

**L.O: I am learning to recognise and understand decimal sequences**

Today you will learn about decimal sequences. You will think about what makes a sequence and learn how to predict the next number in a sequence. Here is some mathematical vocabulary and questions you might use when discussing sequences:

- Increasing
  - Decreasing
  - Terms
  - What is the same?
  - What is changing?
  - What are the rules?
- Answer the questions on the separate worksheet that comes with this assignment. Turn the completed work in so that the teacher can mark and comment on your work

**What is a sequence?**

**Look at the series of numbers below.**

- Are the numbers increasing (going up) or decreasing (going down)?
- Compare the numbers to each other.
- Can you work out the rule?



- The numbers are increasing.
- Look at the first and second numbers.
- What is the difference between them?
- What is the difference between the second and the third numbers, is it the same?
- Can you see the pattern of the sequence (**the numbers increase by 0.4**)

We call the numbers in a sequence “terms”. Can you work out what the next number (Term) will be?

**Let's Practise**

Look at the series of numbers below.

- Are the numbers increasing (going up) or decreasing (going down)?
- Compare the numbers to each other.
- Can you work out the rule?

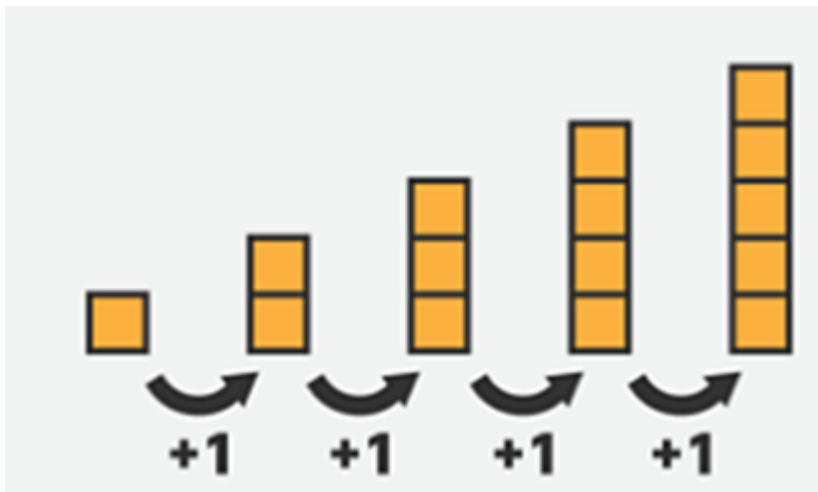


- Now you have worked out the rule, what will the next term in the sequence be?

#### Clarification

- An arithmetic sequence goes from one term to the next by always adding (or subtracting) the **same** value.
- The number added (or subtracted) at each stage of the arithmetic sequence is called the **common difference**.
- Examples of arithmetic sequences occur when things change by the same amount each time.

The image below shows a simple shape pattern that shows an arithmetic sequence. The common difference between the **TERMS** is +1. Therefore the **RULE** is ADD 1 each time. The next **TERM** in the sequence will be 6.



### Today's Tasks

The tasks are arranged in 3 challenges that get progressively more difficult.

- Challenge 1 is a "mild" challenge, if you are not confident

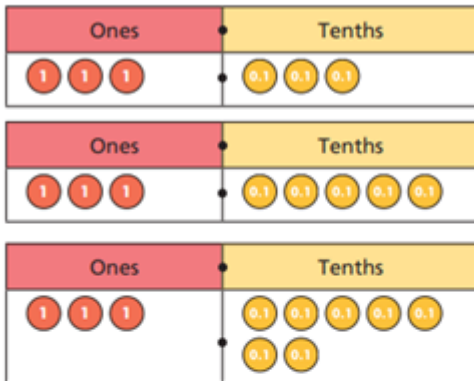
- Challenge 2 is “spicy”, a little bit more challenging, if you are feeling confident and find the first challenge too easy.
- Challenge 3 is “hot”. The questions are designed to challenge you and can be tricky.

You can choose to do just one challenge or more than one, it is up to you. As a guide, if you are consistently getting everything correct, you should move up a challenge. If you are struggling on every question; move down a challenge.

### Challenge 1:

1 Esther has made a sequence with place value counters.

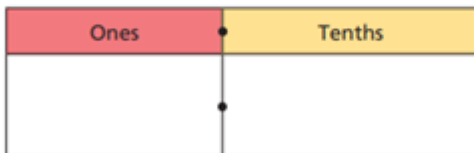
a) Write the numbers she has made.






b) She adds the same counters again.

Draw counters to show the number she has made.

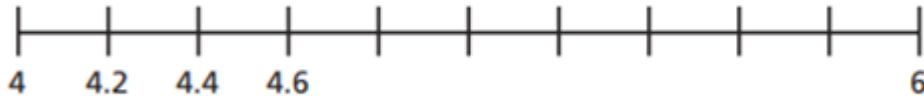


c) She adds the same counters again.

What number is shown in her chart now?

d) Explain the pattern of numbers that Esther has made.

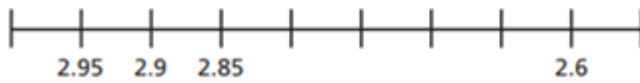
2. Complete the number line.




**Challenge 2:**
















1.

Complete the number line.



2.

 Complete the sequence.

  	    	      		
1st	2nd	3rd	4th	5th
1.21	1.32	1.43		

3.

Write the rules for each sequence.

- 0.45, 0.6, 0.75, 0.9

The rule is

- 1.25, 2.5, 3.75, 5, 6.25

The rule is

4.

Write the rule and the next four terms in each sequence.

a) The rule is \_\_\_\_\_.

2.36	2.39	2.42				
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b) The rule is \_\_\_\_\_.

15.6	16.1	16.6				
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5.

**Asha says...**

1.36	2.38	3.4	4.42	5.44
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The next term would be 6.46  
The rule is + 1.2

**Do you agree with her?**

**Explain why / why not!**

**Challenge 3:**

1.

Generate the first 5 terms of this sequence.

The 1<sup>st</sup> term is 1.74  
The sequence decreases by 0.24 each time.

2.

Mo and Eva are making number sequences.

a) Mo is adding 1.5 each time. He starts with the number 3.8 What is the first number greater than 12 that he makes?

b) Will the number 15.7 be in Mo's sequence?

3.

**Convince me!**

**The first term is 1.23. The rule is add 0.26.**



**2 will not be in the sequence.**

4.

Start	9.2	8.7	8.2	7.7	7.6	7.5
3.7	4	4.3	8.1	7.2	6.8	5.3
3.6	3.9	4.6	8.2	6.7	6.2	5.7
3.5	3.6	4.9	5.2	5.5	5.8	5.2
2.3	5.7	6.7	4.9	7.8	6.1	4.7
6.1	7.2	7.2	9.1	6.5	6.4	4.2
9.7	7.3	8.7	3.4	7.2	6.7	End

**Challenge One:**

Find a route which only travels right, up and down which follows the rule add 0.3

**Challenge Two:**

Find a route which only travels right, up and down which follows the rule subtract 0.5