



QUESTION WORKBOOK

Moments

Mechanics · Year 12–13

6 questions · 20 marks

PRINT EDITION

SECTION A · Warm-up

- A1** Define the moment of a force about a point, state its units, and explain the role of sense. [2]

- A2** An adult of weight 300 N sits 2 m from a seesaw's pivot. How far from the pivot must a child of weight 200 N sit on the other side to balance it? [3]

SECTION B · Standard

- B1** A uniform 6 m beam of weight 90 N rests on a support at its centre. A person of weight 450 N sits 1 m from the centre. Where must a 300 N weight be placed on the other side to keep the beam horizontal? [4]

- B2** A uniform 8 m beam of weight 200 N rests horizontally on supports at 1 m and 6 m from one end. Find the reaction at each support. [5]

- B3** A heavy box is slid along the beam towards the far end, beyond the 6 m support. Describe what happens to the two reactions, and state the condition at the instant the beam starts to tip. [3]

SECTION C · Stretch

- C1** A non-uniform 10 m beam of weight 500 N rests on supports at its two ends, which carry reactions of 300 N and 200 N. Find how far the centre of mass lies from the heavier-loaded end. [3]