

**Straight Lines Exam Questions (from OCR 4721)****Q1 (Jan 2011, Q1)**

The points  $A$  and  $B$  have coordinates  $(6, 1)$  and  $(-2, 7)$  respectively.

- (i) Find the length of  $AB$ . [2]
- (ii) Find the gradient of the line  $AB$ . [2]
- (iii) Determine whether the line  $4x - 3y - 10 = 0$  is perpendicular to  $AB$ . [3]
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**Q2 (Jan 2012, Q8)**

The line  $l$  has gradient  $-2$  and passes through the point  $A(3, 5)$ .  $B$  is a point on the line  $l$  such that the distance  $AB$  is  $6\sqrt{5}$ . Find the coordinates of each of the possible points  $B$ . [6]

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**Q3 (Jun 2012, Q3)**

- (i) Find the gradient of the line  $l$  which has equation  $3x - 5y - 20 = 0$ . [1]
- (ii) The line  $l$  crosses the  $x$ -axis at  $P$  and the  $y$ -axis at  $Q$ . Find the coordinates of the mid-point of  $PQ$ . [4]
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**Q4, (Jan 2013, Q6)**

- (i) The line joining the points  $(-2, 7)$  and  $(-4, p)$  has gradient  $4$ . Find the value of  $p$ . [3]
- (ii) The line segment joining the points  $(-2, 7)$  and  $(6, q)$  has mid-point  $(m, 5)$ . Find  $m$  and  $q$ . [3]
- (iii) The line segment joining the points  $(-2, 7)$  and  $(d, 3)$  has length  $2\sqrt{13}$ . Find the two possible values of  $d$ . [4]
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**Q5, (Jun 2013, Q8)**

$A$  is the point  $(-2, 6)$  and  $B$  is the point  $(3, -8)$ . The line  $l$  is perpendicular to the line  $x - 3y + 15 = 0$  and passes through the mid-point of  $AB$ . Find the equation of  $l$ , giving your answer in the form  $ax + by + c = 0$ , where  $a$ ,  $b$  and  $c$  are integers. [7]

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**Q6, (Jun 2014, Q7)**

$A$  is the point  $(5, 7)$  and  $B$  is the point  $(-1, -5)$ .

- (i) Find the coordinates of the mid-point of the line segment  $AB$ . [2]
- (ii) Find an equation of the line through  $A$  that is perpendicular to the line segment  $AB$ , giving your answer in the form  $ax + by + c = 0$  where  $a$ ,  $b$  and  $c$  are integers. [5]
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**Q7 (Jun 2015, Q5)**

The points  $A$  and  $B$  have coordinates  $(2, 1)$  and  $(5, -3)$  respectively.

(i) Find the length of  $AB$ . [2]

(ii) Find an equation of the line through the mid-point of  $AB$  which is perpendicular to  $AB$ , giving your answer in the form  $ax + by + c = 0$  where  $a$ ,  $b$  and  $c$  are integers. [7]

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