**Parallel and Perpendicular Graphs GREEN**

1. Work out whether these pairs of lines are parallel, perpendicular or neither:

 a) y = 4x + 2 b) y = 2/3x – 1 c) y = 1/5x + 9

 y = -1/4x – 7 y = 2/3x – 11 y = 5x + 9

 d) y = 5x – 3 e) 3x + 2y – 12 = 0 f) 5x – y + 2 = 0

 5x – y + 4 = 0 2x + 3y – 6 = 0 2x + 10y – 4 = 0

2. A line is perpendicular to the line y = 6x – 9 and passes through the point (0, 1). Find an equation of the line.

3. A line is perpendicular to the line 3x + 8y – 11 = 0 and passes through the point (0, -8). Find an equation of the line.

4. Find an equation of the line that passes through the point (6, -2) and is perpendicular to the line y = 3x + 5.

5. Find an equation of the line that passes through the point (5, -5) and is perpendicular to the line y = 2/3x + 5. Write your answer in the form ax + by + c, where a, b and c are integers.

6. The line l passes through the points (-3, 0) and (3, -2) and the line n passes through the points (1, 8) and (-1, 2). Show that the lines l and n are perpendicular.

7. The vertices of a quadrilateral ABCD have coordinates A(-1, 5), B(7, 1), C(5, -3) and D(-3, 1). Show that the quadrilateral is a rectangle.

8. A line l1 has equation 5x + 11y – 7 = 0 and crosses the x-axis at A. The line l2 is perpendicular to l1 and passes through A. Find the equation of the line l2. Write your answer in the form ax + by + c = 0.

**Parallel and Perpendicular Graphs AMBER**

1. Work out whether these pairs of lines are parallel, perpendicular or neither:

 a) y = 4x + 2 b) y = 2/3x – 1 c) y = 1/5x + 9

 y = -1/4x – 7 y = 2/3x – 11 y = 5x + 9

You will need to rearrange these so they’re in the form y = mx + c

 d) y = 5x – 3 e) 3x + 2y – 12 = 0 f) 5x – y + 2 = 0

 5x – y + 4 = 0 2x + 3y – 6 = 0 2x + 10y – 4 = 0

2. A line is perpendicular to the line y = 6x – 9 and passes through the point (0, 1). Find an equation of the line.

Calculate the perpendicular gradient then substitute into y – y1 = m(x – x1)

3. A line is perpendicular to the line 3x + 8y – 11 = 0 and passes through the point (0, -8). Find an equation of the line.

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Calculate the gradients then work out if their product is -1

7. The vertices of a quadrilateral ABCD have coordinates A(-1, 5), B(7, 1), C(5, -3) and D(-3, 1). Show that the quadrilateral is a rectangle.

Sides of a rectangle are perpendicular

8. A line l1 has equation 5x + 11y – 7 = 0 and crosses the x-axis at A. The line l2 is perpendicular to l1 and passes through A. Find the equation of the line l2. Write your answer in the form ax + by + c = 0.

Start by calculating A

**Parallel and Perpendicular Graphs RED**

1. Work out whether these pairs of lines are parallel, perpendicular or neither:

 a) y = 4x + 2 b) y = 2/3x – 1 c) y = 1/5x + 9

 y = -1/4x – 7 y = 2/3x – 11 y = 5x + 9

 4 x -1/4 = Same gradient! 1/5 x 5 =

You will need to rearrange these so they’re in the form y = mx + c

 d) y = 5x – 3 e) 3x + 2y – 12 = 0 f) 5x – y + 2 = 0

 5x – y + 4 = 0 2x + 3y – 6 = 0 2x + 10y – 4 = 0

2. A line is perpendicular to the line y = 6x – 9 and passes through the point (0, 1). Find an equation of the line.

Calculate the perpendicular gradient then substitute into y – y1 = m(x – x1)

 -1 ÷ 6 = -1/6

 y – 1 = -1/6(x – 0)

 y =

3. A line is perpendicular to the line 3x + 8y – 11 = 0 and passes through the point (0, -8). Find an equation of the line.

4. Find an equation of the line that passes through the point (6, -2) and is perpendicular to the line y = 3x + 5.

5. Find an equation of the line that passes through the point (5, -5) and is perpendicular to the line y = 2/3x + 5. Write your answer in the form ax + by + c, where a, b and c are integers.

6. The line l passes through the points (-3, 0) and (3, -2) and the line n passes through the points (1, 8) and (-1, 2). Show that the lines l and n are perpendicular.

Calculate the gradients then work out if their product is -1

 ml = -2 – 0 = mn = 2 – 8 =

 3 + 3 -1 - 1

7. The vertices of a quadrilateral ABCD have coordinates A(-1, 5), B(7, 1), C(5, -3) and D(-3, 1). Show that the quadrilateral is a rectangle.

Sides of a rectangle are perpendicular

8. A line l1 has equation 5x + 11y – 7 = 0 and crosses the x-axis at A. The line l2 is perpendicular to l1 and passes through A. Find the equation of the line l2. Write your answer in the form ax + by + c = 0.

Start by calculating A