

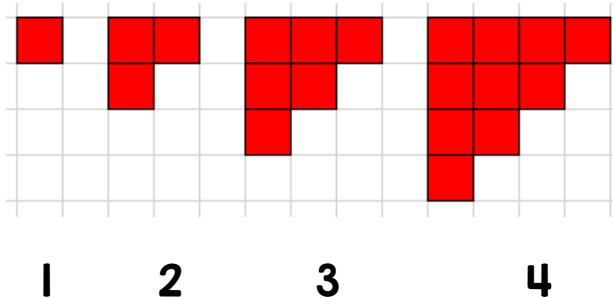
# Summer Term Maths Year 10

Explore triangle numbers and Fibonacci numbers

Day  
2

Week 12

1 Here is a number pattern.



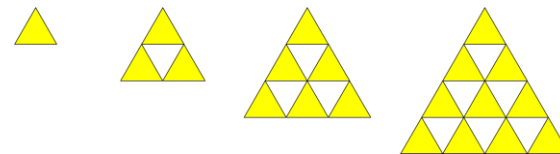
- Draw the next pattern in the sequence.
- How many red squares are needed in pattern number 5.
- How many red squares are needed in pattern number 6?
- How did you work out your answer to part (c)?
- Describe the pattern.

2 Here is a sequence

1, 1, 2, 3, 5, 8, 13, 21,

- What are the next 3 numbers in the sequence?
- Explain how you got your answers.
- What is the first number above 150 in the sequence?
- What is the name given to this type of sequence?

3 Does this sequence show triangular numbers? Explain your answer.



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**4** Here is another sequence

3, 3, 6, 9, 15, 24, 39, 63,

- What are the next 3 numbers in the sequence?
- Explain how you got your answers.
- Explain why this sequence is an example of a Fibonacci sequence.
- Sajid says all the numbers in the sequence will be divisible by 3. Is Sajid correct? Explain your reason.

**5** True or false?

Triangular numbers follow the pattern  
odd, odd, even, even.

**6** The following formula can be used to find the  $n$ th triangular number.

$$\frac{n(n+1)}{2}$$

- Work out the 10<sup>th</sup> triangular number.
- Work out the 12<sup>th</sup> triangular number.
- Is 276 a triangular number? Explain how you know.
- Prove that the sum of two consecutive triangular numbers is a square number.