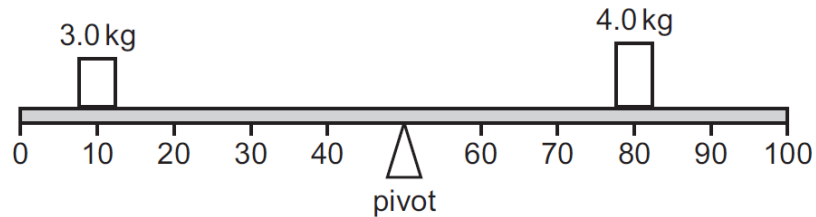


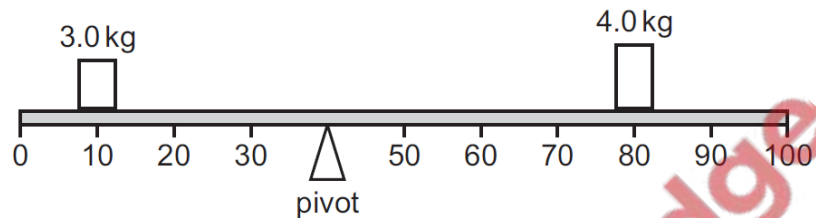
Turning Effect of Force – 2021 IGCSE 0625

1. **Nov/2021/QPaper_11/No.5**

A 100 cm beam balances as shown.



The pivot is moved 10 cm to the left.



What will be the effect of this change on the anticlockwise and clockwise moments about the pivot?

	anticlockwise moment	clockwise moment
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

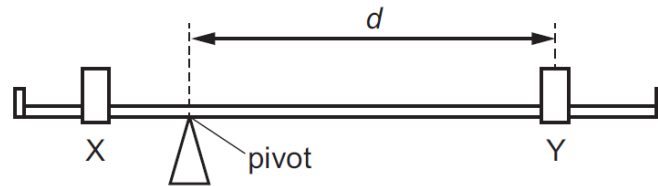
2. **Nov/2021/QPaper_11,12 &13/No.6**

A spacecraft is travelling in space with no resultant force and no resultant moment acting on it.

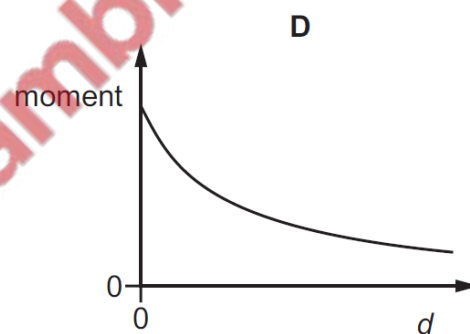
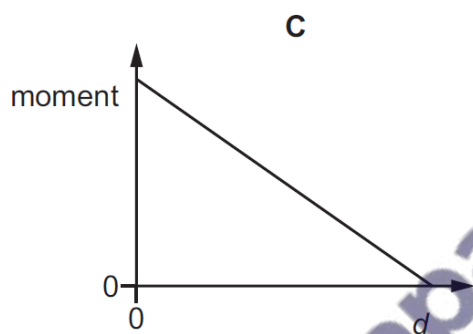
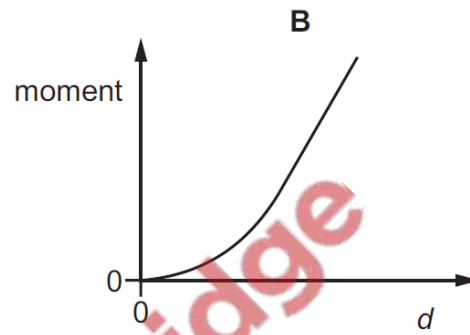
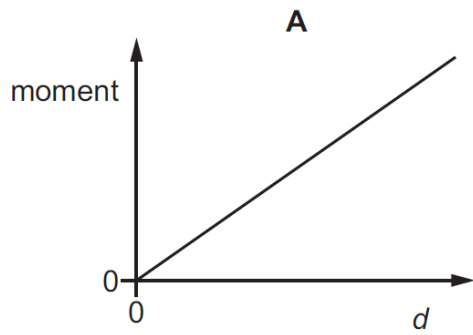
Which statement about the spacecraft is correct?

- A** Its direction is changing.
- B** It is in equilibrium.
- C** Its speed is decreasing.
- D** Its speed is increasing.

The diagram shows a simple balance. The two loads, X and Y, can be moved along the beam.

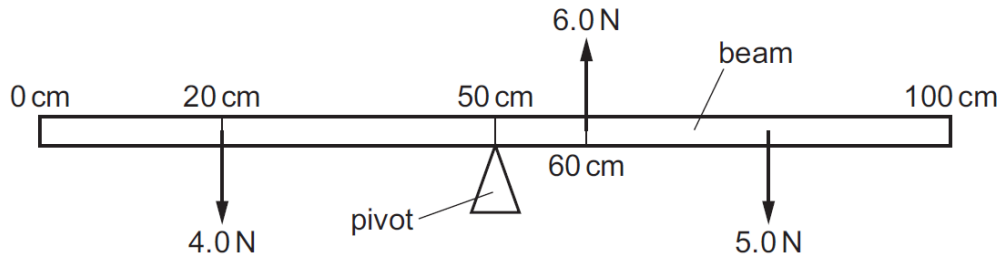


Which graph shows how the moment produced by load Y varies as the perpendicular distance d from the pivot changes?



3. Nov/2021/QPaper_13/No.5

The diagram shows a uniform beam 100 cm long. The diagram is not drawn to scale.



The beam remains balanced on a pivot at the 50 cm mark under the action of the forces of 4.0 N, 5.0 N and 6.0 N.

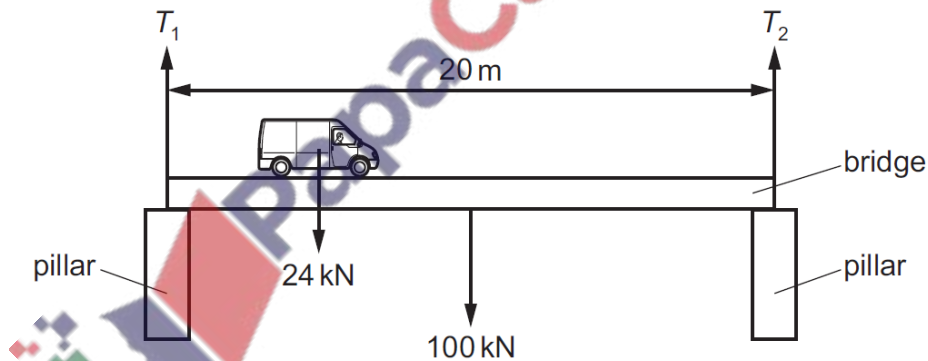
The 4.0 N force is at the 20 cm mark and the 6.0 N force is at the 60 cm mark.

At which point on the beam is the 5.0 N force acting?

- A at the 62 cm mark
- B at the 74 cm mark
- C at the 86 cm mark
- D at the 88 cm mark

4. Nov/2021/QPaper_21/No.5

A 20 m long, uniform bridge of weight 100 kN is supported at each end by pillars, as shown.



The pillars exert forces T_1 and T_2 on the ends of the bridge.

What are the values of T_1 and T_2 when a van of weight 24 kN is on the bridge, 5 m from the left-hand pillar?

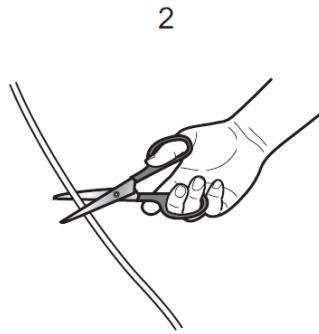
	T_1 /kN	T_2 /kN
A	56	68
B	62	62
C	68	56
D	74	50

5. Nov/2021/QPaper_22/No.5

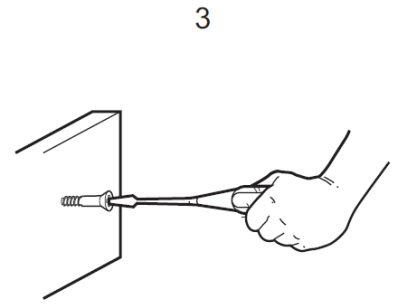
Three simple machines are shown.



moving soil with a wheelbarrow



cutting string with scissors



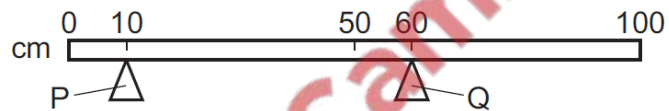
screwing a screw with a screwdriver

Which machines are an application of the moment of a force?

- A 1, 2 and 3 B 1 and 2 only C 1 and 3 only D 2 and 3 only

6. Nov/2021/QPaper_23/No.5

The diagram shows a uniform bar resting on two supports, P and Q.



The weight of the bar is 4.0 N.

What is the force exerted on the bar by support P?

- A 0.80 N B 2.0 N C 3.2 N D 4.0 N

- (b) Another card is pivoted at point P. The weight of the card is 1.4 N and acts through a point 20 cm from P.

Fig. 3.2 shows the arrangement.

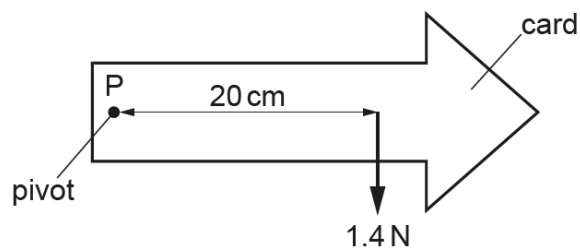
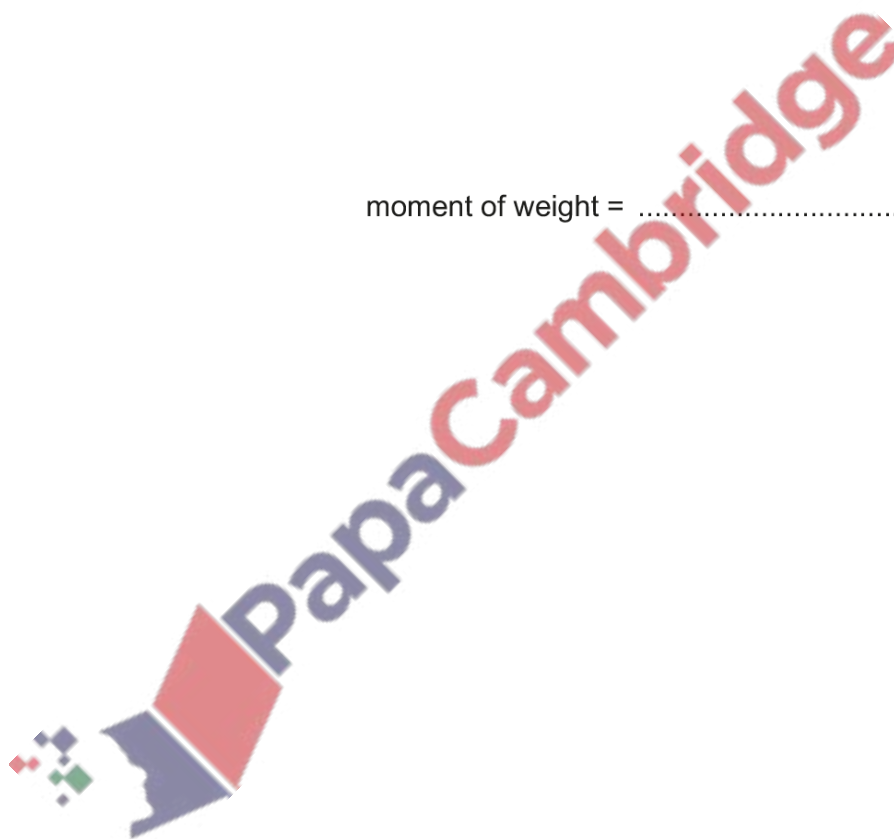


Fig. 3.2

Calculate the moment of the weight of the card about point P.

moment of weight = N cm [3]

[Total: 6]



- (a) A student determines the centre of mass of a piece of wood. The wood is an irregular shape of constant thickness.

He suspends the piece of wood from a nail as shown in Fig. 5.1. The wood is able to swing freely.

The student suspends a weight on a thin string from the nail.

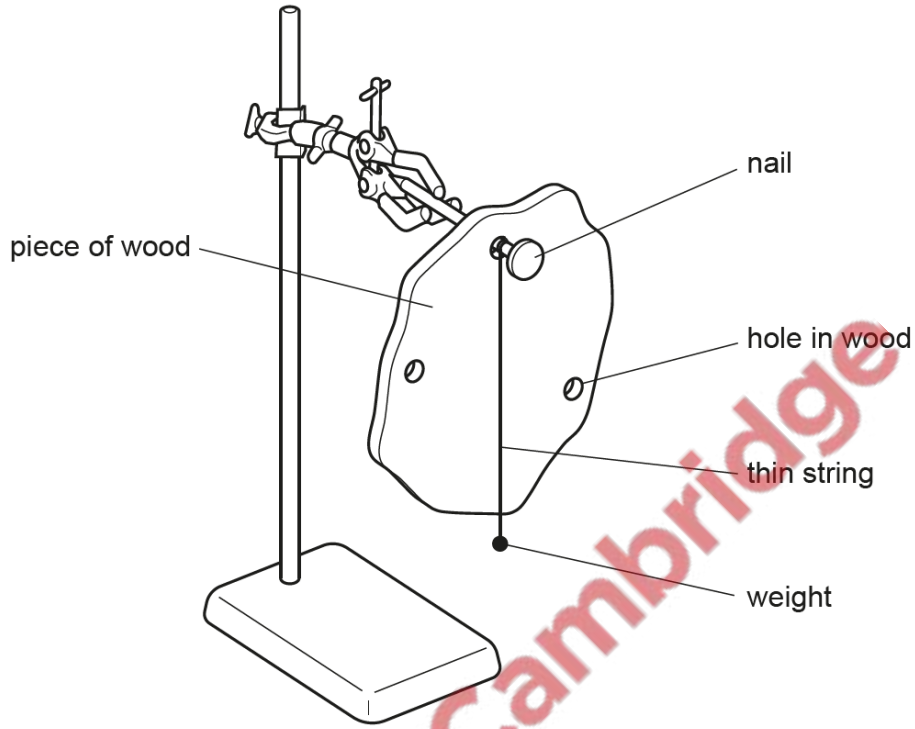


Fig. 5.1

Describe how to determine the centre of mass of the piece of wood in Fig. 5.1. You may draw a diagram to help your answer.

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..... [3]

(b) Fig. 5.2 shows a flat, symmetrical object. Indicate its centre of mass by drawing X in the correct position.



Fig. 5.2

[1]

(c) Fig. 5.3 shows a side view of a drinking-glass in two different positions, A and B.

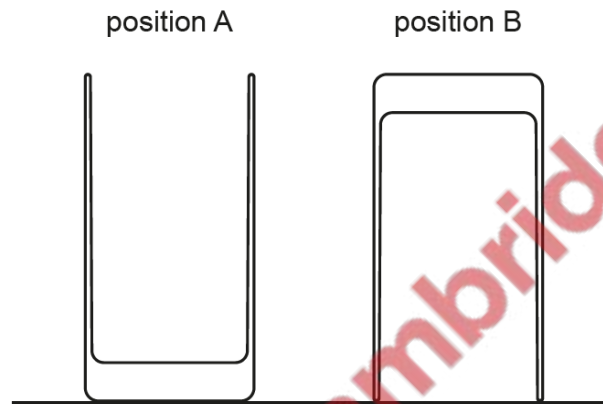


Fig. 5.3

State which position, A or B, is more stable. Explain your answer.

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.....
.....

[2]

[Total: 6]