InkMaths

QUESTION WORKBOOK

Projectiles

Mechanics · Year 12–13

6 questions · 22 marks

PRINT EDITION

inkphysics.co.uk/maths

SECTION A · Warm-up

A1 State the two facts about a projectile's velocity components that make the standard model work. [2]

A2 A ball is projected at 20 m s^{-1} at 40° above the horizontal. Find the initial horizontal and vertical components of its velocity. [2]

SECTION B · Standard

B1 A stone is thrown horizontally at 12 m s^{-1} from a cliff 44.1 m high. Taking g = 9.8 m s^{-2}, find the time to land and the distance from the cliff base. [3]

B2 A ball is struck at 24.5 m s^{-1} at 30° above the horizontal from level ground. Find the time of flight and the range. [4]

B3 A ball is struck at 24.5 m s^{-1} at 30° above the horizontal from level ground. Find its maximum height above the ground. [3]

SECTION C · Stretch

C1 A ball is struck at 24.5 m s^{-1} at 30° above the horizontal from a point 5 m above level ground. Find the time until it lands, the horizontal distance travelled, and its speed on landing. [8]