13 In which example is it **not** possible for the underlined body to be in equilibrium?

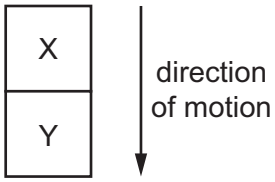
A an <u>aeroplane</u> climbs at a steady rate

B an aeroplane tows a <u>glider</u> at a constant altitude

C a <u>speedboat</u> changes direction at a constant speed

D two tug boats tow a <u>ship</u> into harbour

14 Two blocks X and Y are falling through a vacuum in a uniform gravitational field, as shown.



Block X has weight 2*w*.

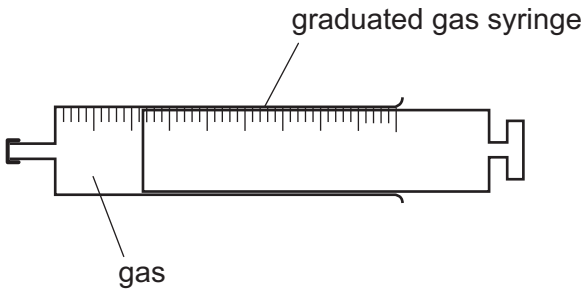
Block Y has weight *w*.

The blocks do not move apart.

Which value best represents the force exerted by block X on block Y?

A 0 **B** *w* **C** 1.5*w* **D** 2*w*

15 A gas is contained inside a sealed syringe, as shown.



The volume of gas at room temperature is 2.0 cm^3.

Atmospheric pressure is 101 kPa.

What is the work done by the gas when it is heated and expands to a volume of 6.0 cm^3?

A 404 μJ **B** 404 mJ **C** 404 J **D** 404 kJ