

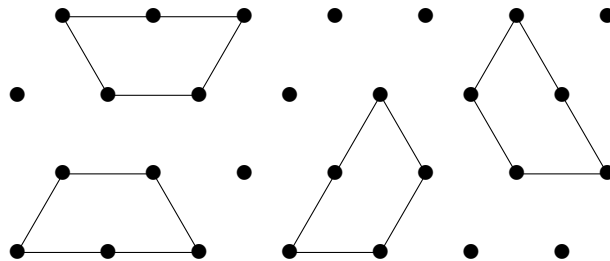


AUSTRALIAN MATHS TRUST

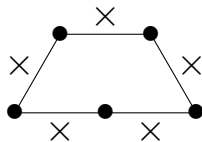
Maths Challenge
Upper Primary: Years 5–6
Practice Problem

UP1: Manipulating Trapeziums

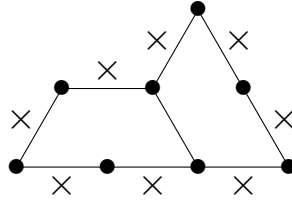
A teacher has several identical tables each in the shape of an isosceles trapezium. Pictures of the tables can be drawn on isometric dot paper like this:



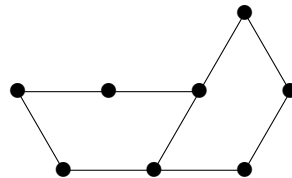
Each table has places for five chairs: two on the long side and one on each of the short sides. The teacher always puts a chair in every place.



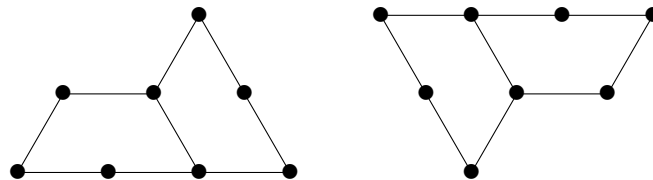
To fit more chairs, the teacher often joins the tables short side to short side or long side to long side. For example, eight chairs can be put around two tables joined like this:



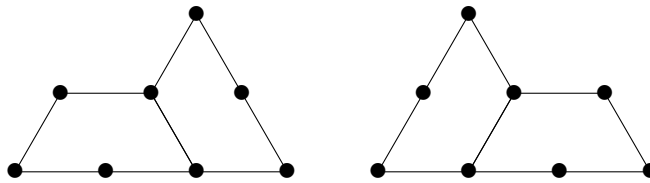
The teacher never joins a short side to a long side like this:



Two clusters of tables are regarded as the same if one cluster is a rotation of the other (possibly by zero degrees). For example, these two clusters are the same:



If one cluster is not a rotation of another, then the two clusters are regarded as different. For example the next two clusters are different, even though one is a reflection of the other.



UP1: Questions

- a. The teacher can join two tables in other ways. Draw four of these other ways which are different from one another.
- b. Draw two ways that the teacher can join three tables which fit different numbers of chairs.
- c. Show how the teacher can join four tables to fit exactly ten chairs.
- d. What is the maximum number of chairs the teacher can fit around a cluster of four tables? Explain.

UP1: Worksheet

