InkMaths

QUESTION WORKBOOK

Straight lines

Coordinate geometry · Year 12–13

7 questions · 25 marks

PRINT EDITION

inkphysics.co.uk/maths

SECTION A · Warm-up

A1 Find the equation of the line through (1, 3) and (4, -3), giving your answer in the form ax + by + c = 0 with integer coefficients. [3]

A2 Write down the gradient of any line perpendicular to a line of gradient 2/3, and of any line perpendicular to a line of gradient -4. [2]

SECTION B · Standard

B1 Find the equation of the perpendicular bisector of the segment joining (1, 2) and (7, 10). [4]

B2 Find the equation of the line through (4, -1) perpendicular to the line $2x + 3y - 6 = 0$. [3]

B3 The height in centimetres of a burning candle after t hours is modelled by $H = 30 - 2.5t$. Interpret the numbers 30 and 2.5, find when the height is 10 cm, and state when the model must stop applying. [5]

SECTION C · Stretch

C1 The line l_1 has equation $3x + 4y - 12 = 0$. The line l_2 passes through the origin and is perpendicular to l_1. Find the coordinates of the point where the two lines meet, and hence find the shortest distance from the origin to l_1. [6]

C2 A vertical line and a horizontal line are perpendicular, yet the rule $m_1m_2 = -1$ cannot be applied to them. Explain why not. [2]