Level 2 Further Maths

Parallel Lines
Perpendicular Lines

Ensure you have: Pencil or pen

Guidance
1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic
www.corbettmaths.com/more/further-maths/
1. Write down the equation of the line that is parallel to \(4x - 2y = 7\) and passes through \((9, -3)\)

2. A straight line \(L_1\) passes through the points \((-6, 1)\) and \((-2, -1)\).
   A straight line \(L_2\) passes through the point \((5, 7)\) and is parallel to \(L_1\).
   Find the equation of the line \(L_2\)
3. A straight line passes through the point A(1, 4) and B(5, 16)

Find the equation of the line parallel to AB that passes through (−8, 2)

4. The line L passes through the points (−5, 3) and (1, −2).
The line N passes through the points (−22, 1) and (−4, −14).

Bryan says that the lines L and N are parallel.
Is Bryan correct? Explain your answer.
5. Line $L_1$ is parallel to $5x - 7y = 31$ and passes through the point $(4, 16)$.

Find the coordinates of the point where $L_1$ intersects the x-axis.

6. Write down the equation of the line that is perpendicular to $y = -3x + 4$ and passes through $(9, -3)$.
7. A straight line passes through the point A(1, 4) and B(5, 16)

Find the equation of the line perpendicular to AB that passes through C.

8. The line Q passes through the points (−10, −2) and (−8, −8)
The line R passes through the points (1, 2) and (10, a)

The lines Q and R are perpendicular.

Find a.
9. Point A has coordinates (9, 7)
Point B has coordinates (13, −27)

Find the equation of the line perpendicular to AB that passes through the midpoint of AB

10. Calculate the shortest distance between Line 1 and the point A.

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11. Two straight lines are shown below.

Line 1 has equation \( y = \frac{3}{2} x - 24 \)

Are Line 1 and Line 2 perpendicular?
12. Shown below are the straight lines AB and CD

M is the midpoint of CD
AB is perpendicular to CD and passes through M.

C is the point (0, 12)
D is the point (6, 0)

Find the coordinates of the point where AB crosses the y-axis.
13. The line $L_1$ passes through the points $A(-4, 2)$ and $B(11, 7)$

The line $L_2$ is parallel to $L_1$ and passes through the point $C(5, 0)$
The line $L_3$ is perpendicular to $L_2$ and passes through the point $D(-3, 8)$

The lines $L_2$ and $L_3$ intersect at the point $E$.

Find the area of triangle $OCE$