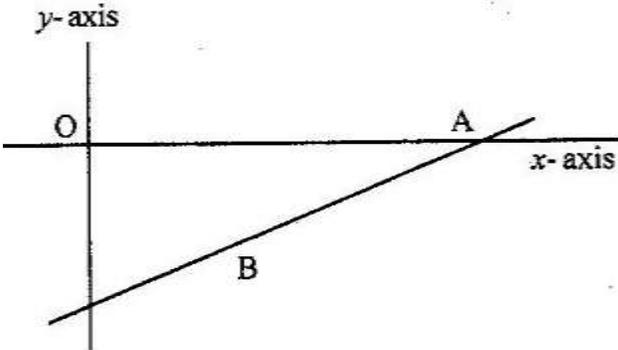


# EQUATIONS OF STRAIGHT LINES

*KCSE 1989 – 2012 Form 2 Mathematics*

1.	<p><b>1989 Q23 P1</b>            A rhombus PQRS is such that Q lies on the x axis. The coordinates of vertices P and R are (2, 4) and (6, 2) respectively.            Determine</p> <p style="margin-left: 40px;">(i) The coordinates of Q <span style="float: right;">(4marks)</span>            (ii) The coordinates of S <span style="float: right;">(4marks)</span></p>
2	<p><b>1992 Q9 P2</b>            A perpendicular is drawn from a point (3, 5) to the line <math>2y + x = 3</math>. Find the equation of the perpendicular. <span style="float: right;">(3marks)</span></p>
3	<p><b>1995 Q 5 P1</b>            A perpendicular to the line <math>y - 4x + 3 = 0</math> passes through the point (-8, 5) Determine its equation  <span style="float: right;">(2marks)</span></p>
4	<p><b>1997 Q 24 P1</b></p> <p>The coordinates of the points P and Q are (1, -2) and (4, 10) respectively. A point T divides the line PQ in the ratio 2: 1</p> <p>(a) Determine the coordinates of T</p> <p>(b) (i) Find the gradient of a line perpendicular to PQ            (ii) Hence determine the equation of the line perpendicular PQ and passing through T            (iii) If the line meets the y- axis at R, calculate the distance TR, to three significant figures</p>
5	<p><b>1999 Q 7 P2</b>            The equation of a line is <math>-\frac{3}{5}x + 3y = 6</math>            Find the:</p> <p>(a) Gradient of the line            (b) Equation of a line passing through point (1,2) and perpendicular to the given line</p>
6	<p><b>2000 Q 1 P2</b>            Find equation of the perpendicular to the line <math>x + 2y - 4</math> and passes through point (2,1)</p>

7	<p><b>2001 Q 5 P1</b></p> <p>A line <math>L_1</math> passes through point (1,2) and has a gradient of 5. Another line <math>L_2</math>, is perpendicular to <math>L_1</math> and meets it at a point where <math>x = 4</math>. Find the equation for <math>L_2</math> in the form of <math>y = mx + c</math></p>
8	<p><b>2003 Q 4 P2</b></p> <p>A straight line passes through points A(-3,8) and B(3, -4). Find the equation of the straight line through (3,4) and parallel to AB. Give the answer in the form <math>y = mx + c</math>, and <math>c</math> are constants. (3mks)</p>
9	<p><b>2004 Q 16 P1</b></p> <p>P(5,-4) and Q (-1,-2) are points on a straight line. Find the equation of the perpendicular bisector of PQ: giving the answer in the form <math>y = mx + c</math>. (4 mks)</p>
10	<p><b>2005 Q 11 P1</b></p> <p>On the diagram below, the line whose equation is <math>7y - 3x + 30 = 0</math> passes through the points A and B. Point A on the x-axis while point B is equidistant from x- and y- axes.</p>  <p>Calculate the co-ordinates of the points A and B (3mks)</p>
11	<p><b>2005 Q 12 P2</b></p> <p>Two lines <math>L_1</math> and <math>L_2</math> intersect at a point P. <math>L_1</math> passes through the points (-4,0) and (0,6). Given that <math>L_2</math> has the equation: <math>y = 2x - 2</math>, find, by calculation, the coordinates of P. (3 marks)</p>
12	<p><b>2006 Q 9 P1</b></p> <p>A line with gradient of -3 passes through the points (3, k) and (k,8). Find the value of k and hence express the equation of the line in the form of <math>ax + by = c</math>, where a, b, and c are constants.</p>
13	<p><b>2007 Q 7 P2</b></p> <p>Find the equation of a straight line which is equidistant from the points (2,3) and (6, 1), expressing it in the form <math>ax + by = c</math> where a, b and c are constants</p>

14	<p><b>2008 Q 11 P1</b></p> <p>Three vertices of a rhombus ABCD are; A(-4,-3), B(1,-1) and C(3,4) are constants.</p> <p>a) Draw the rhombus on the grid provided below. (2mks)</p> <p>b) Find the equation of the line AD in the form <math>y = mx + c</math>, where <math>m</math> and <math>c</math> are constants. (2mks)</p>
15	<p><b>2008 Q 15 P1</b></p> <p>The equation of line <math>L_1</math> is <math>2y - 5x - 8 = 0</math> and line <math>L_2</math> passes through the points <math>(-5, 0)</math> and <math>(5, -4)</math>. Without drawing the lines <math>L_1</math> and <math>L_2</math> show that the two lines are perpendicular to each other. (3mks)</p>
16	<p><b>2009 Q 9 P1</b></p> <p>A line which joins the points A <math>(3, k)</math> and B <math>(-2, 5)</math> is parallel to another line whose equation is <math>5y + 2x = 10</math>. Find the value of <math>k</math>. (3 marks)</p>
17	<p><b>2009 Q 14 P1</b></p> <p>The diagonals of a rhombus PQRS intersect at T. Given that P(2,2), Q(3,6) and <math>(-1, 5)</math>:</p> <p>(a) Draw the rhombus PQRS on the grid provided;</p> <p>(b) State the coordinate of T.</p>
18	<p><b>2010 Q 3 P1</b></p> <p>A straight line <math>l</math> passes through the point <math>(3, -2)</math> and is perpendicular to a line whose equation is <math>2y - 4x = 1</math>. Find the equation of <math>l</math> in the form <math>y = mx + c</math>, where <math>m</math> and <math>c</math> are constants. (3 mks)</p>
19	<p><b>2011 Q 12 P1</b></p> <p>Three vertices of a parallelogram PQRS are P(-1, -2), Q(8,-5) and R(5,0).</p> <p>a) On the grid provided below draw the parallelogram PQRS (1 mk)</p> <p>b) Determine the length of the diagonal QS. (2 mks)</p>
20	<p><b>2012 Q13 P1</b></p> <p>A line <math>L</math> passes through point <math>(3, 1)</math> and is perpendicular to the line <math>2y = 4x + 5</math>. Determine the equation of line <math>L</math>. (3marks)</p>
21	<p><b>2012 Q22 P1</b></p> <p>The equation of a curve is <math>y = 2x^3 + 3x^2</math></p> <p>(a) Find:</p> <p>(i) the <math>x</math> - intercept of the curve (2marks)</p> <p>(ii) the <math>y</math> - intercept of the curve (1mark)</p> <p>(b) (i) Determine the stationary points of the curve. (3marks)</p> <p>(ii) For each point in (b) (i) above, determine whether it is a maximum or a minimum. (2marks)</p> <p>(c) Sketch the curve (2marks)</p>