# Make it equal

Teacher notes

## 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.