



Assessment: Pattern detective

Assessment task

Students will use their understanding of an algorithm that will generate a sequence using multiplication and record the sequence of numbers generated.

Guidance:

Assessing student understanding will involve checking results and describing any emerging patterns.

The assessment of student understanding for this task may include:

- Understand the purpose and use of generating a sequence of numbers using an algorithm
- Accuracy of calculations and recording the sequence of numbers generated
- Checking for accuracy and describing any emerging patterns

Q1. Complete the pattern in the table.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192

Q2 and Q3

Question	Expected student response
How might Ali's table help work out the odd one out? Choose which number you think is the odd one out. Explain why.	The table shows a doubling pattern most of the numbers are in that pattern except 4090 it should be 4096 (or similar answer)

Q4 Create an algorithm so that this number sequence can be generated

Algorithm: List	Algorithm: Flow chart
<p>Start Enter the number 2 Take that number and double it [Repeat 12 times] STOP</p> <p>Note students may do a less efficient algorithm and list the step 'Take that number and double it' multiple times instead of using a loop and repeat instruction.</p>	<pre> graph TD A[Enter a number] --> B[Take that number and double it] B --> C[Repeat 12 times] C --> D[STOP] C --> B </pre>



Pattern detective

Task:

Ali was given 4 numbers; one was the odd one out. The numbers are 16, 128, 512 and 4090.

Ali created a table in a spreadsheet to help him look for patterns in number.

He thinks he might know which number is the odd one out.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	4	8	16	32	64	128	256					

1. Complete the pattern in the table.
2. How might Ali's table help work out the odd one out? Explain your thinking.
3. Choose which number you think is the odd one out. Explain why.
4. Create an algorithm so that this number sequence can be generated.
 - Write your algorithm as a series of steps or as a flow chart.