IGCSE PAST PAPER
Physics extended 0625
Multiple choice questions

Turning effect of force and Equilibrium

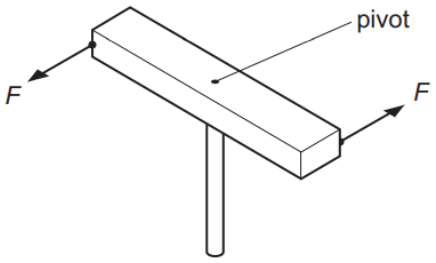
WRITTEN BY RISHI

1

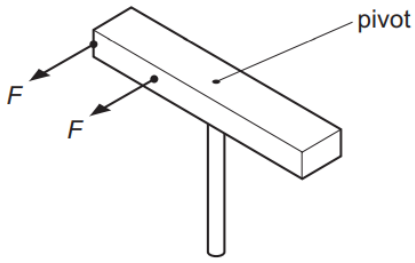
A wooden bar is pivoted at its centre so that it can rotate freely. Two equal forces *F* are applied to the bar.

In which diagram is the turning effect greatest?

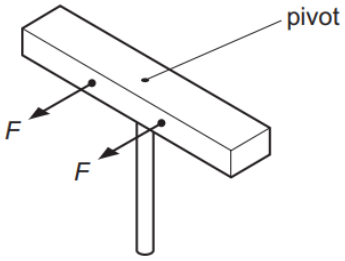
A



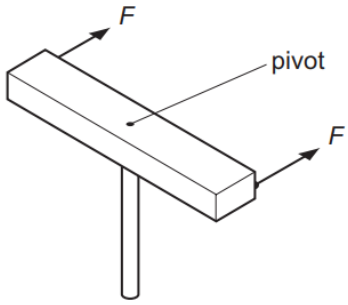
B



C



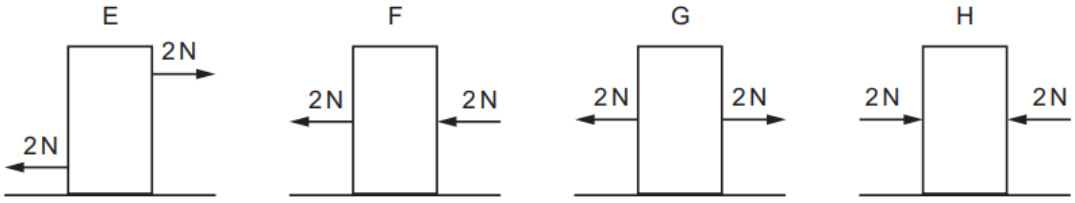
D



0625/11/M/J/19

2

The diagrams show a block of wood on a frictionless surface. In each diagram, the block has two forces acting on its sides.



Which diagrams show the block in equilibrium?

A E, G and H only

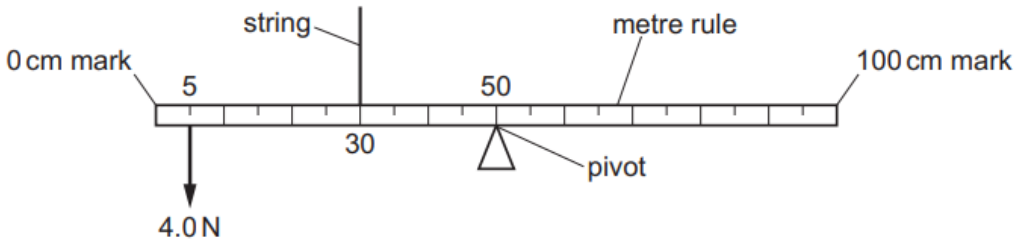
B E and F only

C G and H only

D E, F, G and H

0625/12/O/N/19

3 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.

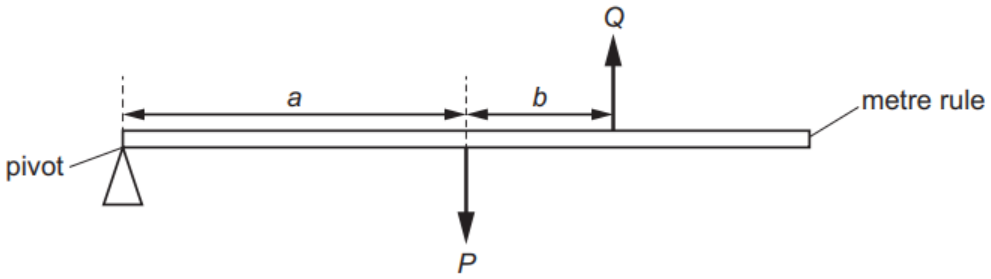


What is the upward force that the string exerts on the rule?

A 0.67 N **B** 4.0 N **C** 6.0 N **D** 9.0 N

0625/13/O/N/19

4 Two forces *P* and *Q* act on a metre rule as shown. The metre rule is pivoted at one end. The rule starts to rotate in a clockwise direction.



Which statement is correct?

A *P* equals *Q*

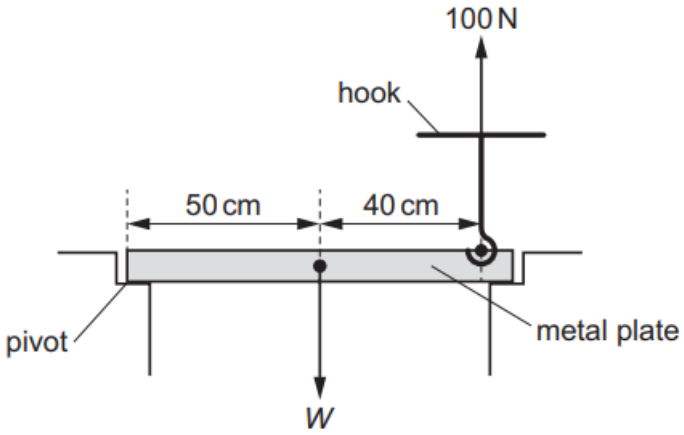
B *P* is less than *Q*

C $(P \times a)$ is equal to $(Q \times b)$

D $(P \times a)$ is greater than $(Q \times (a + b))$

0625/21/O/N/19

5 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?

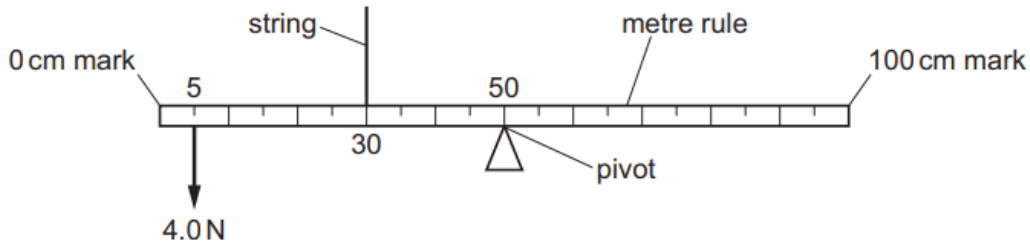
A 80 N **B** 100 N **C** 180 N **D** 225 N

6 What is the unit of the moment of a force?

A N **B** N/kg **C** N/m **D** Nm

0625/22/O/N/19

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.

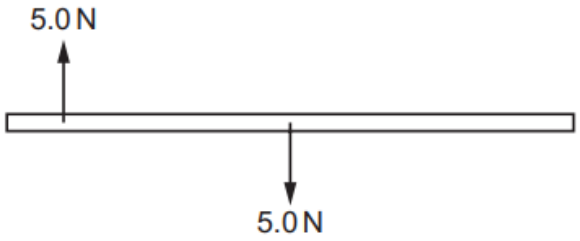


What is the upward force that the string exerts on the rule?

A 0.67 N **B** 4.0 N **C** 6.0 N **D** 9.0 N

0625/23/O/N/19

8 The diagram shows a wooden beam with two forces acting on it.



Which way will the beam move?

A accelerate up the page

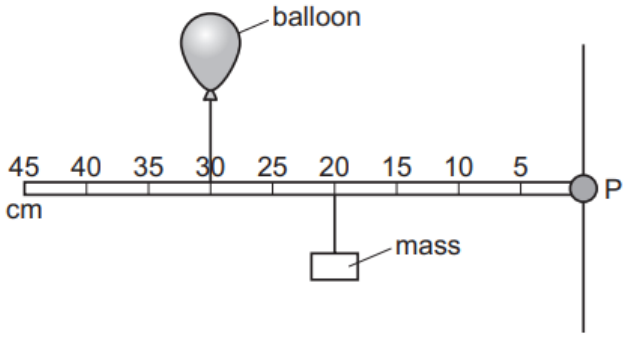
B accelerate down the page

C turn anticlockwise

D turn clockwise

0625/12/F/M/19

9 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.

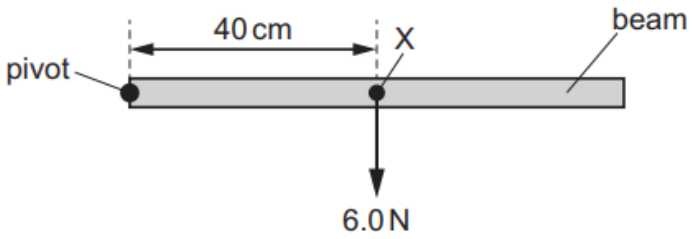
B Move both the balloon and mass 10 cm to the right.

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.

0625/21/M/J/18

10 A beam is pivoted at one end, as shown.



The beam weighs 6.0 N and its weight acts at a point X, 40 cm from the pivot.

A force of 4.0 N is applied to the beam causing it to balance horizontally.

In which direction and where is the 4.0 N force applied?

A downwards at 20 cm to the left of X

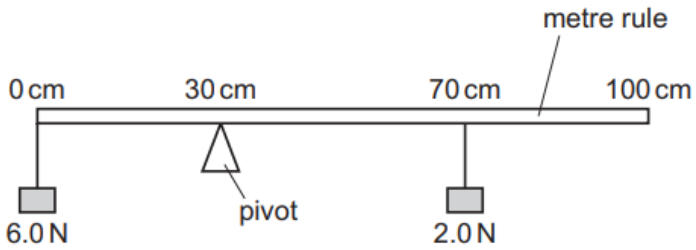
B downwards at 20 cm to the right of X

C upwards at 20 cm to the left of X

D upwards at 20 cm to the right of X

0625/22/M/J/18

11 The diagram shows a uniform metre rule pivoted at the 30 cm mark.



The rule balances when a weight of 6.0 N is hanging from the zero mark and a weight of 2.0 N is hanging from the 70 cm mark.

What is the weight of the rule?

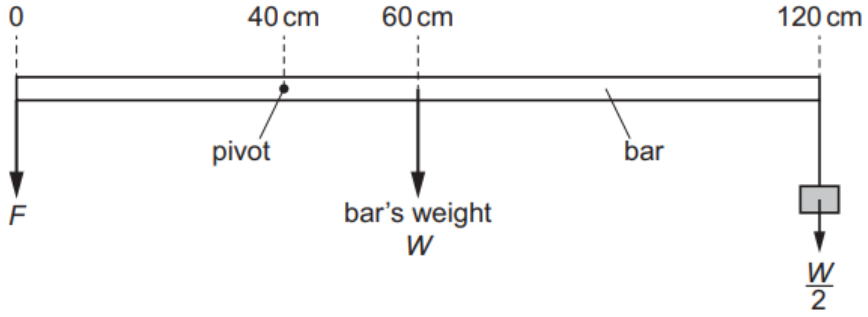
A 2.0 N **B** 5.0 N **C** 6.0 N **D** 13.0 N

0625/23/M/J/18

12 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 $\frac{W}{2}$ 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.



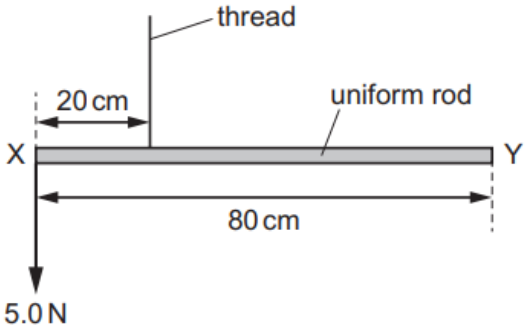
What is the magnitude of force F?

A $\frac{W}{2}$ **B** W **C** $\frac{3W}{2}$ **D** $2W$

0625/23/O/N/18

13 A uniform rod XY of weight 2.0 N has a length of 80 cm.

The rod is suspended by a thread 20 cm from end X. A weight of 5.0 N is suspended from end X.



A student hangs a 6.0 N weight on the rod so that it is in equilibrium.

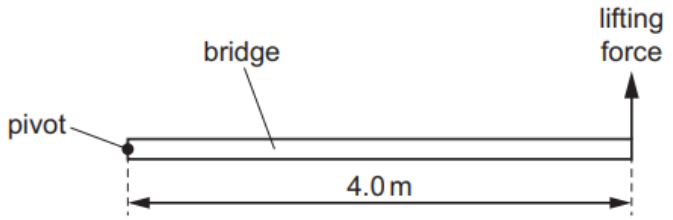
What is the distance of the 6.0 N weight from end X?

A 6 cm **B** 10 cm **C** 26 cm **D** 30 cm

0625/22/F/M/18

14 The diagram shows a uniform bridge, 4.0 m long and weighing 10 000 N.

The bridge is pivoted at one end. A force at the other end gradually increases until the bridge begins to lift.



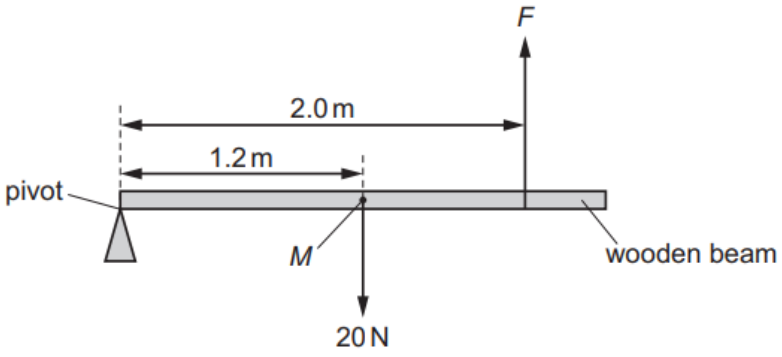
What is the lifting force as the bridge starts to move upwards?

A 2500 N **B** 5000 N **C** 10 000 N **D** 20 000 N

0625/21/M/J/17

15 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

0625/22/M/J/17