg gravitational field

---

37. 0625_w17_qp_22 Q: 3

The gravitational field strength on the Earth is greater than the gravitational field strength on the Moon. The Earth has an atmosphere, but the Moon does not.

Which speed-time graph represents the motion of a light ball dropped from a great height near the surface of the Earth and near the surface of the Moon?



---

38. 0625_w17_qp_22 Q: 5

A body of mass m has a weight W in a location where the gravitational field strength is g.

Which statement about these quantities is correct?

A m and W are both forces.

B m and W are both vector quantities.

C m and W are related by the equation $\frac{W}{m} = g$.

D m and W have the same unit.

---

39. 0625_w17_qp_23 Q: 5

On the Moon, all objects fall with the same acceleration.

Which statement explains this?

A On the Moon, all objects have the same weight.

B The Moon has a smaller gravitational field strength than the Earth.

C The weight of an object is directly proportional to its mass.

D The weight of an object is inversely proportional to its mass.

---

40. 0625_m16_qp_22 Q: 4

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
A	is less	is less
B	is less	is unchanged
C	is unchanged	is less
D	is unchanged	is unchanged

---

41. 0625_p16_qp_20 Q: 4

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
A	decreases	decreases
B	decreases	unchanged
C	unchanged	decreases
D	unchanged	unchanged

---

42. 0625_s16_qp_21 Q: 5

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
A	decreases	decreases
B	decreases	stays the same
C	stays the same	decreases
D	stays the same	stays the same

---

43. 0625_w16_qp_22 Q: 4

An object tends to keep moving with the same speed and in the same direction due to a certain property.

The object also has weight due to the action of a field.

What is the name of the property, and what is the name of the field?

	property	field
A	mass	electric
B	mass	gravitational
C	volume	electric
D	volume	gravitational

---

44. 0625_w16_qp_23 Q: 4

An astronaut on the Moon weighs less than on Earth.

What is the reason for this difference, and how does his mass on the Moon compare with his mass on Earth?

	reason for weight difference	mass on Moon
A	the Moon has a weaker gravitational field	less than on Earth
B	the Moon has a weaker gravitational field	same as on Earth
C	the Moon has a weaker magnetic field	less than on Earth
D	the Moon has a weaker magnetic field	same as on Earth

---

45. 0625_w15_qp_11 Q: 4

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

---

46. 0625_w15_qp_13 Q: 4

What is the weight of an object?

A the force of gravity on the object

B the gravitational potential energy of the object

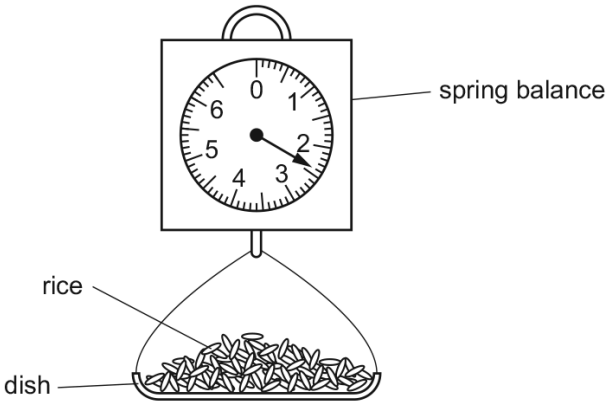
C the internal energy of the object

D the mass of the object

---

47. 0625_s14_qp_12 Q: 4

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.

---

48. 0625_w14_qp_11 Q: 4

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

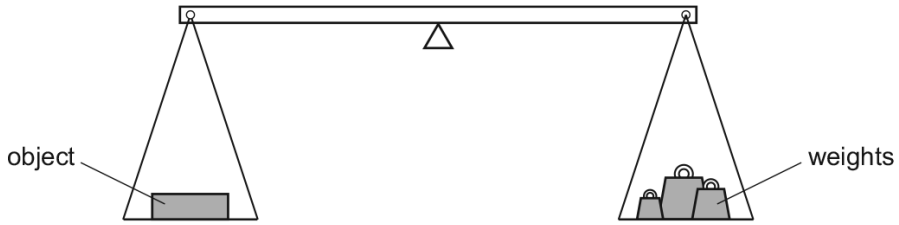
What is the mass of the astronaut on the Earth?

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

---

49. 0625_w14_qp_11 Q: 5

The weight of an object is found using the balance shown in the diagram. The object is put in the left-hand pan and various weights are put in the right-hand pan.



These are the results.

weights in the right-hand pan	effect
0.1 N, 0.1 N, 0.05 N, 0.02 N	balance tips down slightly on the left-hand side
0.2 N, 0.1 N, 0.01 N	balance tips down slightly on the right-hand side

What is the best estimate of the weight of the object?

A 0.27 N **B** 0.29 N **C** 0.31 N **D** 0.58 N

---

50. 0625_w14_qp_13 Q: 4

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

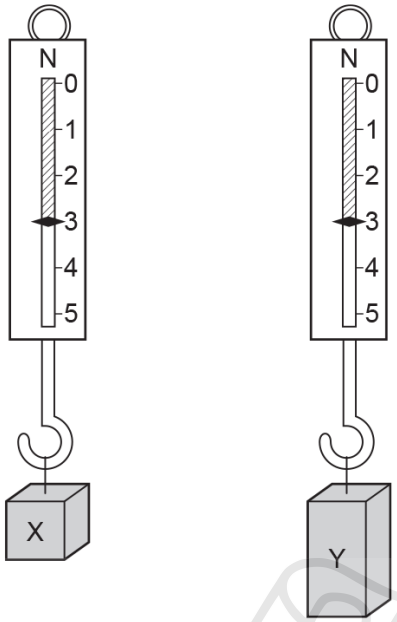
What is the mass of the astronaut on the Earth?

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

---

51. 0625_s13_qp_11 Q: 4

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.

---

52. 0625_s13_qp_11 Q: 5

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

---

53. 0625_s13_qp_12 Q: 5

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

---

54. 0625_s13_qp_12 Q: 7

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

---

55. 0625_w13_qp_11 Q: 4

Which is the unit for force and which is the unit for weight?

	force	weight
A	kg	kg
B	kg	N
C	N	kg
D	N	N

---

56. 0625_w13_qp_11 Q: 5

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
A	decreases	decreases
B	decreases	stays the same
C	stays the same	decreases
D	stays the same	stays the same

---

57. 0625_s12_qp_11 Q: 4

Which quantity is measured in newtons?

A density

B energy

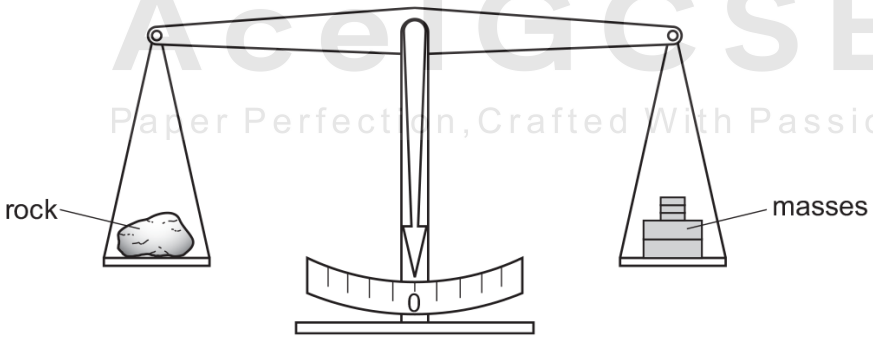
C pressure

D weight

---

58. 0625_s12_qp_11 Q: 5

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

---

59. 0625_s12_qp_12 Q: 4

A metal block is heated until it is completely melted. It is then allowed to solidify.

What happens to the mass of the metal during the changes of state?

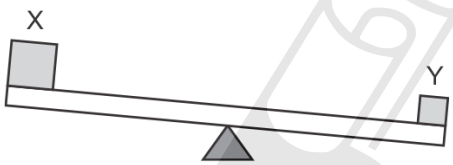
	mass during melting	mass during solidification
A	decreases	increases
B	increases	decreases
C	increases	stays constant
D	stays constant	stays constant

---

60. 0625_s12_qp_12 Q: 5

Two objects X and Y are placed on a balance.

The balance tilts as shown.



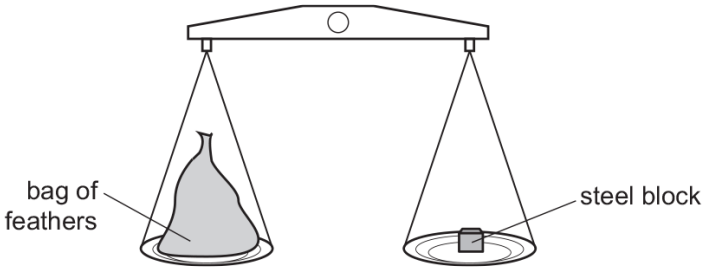
What does this show about the masses and weights of objects X and Y?

	masses	weights
A	X has less mass than Y	X has less weight than Y
B	X has less mass than Y	X has more weight than Y
C	X has the same mass as Y	X has less weight than Y
D	X has the same mass as Y	X has more weight than Y

---

61. 0625_w12_qp_11 Q: 4

A large bag of feathers and a steel block balance each other on some scales.



What does this show about the masses and the weights of the bag of feathers and the steel block?

A It shows that the masses are equal and the weights are equal.

B It shows that the masses are equal, but the weights might be different.

C It shows that the masses might be different and the weights might be different.

D It shows that the weights are equal, but the masses might be different.

---

62. 0625_w12_qp_11 Q: 5

A parachutist inside an aeroplane has a mass of 70 kg.

What is his mass after he has jumped from the aeroplane?

A 0 kg

B between 0 kg and 70 kg

C 70 kg

D greater than 70 kg

SN	Paper	Q. No.	Answer
01	0625_m22_qp_22	4	A
02	0625_m21_qp_22	4	D
03	0625_s21_qp_21	4	D
04	0625_s21_qp_22	4	C
05	0625_s21_qp_23	4	C
06	0625_w21_qp_21	3	A
07	0625_w21_qp_22	3	B
08	0625_w21_qp_23	3	D
09	0625_m20_qp_22	4	D
10	0625_m20_qp_22	5	C
11	0625_p20_qp_20	4	C
12	0625_s20_qp_21	5	D
13	0625_s20_qp_22	5	B
14	0625_s20_qp_23	5	A
15	0625_w20_qp_21	4	B
16	0625_w20_qp_21	5	B
17	0625_w20_qp_22	4	B
18	0625_w20_qp_22	5	D
19	0625_w20_qp_23	4	B
20	0625_w20_qp_23	5	A
21	0625_s19_qp_21	4	A
22	0625_s19_qp_22	4	D
23	0625_w19_qp_21	4	C
24	0625_w19_qp_23	4	B
25	0625_m18_qp_22	5	C
26	0625_s18_qp_21	4	B
27	0625_s18_qp_21	5	A
28	0625_s18_qp_22	4	C
29	0625_s18_qp_22	5	D
30	0625_s18_qp_23	4	B
31	0625_s18_qp_23	5	A
32	0625_m17_qp_22	4	B
33	0625_m17_qp_22	5	B
34	0625_s17_qp_21	4	C
35	0625_w17_qp_21	4	D
36	0625_w17_qp_21	5	B
37	0625_w17_qp_22	3	C
38	0625_w17_qp_22	5	C
39	0625_w17_qp_23	5	C
40	0625_m16_qp_22	4	C
41	0625_p16_qp_20	4	C
42	0625_s16_qp_21	5	A
43	0625_w16_qp_22	4	B
44	0625_w16_qp_23	4	B
45	0625_w15_qp_11	4	C
46	0625_w15_qp_13	4	A
47	0625_s14_qp_12	4	D
48	0625_w14_qp_11	4	B
49	0625_w14_qp_11	5	B

SN	Paper	Q. No.	Answer
50	0625_w14_qp_13	4	B
51	0625_s13_qp_11	4	B
52	0625_s13_qp_11	5	D
53	0625_s13_qp_12	5	C
54	0625_s13_qp_12	7	B
55	0625_w13_qp_11	4	D
56	0625_w13_qp_11	5	A
57	0625_s12_qp_11	4	D
58	0625_s12_qp_11	5	B
59	0625_s12_qp_12	4	D
60	0625_s12_qp_12	5	A
61	0625_w12_qp_11	4	A
62	0625_w12_qp_11	5	C