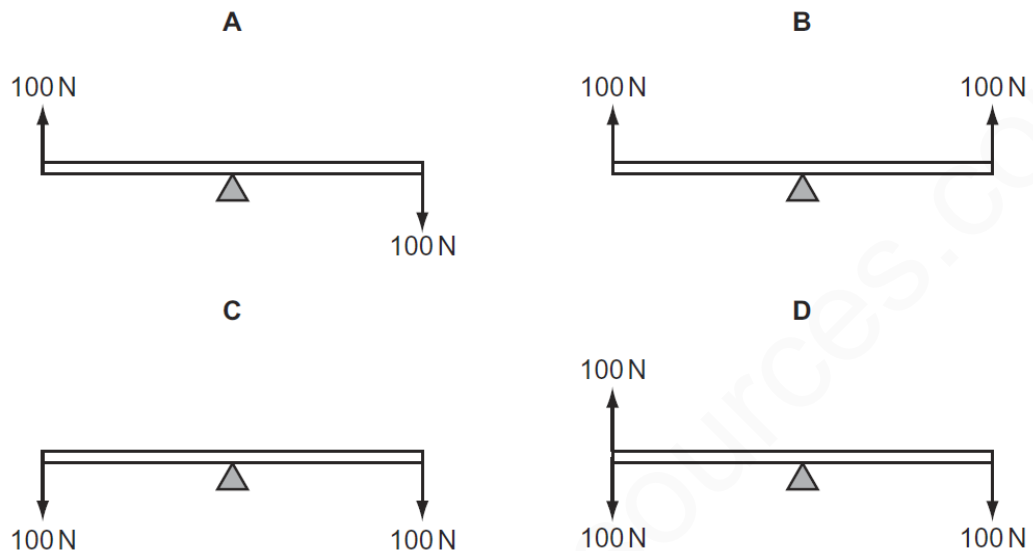# MOMENT OF A FORCE-EQUILIBRIUM-SET-2

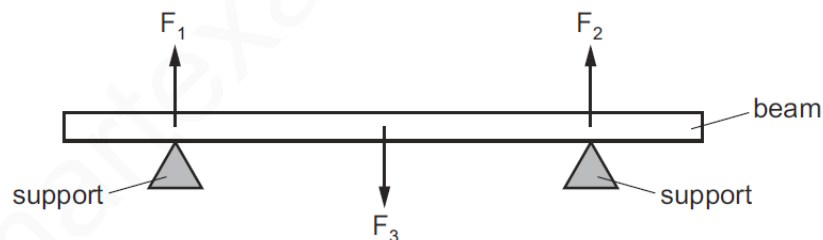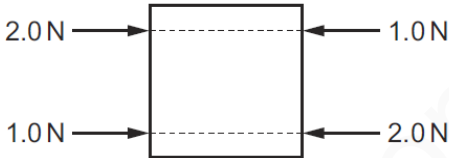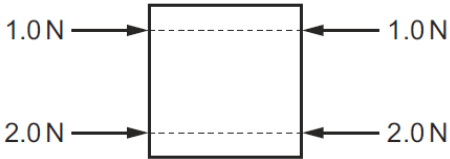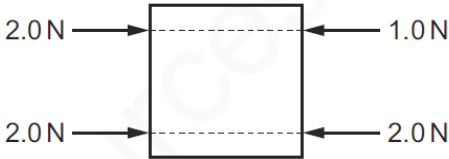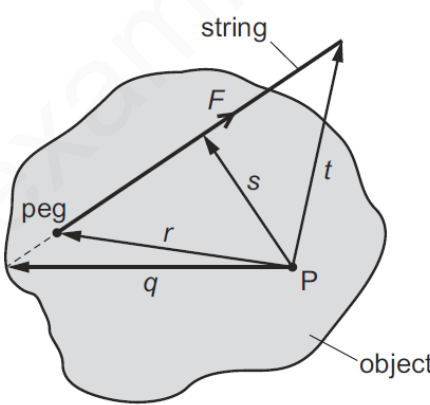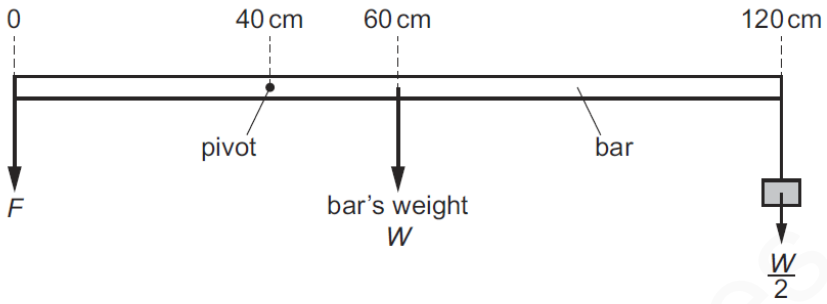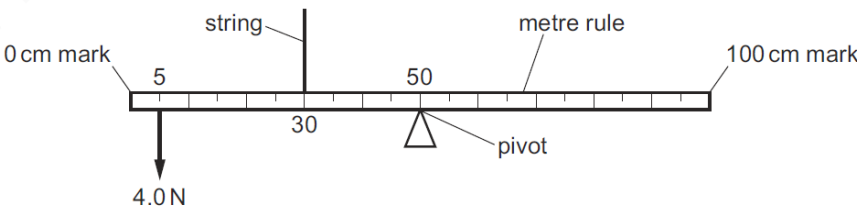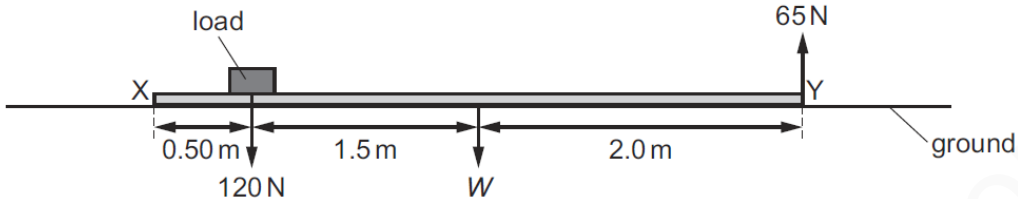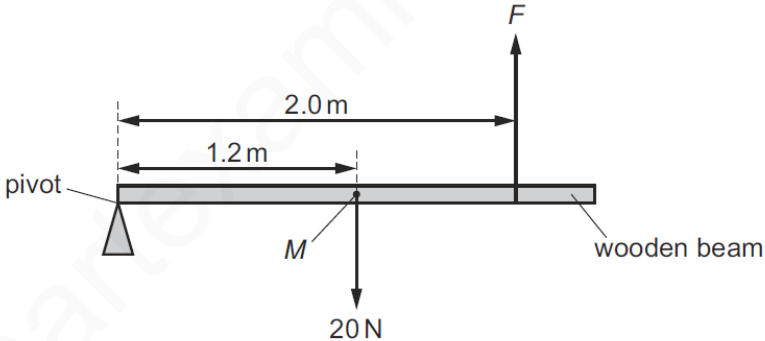|	
1	A uniform rod rests on a pivot at its centre. The rod is not attached to the pivot. Forces are then applied to the rod in four different ways, as shown. The weight of the rod can be ignored. Which diagram shows the rod in equilibrium?
MS-1	C
2	A heavy beam rests on two supports. The diagram shows the only three forces F_1, F_2 and F_3 acting on the beam. The beam is in equilibrium. Which statement is correct? A All the forces are equal in size. B The resultant force on the beam is in the opposite direction to the resultant turning effect. C The resultant force on the beam is zero and the resultant turning effect on the beam is zero. D The total upward force is twice the total downward force.
MS-2	C
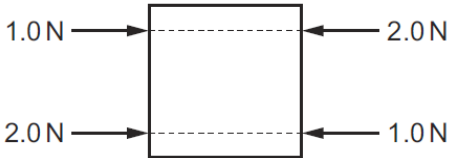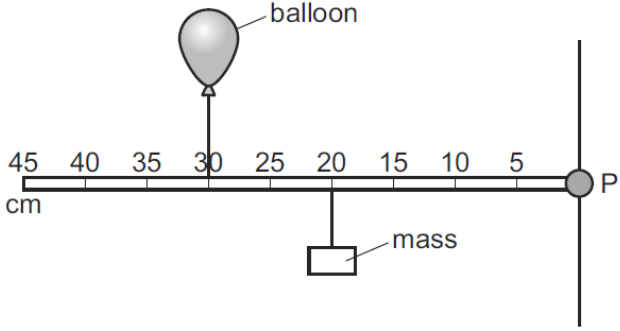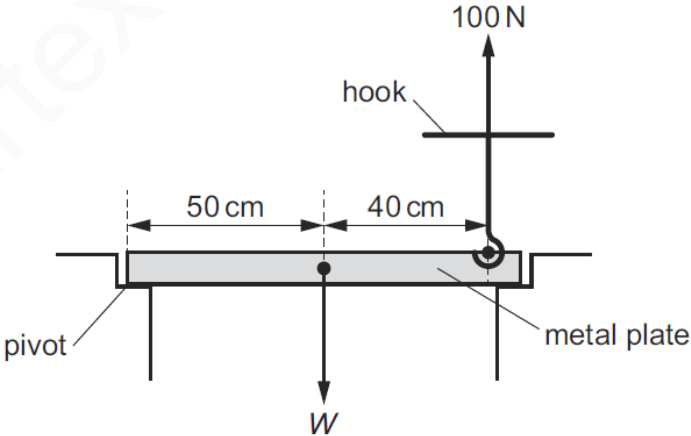
3	Each diagram shows a metal plate with four parallel forces acting on it. These are the only forces acting on the plates.
	In which diagram is the plate in equilibrium?

A

1.0 N → ⊣ ← 2.0 N

2.0 N → ⊣ ← 1.0 N

B

2.0 N → ⊢ ← 1.0 N

1.0 N → ⊢ ← 2.0 N

C

1.0 N → ⊣ ← 1.0 N

2.0 N → ⊣ ← 2.0 N

D

2.0 N → ⊢ ← 1.0 N

2.0 N → ⊢ ← 2.0 N

MS-3	C

4	An object is pivoted at point P. A student ties a length of string to a peg on the object. He pulls the string with a force *F*.

What is the moment of the force *F* about the point P?

A $F \times q$ **B** $F \times r$ **C** $F \times s$ **D** $F \times t$

MS-4	C

5	The diagram shows a uniform bar of length 120 cm and weight W. The bar is pivoted at a point 40 cm from the left end of the bar. A load of $\dfrac{W}{2}$ is suspended from the right-hand end of the bar. A downward force F is applied to the left-hand end of the bar to keep it in equilibrium. What is the magnitude of force F? **A** $\dfrac{W}{2}$ **B** W **C** $\dfrac{3W}{2}$ **D** $2W$
MS-5	C
6	Which statement gives a complete description of any object that is in equilibrium? **A** There are no forces acting. **B** There is no resultant force. **C** There is no resultant force and no resultant turning effect. **D** There is no resultant turning effect.
MS-6	C
7	The diagram shows a uniform metre rule. The rule is pivoted at its mid-point. A downward force of 4.0 N acts on the rule at the 5 cm mark. The rule is held by a string at the 30 cm mark. The rule is in equilibrium. What is the upward force that the string exerts on the rule? **A** 0.67 N **B** 4.0 N **C** 6.0 N **D** 9.0 N
MS-7	D

8	A long plank XY lies on the ground. A load of 120 N is placed on it, at a distance of 0.50 m from end X, as shown. End Y is lifted off the ground. The upward force needed to do this is 65 N. In the diagram, W is the weight of the plank, acting at its mid-point. What is the value of W? **A** 35 N **B** 47 N **C** 100 N **D** 133 N
MS-8	C
9	The diagram shows a wooden beam of weight 20 N. The centre of mass of the beam is labelled M. There is a pivot at one end of the beam. The beam is kept horizontal by an upward force, F. What is the magnitude of F? **A** 12 N **B** 20 N **C** 30 N **D** 33 N
MS-9	A

10	A balloon and a mass are attached to a rod that is pivoted at P.
	The balloon is filled with helium, a gas less dense than air, so that it applies an upward force on the rod.
	The rod is horizontal and stationary.
	Which action causes the rod to rotate clockwise?
	A Move both the balloon and mass 10 cm to the left.
	B Move both the balloon and mass 10 cm to the right.
	C Move both the balloon and mass to the 25 cm mark.
	D Move the balloon to the 20 cm mark and the mass to the 30 cm mark.
MS-10	B
11	A hook is used to lift a metal plate, as shown.
	An upward force of 100 N is needed to lift the metal plate about the pivot, as shown.
	What is the weight W of the metal plate?
MS-11	C