

Arithmetic Sequences

Student Worksheet

7 8 9 10 **11** 12



TI-30XPlus
MathPrint™



Worksheet



Student



45 min

Dining Table

The world's longest dining table measured 3,189.83m. The table was used to serve the evening meal to 7000 Muslims at the end of Ramadan. The images below show the configuration of seats around a collection of rectangular dining tables in a typical restaurant.



Figure 1 - Scan the QR code for calculator instructions.

Question: 1.

- Assuming the pattern continues, how many people could be seated at the fourth configuration?
- Explain why the number of seats at successive configurations forms an arithmetic sequence.
- How many people could be seated at the 10th configuration?
- The world record breaking dining table was set out similar to the pattern shown above, determine the approximate space (width) available to each person. (Show your calculations)

There are four ways you can generate these types of sequences on your calculator:

- Recursion (home screen)
- Sequence command (Lists)
- Formulas (memory allocations)
- Functions (efficient use of formulas and memory allocations)

Question: 2.

A restaurant has multiple table bookings and configurations. For each of the following configurations in the restaurant, determine the total number of people that can be seated.

- Craig's restaurant has 6 tables set up as the following configurations: 2, 2, 3, 4, 5 and 5. How many people can be seated in total?

Hint: Use the sequence command and generate a list starting at 1 and ending at 6.

- Hayley runs a wedding venue and has 8 tables set up with the following configurations: 6, 6, 7, 7, 8, 8, 9 and 9. How many guests can be seated in total?

Match Stick Patterns



Pattern 1



Pattern 2



Pattern 3

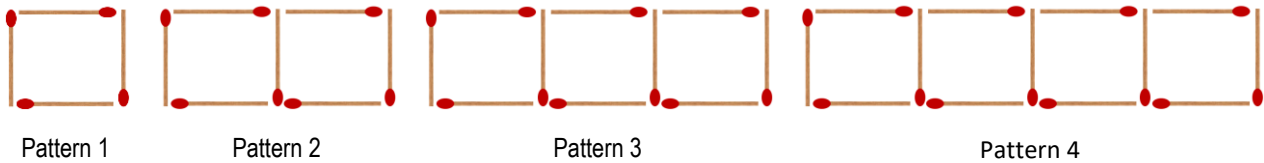


Pattern 4

Question: 3.

Matchsticks can be used to form all sorts of patterns. A single box of matches contains precisely 50 matches. The following questions relate to the (above) pattern.

- How many matches in the first pattern?
- How many matches are required for each additional pattern?
- Generate the sequence using a list to help determine quantity of triangles formed using the above pattern, from a single box of matches.
- Cameron has created 99 triangles. How many boxes of matches did he use?

**Question: 4.**

A series of squares is formed using matchsticks. Using the pattern above:

- How many matches in the first pattern?
- How many matches are required for each additional pattern?
- Generate the table feature to help determine quantity of squares formed using the above pattern, from a single box of matches.