

Why use this resource?

Students are asked to find different ways to work with vectors in order to solve a problem about equilibrium. Using and discussing these different approaches should help to develop how students think about, and represent, forces in equilibrium.

The problem could be used as a way to introduce students to forces in equilibrium, or it could be used to encourage them to practise and think flexibly about them.

Preparation

If you wish to give individual situations to students then you may want to print out sets of these [cards](#).

Possible approaches

Students could work in pairs to solve each of the situations using different methods. This could be followed by a discussion on the different methods used, and why they chose them.

A different approach could be giving just one situation to each student. When they have found the third force, ask them to use the same method to solve a different situation and reflect on how useful the method was in each case.

Key questions

- Is it possible to use a different approach for each situation?
- Would the different approaches taken work equally well for the three different situations? If not, why not?
- What are the similarities and differences between your approaches?

Possible extension

Students could move on to looking at [Make it stop!](#), where they are given a particle moving under a system of forces and asked to add a further force to bring the particle to rest in a specified time. This offers opportunities to combine various ideas about vectors with kinematics and Newton's laws of motion.