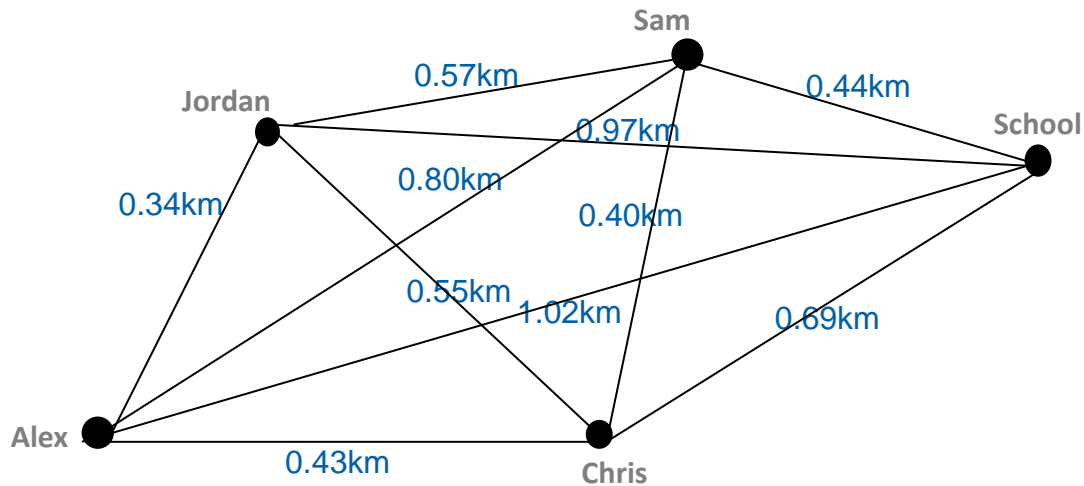# Shortest Routes

- Alex and his three friends usually walk to school together.
- Alex lives the furthest away from school and calls for his friends on the way.
- They always take the shortest route.

- This diagram shows the distances between houses and the school and each value shows the distance of the whole straight line e.g. 0.80km is the distance from Alex's house to Sam's house. (It is not to scale and the routes are not necessarily straight).



- What distance would Alex travel if he called for all his friends and took the shortest route to school?

- Last Wednesday two of Alex's friends were ill.
  1. What distances might he have travelled to call for his other friend and arrive at school?
  2. Find all possibilities.

- The week before, one friend was on holiday.
  3. What distances might he have travelled to call for his other friends?

## Solutions

1.  Alex + 3 friends
    Alex → Jordan → Chris → Sam → school
    0.34km + 0.55km + 0.4km + 0.44km = 1.73

2.  Alex + 1 friend
    Alex → Jordan → school
    0.34km + 0.97km = 1.31km
    Alex → Sam → school
    0.8km + 0.44km = 1.24km
    Alex → Chris → school
    0.43km + 0.69km = 1.12km

3.  Alex + 2 friends
    Alex → Jordan → Sam → school
    0.34km + 0.57km + 0.44km = 1.35km
    Alex → Chris → Sam → school
    0.43km + 0.4km + 0.44km = 1.27km
    Alex → Jordan → Chris → school
    0.34km + 0.55km + 0.69km = 1.58km