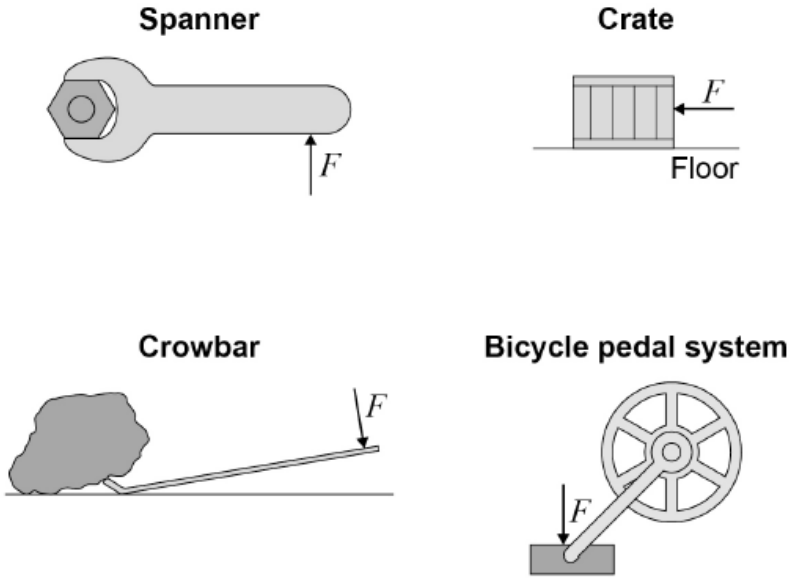
AQA - Moments, lever and gears – GCSE Physics

1. June/2019/Paper_2F/No.7

0 7 . 1 **Figure 17** shows four examples of a force causing an object to move.

Figure 17



Which object is **not** likely to rotate?

[1 mark]

Tick (✓) **one** box.

- Bicycle pedal system ☐
- Crate ☐
- Crowbar ☐
- Spanner ☐

Figure 18 shows a simple device that can be used as a weighing scale.

Figure 19 shows the device being used to measure a quantity of rice.

The weight of the device is balanced by the weight of the rice and basket.

Figure 18

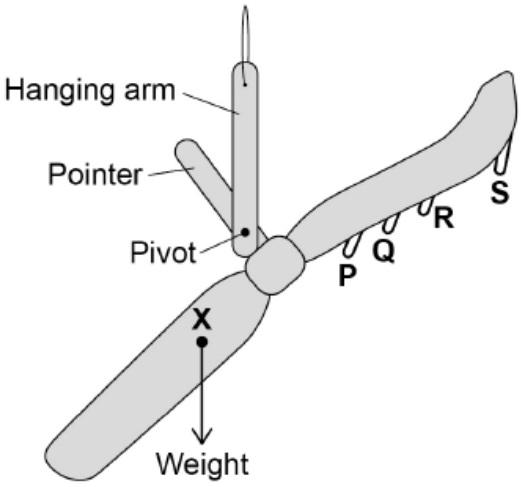
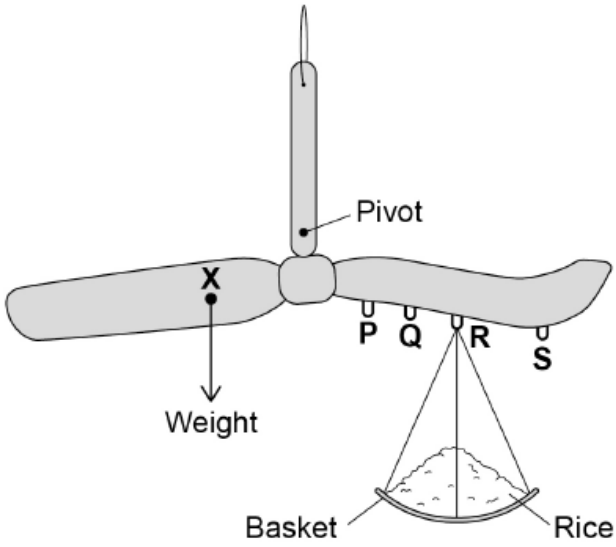


Figure 19



0 7 . 2 The weight of the device acts through the point labelled **X**.

What is point **X** called?

[1 mark]

Tick (✓) **one** box.

Centre of balance ☐

Centre of mass ☐

Centre of weight ☐

0 7 . 3 How does **Figure 19** show that the weight of the device is balanced by the weight of the rice and basket?

[1 mark]

0 7 . 4 The basket can hang from different points on the device.

Where should the basket hang to measure the largest quantity of rice?

[1 mark]

Tick (✓) **one** box.

P ☐ **Q** ☐ **R** ☐ **S** ☐

0 7 . 5 Write down the equation which links distance, force and moment of a force.

[1 mark]

0 7 . 6 In **Figure 19**, the weight of the device causes an anticlockwise moment of 0.15 Nm about the pivot.

The weight of the rice and basket acts 0.06 m from the pivot.

Calculate the weight of the rice and basket.

[3 marks]

Weight of rice and basket = _____ N

0 7 . 7 Write down the equation which links gravitational field strength, mass and weight.

[1 mark]

_____

0 7 . 8 The basket has a mass of 0.04 kg

gravitational field strength = 9.8 N/kg

Calculate the mass of rice in the basket.

[3 marks]

_____

_____

_____

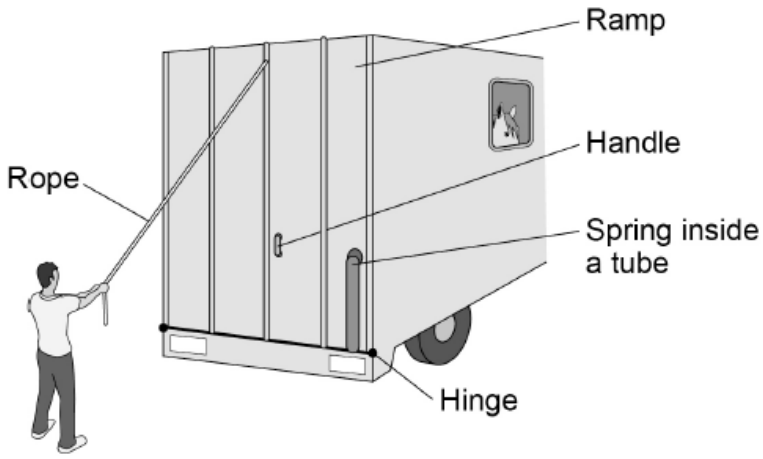
_____

Mass = _____ kg

2. June/2019/Paper_2H/No.10

1 0 **Figure 19** shows the back of a lorry. The lorry is used to carry horses.

Figure 19



The ramp is lowered by pulling on the rope or by pulling on the handle.

The hinge acts as a pivot.

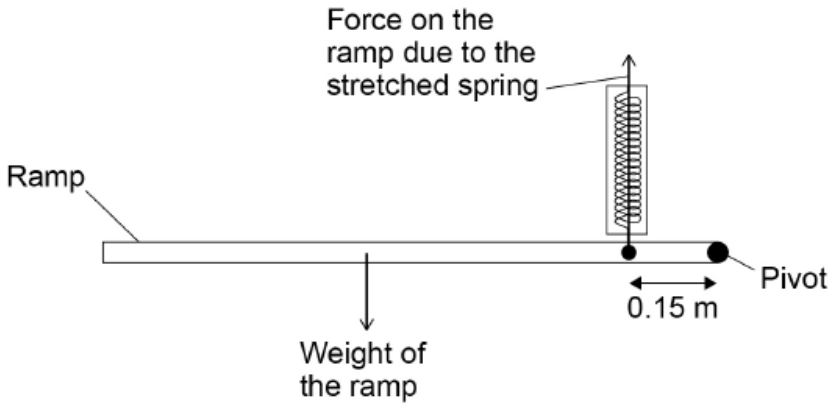
1 0 . 1 Explain why it is easier to lower the ramp by pulling on the rope rather than pulling on the handle.

[2 marks]

When the ramp is lowered, work is done to stretch a spring on the side of the ramp. Elastic potential energy is stored in the stretched spring.

Figure 20 shows the ramp part way down in a balanced horizontal position.

Figure 20



1 0 . 2 With the ramp horizontal:

the moment caused by the weight of the ramp = 924 Nm

the spring is stretched by 0.250 m

Calculate the elastic potential energy stored in the stretched spring.

Use data from **Figure 20**.

[6 marks]

Elastic potential energy = _____ J