MATHEMATICS AND CAREER EXPLORATION

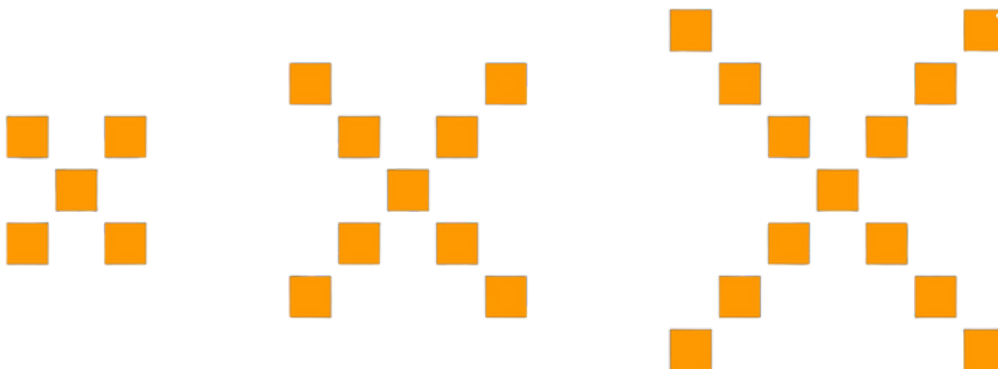## YEAR 8

Worksheet
Growing patterns.

Patterns can be represented in 5 ways, and the number of ways you choose will depend on the year level or development of the student. We will examine the representation of patterns in the following ways:

1. As a diagram.
2. In a verbal description.
3. As a chart.
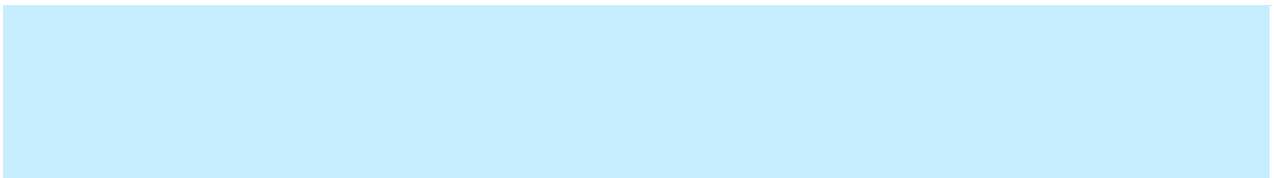4. As an algebraic formula.
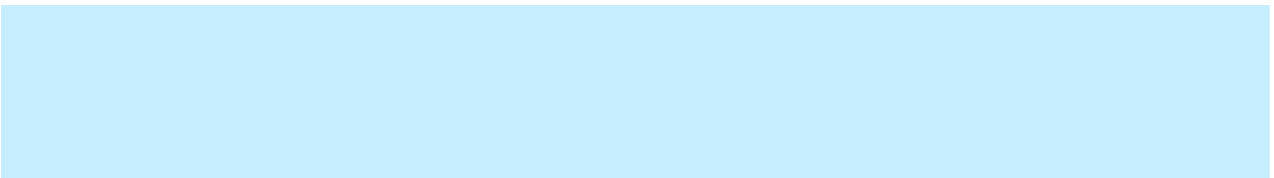5. In graphical form.

From visualpatterns.org

1. How do you see the pattern growing? Explain this verbally and using a diagram.
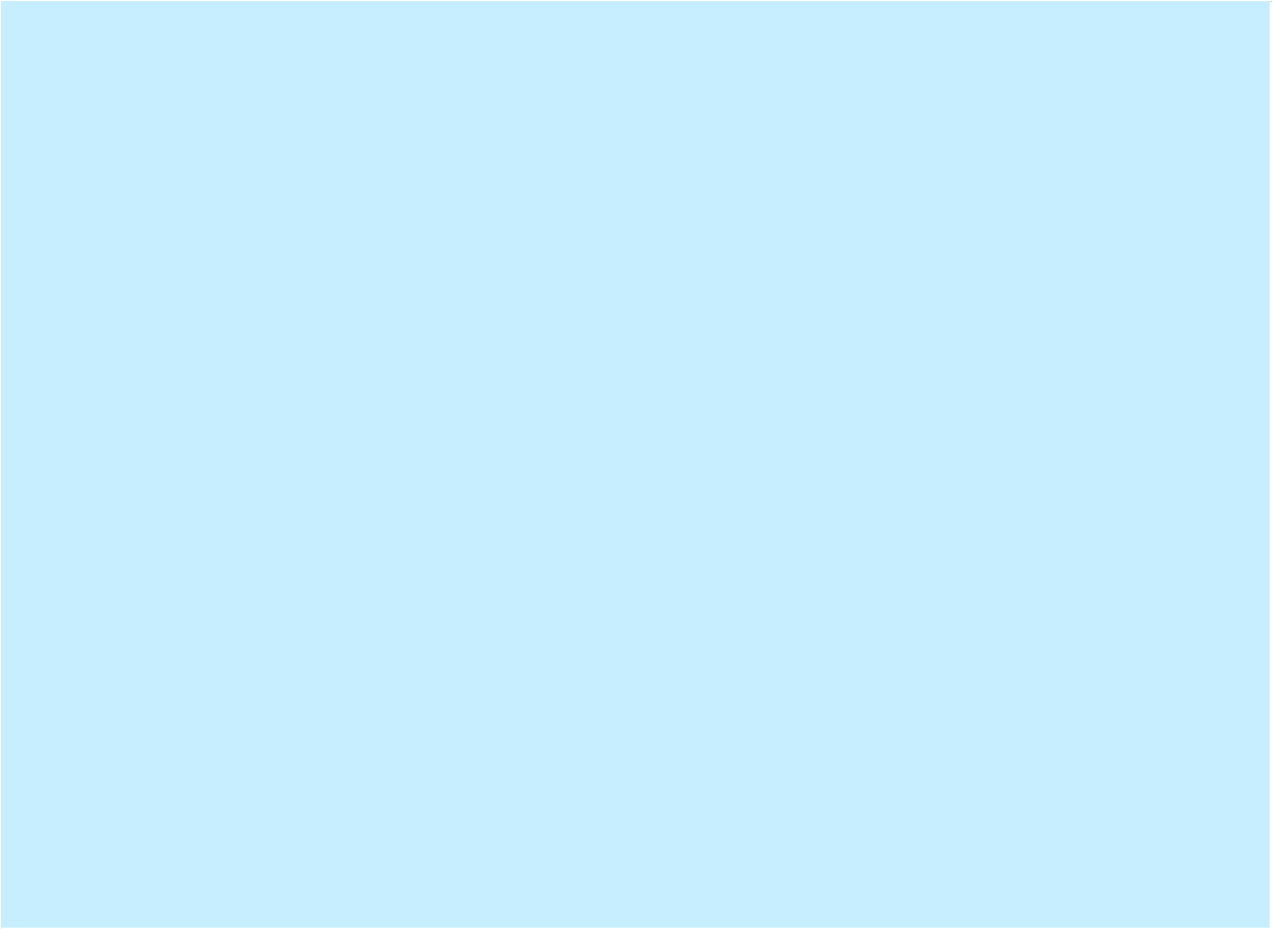
2. What is the next figure in the pattern? How many blocks does it contain?

3. What is the 10th item in the pattern and how many blocks does it contain?

4. Complete the table (chart) below.

Figure no. (f)	1	2	3	4	5	6	7	8
No. of Blocks (b)	5	9	13	17				

5. Does this table make it easier to predict how many blocks will be in later figures?

6. How would you go about predicting the number of blocks in the hundredth figure? The 250th? The nth? (Now we're starting to go into algebra! Using letters to represent numbers.)

7. Use your chart and predictions to draw a graph. Figure no. (f) should be on the horizontal (x) axis and the No of Blocks (b) should be on the vertical axis.
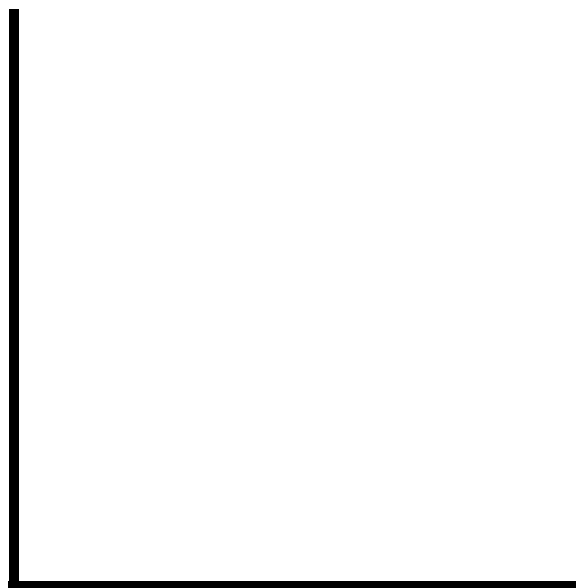
8. How can you use your graph to make predictions?

9. Try some other patterns – visualpatterns.org. What do you notice about the patterns that make straight lines? Can you find shortcuts to work out the formula? What sorts of shapes can the graphs make? Can we always make predictions?

10. What careers would use this mathematics? (Think about occupations or industries that use prediction. Engineers at **Aurecon** need to observe patterns and predict what will happen in all aspects of engineering, energy, advising and STEM. Find out more about engineering specialisations at aurecongroup.com. You can also view a Careers Bullseye poster on myfuture or explore occupations on mycareer.gov.au for inspiration.)