5 Diagram 1 shows a wooden plank balanced horizontally on two supports, A and B.

A block is suspended from the plank between the supports by a cable of negligible weight.

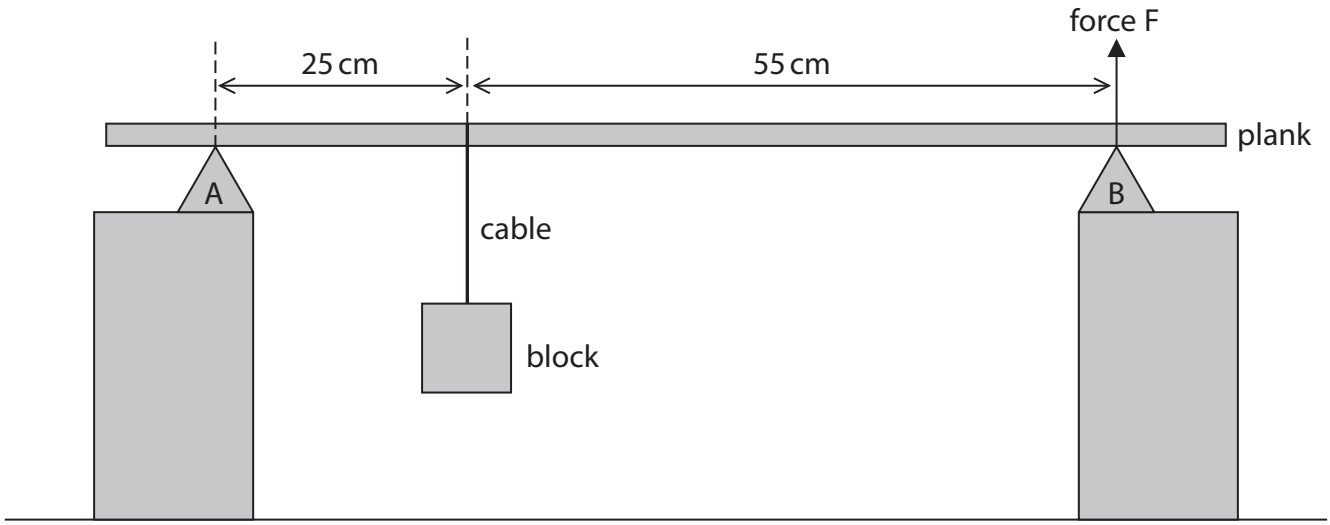

Diagram 1

(a) The weight of the block is 260 N.

(i) State the formula linking moment, force and perpendicular distance from the pivot.

(1)

(ii) By taking moments about support A, calculate force F.

Assume the weight of the plank is negligible.

(3)

force F = ... N

(iii) Explain what will happen to the magnitude of force F if the block is moved towards support B.

(3)

(b) Diagram 2 shows the block and the cable connecting the block to the plank.

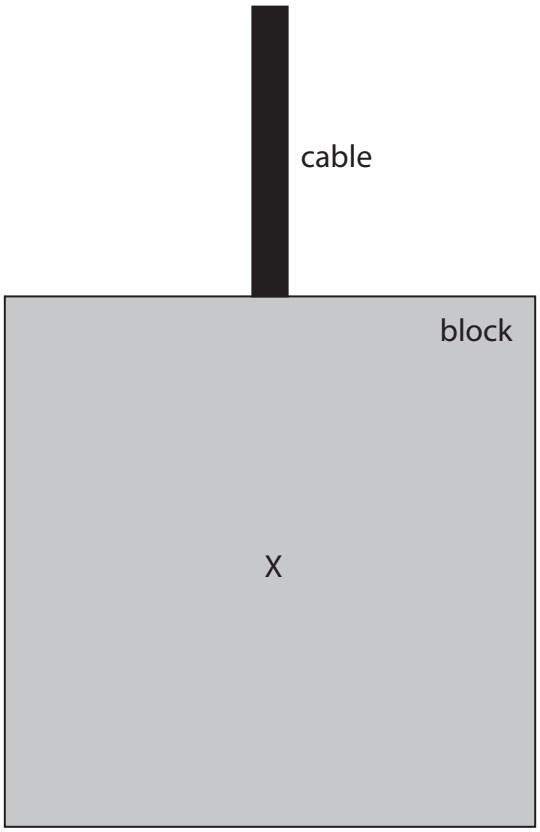

Diagram 2

(i) The centre of gravity of the block is located at point X.

Draw an arrow on diagram 2 to show the weight of the block.

(2)

(ii) The block also experiences a force due to the tension in the cable.

Explain why the block remains stationary when it is supported by this tension force.

(2)

(iii) Explain why the forces acting on the block are **not** an example of Newton's third law of motion.

(2)

(Total for Question 5 = 13 marks)