

Year 4 Unit 13: Reasoning with patterns and sequences (2 weeks)

Before you start...

- How have Meetings been used for pupils to explore Roman numerals?
- What experience do pupils have with counting backwards beyond zero to include negative numbers?
- Do you need to build this into transitions and Do Now time?

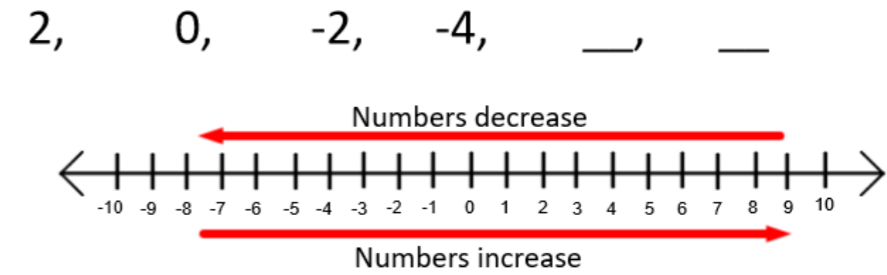
Video: Representing Roman numerals

1	2	3	4	5	6	7	8	9	10
I	II	III	IV	V	VI	VII	VIII	IX	X

I	II	III	IV	V	VI	VII	VIII	IX	X
XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX
XXI	XXII	XXIII	XXIV	XXV	XXVI	XXVII	XXVIII	XXIX	XXX
XXXI	XXXII	XXXIII	XXXIV	XXXV	XXXVI	XXXVII	XXXVIII	XXXIX	XL
XLI	XLII	XLIII	XLIV	XLV	XLVI	XLVII	XLVIII	XLIX	L
LI	LII	LIII	LIV	LV	LVI	LVII	LVIII	LIX	LX
LXI	LXII	LXIII	LXIV	LXV	LXVI	LXVII	LXVIII	LXIX	LXX
LXXI	LXXII	LXXIII	LXXIV	LXXV	LXXVI	LXXVII	LXXVIII	LXXIX	LXXX
LXXXI	LXXXII	LXXXIII	LXXXIV	LXXXV	LXXXVI	LXXXVII	LXXXVIII	LXXXIX	LXXX
LXXXX	LXXXXI	LXXXXII	LXXXXIII	LXXXXIV	LXXXXV	LXXXXVI	LXXXXVII	LXXXXVIII	LXXXXIX
LXXXXX	LXXXXXI	LXXXXXII	LXXXXXIII	LXXXXXIV	LXXXXXV	LXXXXXVI	LXXXXXVII	LXXXXXVIII	LXXXXXIX
LXXXXXX	LXXXXXXI	LXXXXXXII	LXXXXXXIII	LXXXXXXIV	LXXXXXXV	LXXXXXXVI	LXXXXXXVII	LXXXXXXVIII	LXXXXXXIX
LXXXXXXX	LXXXXXXXI	LXXXXXXXII	LXXXXXXXIII	LXXXXXXXIV	LXXXXXXXV	LXXXXXXXVI	LXXXXXXXVII	LXXXXXXXVIII	LXXXXXXXIX
LXXXXXXXI	LXXXXXXXII	LXXXXXXXIII	LXXXXXXXIV	LXXXXXXXV	LXXXXXXXVI	LXXXXXXXVII	LXXXXXXXVIII	LXXXXXXXIX	C

Where does zero sit?
This [article](#) from NRICH provides information and ideas around thinking about the number system.

Lesson 5 is a suggested consolidation lesson. If pupils are unfamiliar with Roman numerals and negative numbers, you may wish to use it earlier to provide experiences with these.



Exploring number systems

- L1 Investigate symbols from a range of number systems
- L2 Build and extend sequences with Roman numerals

Pupils think about where numbers came from and recognise that the symbols we use are not the only number symbols. Exploring symbols from other number systems, including Roman numerals, gives opportunity to deepen understanding of our system by describing and comparing. Pupils apply understanding of Roman numerals to identify, describe and complete sequences.

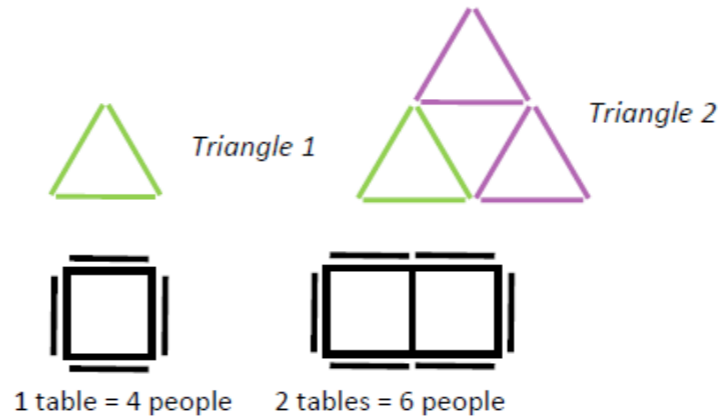
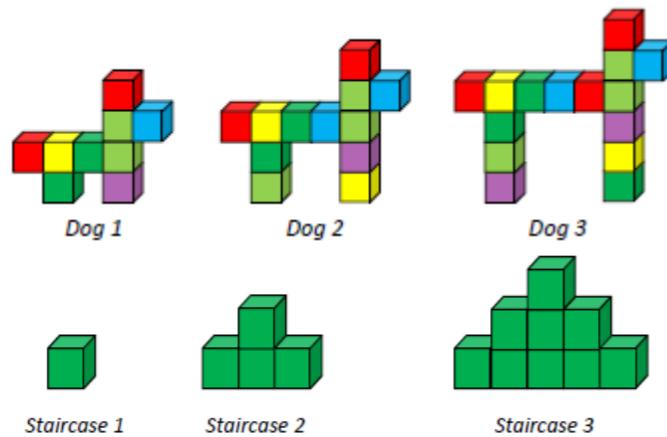
? Why is the Roman numeral for 15 not IV? There is a one in the tens place and a five in the ones place. What discussions can you facilitate to deepen understanding of place value?

Investigating number sequences

- L3-4 Explore, describe and complete number sequences

Pupils continue to work with number sequences and use addition, subtraction and multiplication skills. Sequences that extend below zero are an opportunity to apply understanding of negative numbers which has been developed in Maths Meeting across the year. Pupils identify and describe sequences and find missing terms including at the beginning or in the middle of a sequence.

? Why might some pupils have a vertical number line in mind when counting beyond zero? What opportunities to use both horizontal and vertical number lines will you provide?



Video: Exploring patterns and sequences

Lesson 10 is a suggested consolidation lesson. The investigations in the previous lessons can be extended for pupils to follow their own lines of enquiry.

Solving problems involving patterns and sequences

- L6-7 Explore patterns with multi-link cubes
- L8-9 Plan and solve problems involving patterns

In this sequence of lessons, pupils develop strategies to plan and solve problems involving pattern spotting and generalising skills. Take the time to explore what pupils notice and different ways they can describe and explain the patterns. Encourage them to make conjectures about what they think is going to happen with the pattern and then work to find out if they need to modify their conjecture. Support pupils to articulate general rules of the patterns and use these to make predictions. The suggested pattern problems in the unit provide an opportunity to introduce content that will be revisited in Year 5, such as square numbers.

- ? What strategies will you use to encourage pupils to visualise manipulating and extending the patterns?
- ? What reasoning would you expect pupils to give when explaining their predictions for larger dogs, staircases, triangles and tables?
- ? How will you provide opportunities for pupils to adapt the problems and follow their own lines of enquiry?