

Categorising simultaneous equations

Think about pairs of straight line graphs and the three properties:

A: The lines cross in the first quadrant

B: The lines are perpendicular

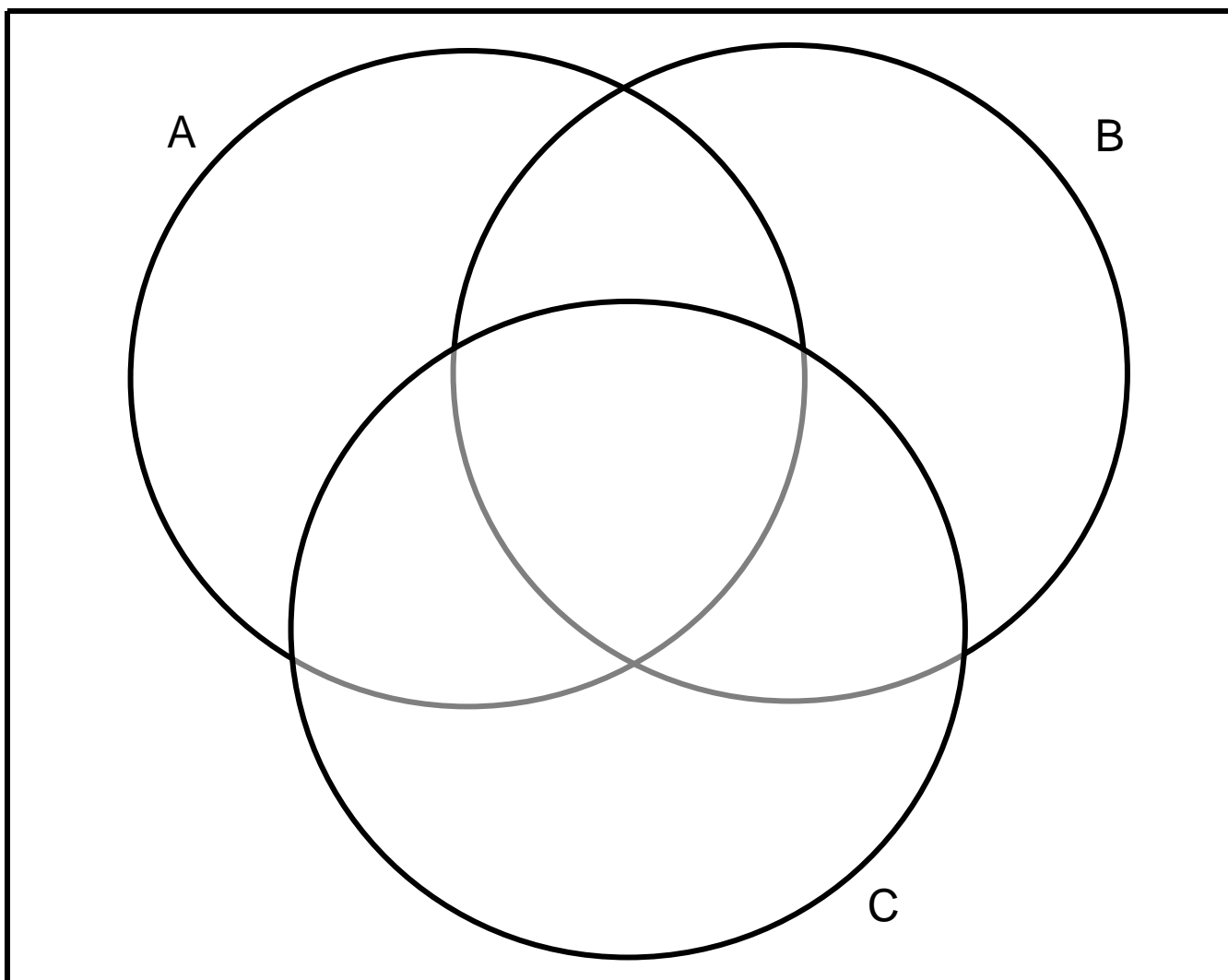
C: One equation is of the form $x + 2y = c$

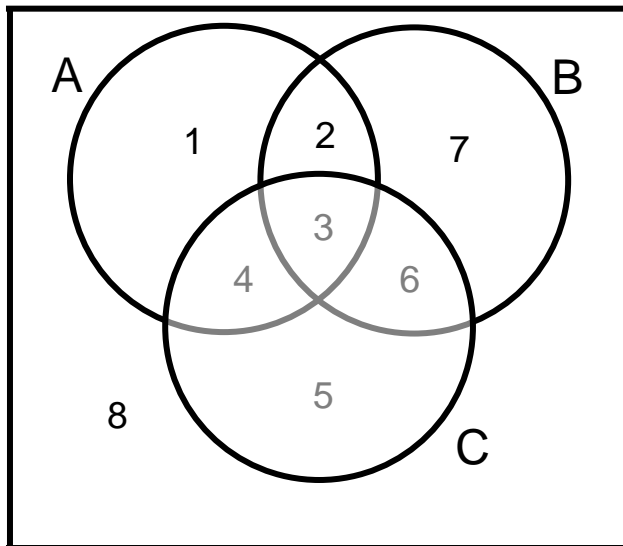
Can you find a pair of lines which satisfies all three properties A, B and C?
If so write this pair in the central region where the three circles overlap.

How about a pair which doesn't satisfy any of the requirements?
Fill this in the region outside the three circles.

The task: To find one example for each of the other six regions.

Is it possible to find an example for every region?





A possible solution

- A: The lines cross in the first quadrant
- B: The lines are perpendicular
- C: One equation is of the form $x + 2y = c$

<p>1</p> <p>Equation 1: $y=2x-2$ Equation 2: $x+y=8$</p>	<p>2</p> <p>Equation 1: $y=x+2$ Equation 2: $x+y=8$</p>	<p>3</p> <p>Equation 1: $y=2x+1$ Equation 2: $x+2y=8$</p>
<p>4</p> <p>Equation 1: $y=x+2$ Equation 2: $x+2y=8$</p>	<p>5</p> <p>Equation 1: $y=x+6$ Equation 2: $x+2y=8$</p>	<p>6</p> <p>Equation 1: $y=2x+6$ Equation 2: $x+2y=8$</p>
<p>7</p> <p>Equation 1: $y=x+4$ Equation 2: $x+y=2$</p>	<p>8</p> <p>Equation 1: $y=2x+6$ Equation 2: $x+y=2$</p>	<p>An easier problem: Give your students the eight pairs of equations (not the graphs!) and ask them to place them in the Venn diagram.</p>