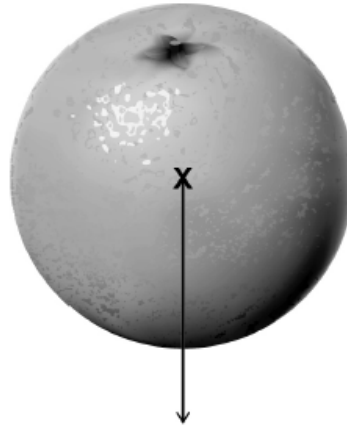


Force and elasticity – GCSE Physics Paper 2

1. No.4

0	4
---	---

Figure 6 shows the weight of an orange acting from a point labelled X.

Figure 6

0	4	.	1
---	---	---	---

What name is given to point X in Figure 6?

[1 mark]Tick (✓) **one** box.

Centre of force

☐

Centre of mass

☐

Centre of balance

☐

Centre of weight

☐

0 4 . 2 Weight and mass are not the same.

The relationship between weight and mass for an object can be written as:

$$\text{weight} \propto \text{mass}$$

Which sentence describes the relationship between weight and mass?

[1 mark]

Tick (✓) **one** box.

Weight is approximately equal to mass.

☐

Weight is directly proportional to mass.

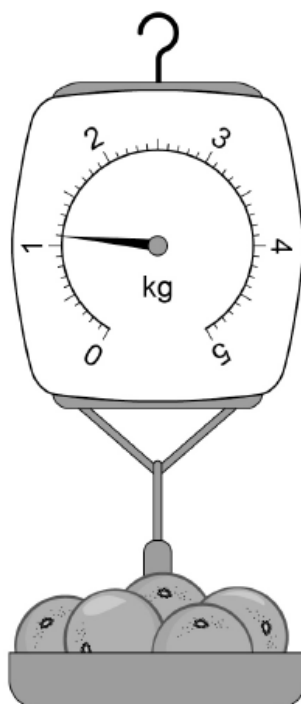
☐

Weight is less than mass.

☐

Figure 7 shows a balance used to measure the mass of 5 oranges.

Figure 7



0 4 . 3 All 5 of the oranges have the same mass.

Determine the mass of 1 orange.

[2 marks]

Mass = _____ kg

0 4 . 4 Calculate the weight of 1 orange.

gravitational field strength = 9.8 N/kg

Use the equation:

$$\text{weight} = \text{mass} \times \text{gravitational field strength}$$

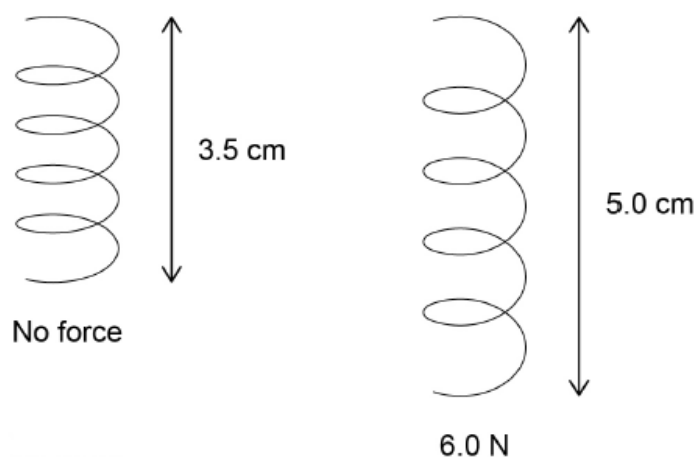
[2 marks]

Weight = _____ N

The balance shown in **Figure 7** contains a spring.

Figure 8 shows the spring with no force acting on it and with a force of 6.0 N acting on it.

Figure 8



0 4 . 5 What is the extension of the spring when a force of 6.0 N acts on it?

[1 mark]

Tick (✓) **one** box.

0.015 m

☐

0.035 m

☐

0.050 m

☐

0.085 m

☐

0 4 . 6 Calculate the spring constant of the spring.

Use the equation:

$$\text{spring constant} = \frac{\text{force}}{\text{extension}}$$

[2 marks]

Spring constant = _____ N/m

0	4	.	7
---	---	---	---

What will happen to the spring when the force is removed?

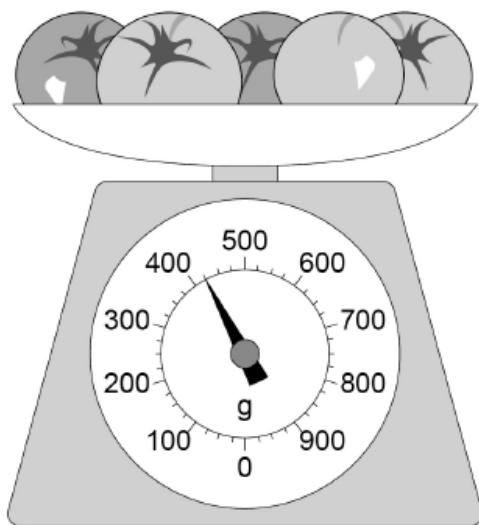
[1 mark]

2. No.5

0 5

Figure 9 shows a balance used to measure the mass of five tomatoes.

Figure 9



0 5 . 1

What is meant by 'centre of mass'?

[1 mark]

0 5 . 2

Calculate the mean weight of a tomato in Figure 9.

Use the Physics Equations Sheet.

gravitational field strength = 9.8 N/kg

[3 marks]

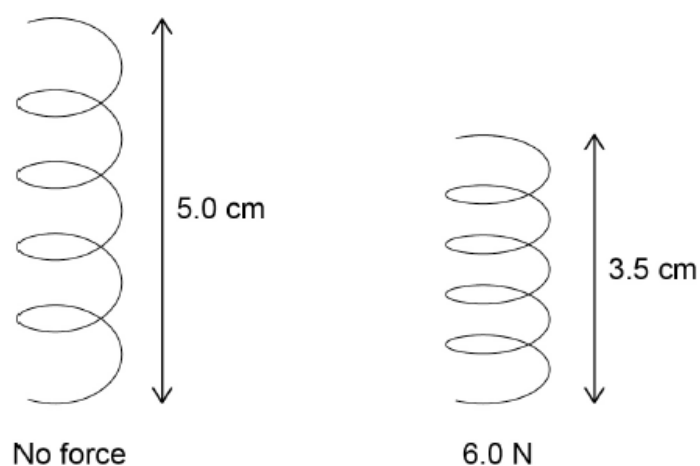
Weight = _____ N

0 5 . 3

The balance in **Figure 9** contains a spring that compresses when the tomatoes are placed on the balance.

Figure 10 shows the spring with no force acting and with a 6.0 N force acting.

Figure 10



Determine the spring constant of the spring.

Use the Physics Equations Sheet.

[3 marks]

Spring constant = _____ N/m

0 5 . 4

Explain **one** property of the spring that makes it suitable for use in the balance.

[2 marks]
