

## Harder Coordinate Geometry

<b>(a)</b>	<b>(b)</b>	<b>(c)</b>
<p>Find an equation of the line that passes through the points <math>(4, 2)</math> and <math>(-8, 11)</math>. Give your answer in the form <math>ax + by = c</math> where <math>a</math>, <math>b</math> and <math>c</math> are integers.</p> <p style="text-align: center;"><math>3x + 4y = 20</math></p>	<p>The straight line <math>L</math> has equation <math>5x - 3y = 18</math>. Find an equation of the line that is parallel to <math>L</math> and crosses the <math>x</math>-axis at <math>(4, 0)</math>.</p> <p style="text-align: center;"><math>y = \frac{5}{3}x - \frac{20}{3}</math></p>	<p>The straight line <math>L_1</math> has equation <math>x + 2y - 7 = 0</math>. The straight line <math>L_2</math> passes through the points <math>(-2, -6)</math> and <math>(5, 8)</math>. Show that the lines <math>L_1</math> and <math>L_2</math> are perpendicular to each other.</p> <p style="text-align: center;"><math>m \text{ for } L_1 = -\frac{1}{2} \quad m \text{ for } L_2 = 2</math></p> <p style="text-align: center;"><math>-\frac{1}{2} \times 2 = -1</math>, therefore perpendicular</p>
<b>(d)</b>	<b>(e)</b>	<b>(f)</b>
<p>The straight line <math>L</math> passes through the points <math>(1, -1)</math> and <math>(5, 9)</math>. Find an equation of the line that is parallel to <math>L</math> and passes through the point <math>(2, 4)</math>. Give your answer in the form <math>ax + by + c = 0</math> where <math>a</math>, <math>b</math> and <math>c</math> are integers.</p> <p style="text-align: center;"><math>5x - 2y - 2 = 0</math></p>	<p>The straight line <math>L_1</math> has equation <math>2x - 3y = 4</math>. The straight line <math>L_2</math> is perpendicular to <math>L_1</math> and passes through the point <math>(1, 2)</math>. Find the equation of the line <math>L_2</math> and the coordinates of the point where it crosses the <math>x</math>-axis.</p> <p style="text-align: center;"><math>y = -\frac{3}{2}x + \frac{7}{2}</math></p> <p style="text-align: center;"><math>\left(\frac{7}{3}, 0\right)</math></p>	<p><math>ABC</math> is a triangle, where <math>\widehat{BAC} = 90^\circ</math>. The point <math>C</math> has coordinates <math>(9, 5)</math> and points <math>A</math> and <math>B</math> lie on the line with equation <math>2x + 3y = 7</math>. Find the equation of the line that passes through <math>A</math> and <math>C</math>, giving your answer in the form <math>ax + by = c</math> where <math>a</math>, <math>b</math> and <math>c</math> are integers.</p> <p style="text-align: center;"><math>3x - 2y = 17</math></p>