

Maths

Number and Place Value

Need a coherently planned sequence of lessons to complement this resource?

Assessment Statements
By the end of this unit;

children working towards the expected level will be able to:

- read and write numbers up to 100 000;
- identify the value of each digit in a number up to 100 000 using place value grids and counters;
- recognise concrete and visual representations of numbers with one decimal place;
- order numbers up to 100 000;
- compare numbers up to 100 000 using the greater than and less than symbols;
- round numbers to the nearest 10, 100, 1 000, 10 000 or 100 000 using a number line; calculate intervals across zero using a number line;
- compare and order negative numbers using a number line;
- identify negative numbers in context;
- recognise some powers of 10 within sequences;
- read Roman numerals up to 500 (D) using a symbol chart;
- identify years written in Roman numerals using a symbol chart;

children working at the expected level will be able to:

- read and write most numbers up to 1 000 000;
- identify the value of most digits in a number up to 1 000 000;
- use concrete, visual and abstract representations to help identify numbers with two decimal places;
- order most numbers up to 1 000 000;
- compare most numbers up to 1 000 000 using the greater than and less than symbols;
- round numbers up to 1 000 000 to the nearest 1000, 10 000 or 100 000 using a number line;
- compare and order negative numbers;
- solve age appropriate problems involving negative numbers;
- count forwards and backwards in steps of 10;
- read Roman numerals up to 1000 (M);
- identify years written in Roman numerals;
- solve reasoning problems using all of the above.

Introduction

Teacher Note: The Y5 Place Value objectives read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit and round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 are closely linked to the Y5 fractions objectives read, write, order and compare numbers with up to three decimal places and round decimals with two decimal places to the nearest whole number and to one decimal place. Please head over to the Fractions Topic Area to find some more support lessons to support decimal place value.

In this unit, children will read, write, construct and deconstruct numbers up to 1 000 000. They will use concrete, visual and abstract methods to help identify the value of individual digits in numbers with up to six digits. As well as larger numbers, children are introduced to the concept of decimal numbers in preparation for the designated book in Spring term. They revisit comparisons of numbers using the greater than and less than symbols and then develop their skills by reasoning about numbers. Children will focus on rounding any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 or 100 000. They will work with negative numbers, counting forwards and backwards across zero. They will use negative numbers in context to solve problems. Children will count forwards and backwards in different powers of 10. They will have the opportunity to use all of their number and place value skills to solve a range of problems. Finally, children will extend their knowledge of Roman numerals to represent numbers up to 1000 and read years written in Roman numerals.

Resources
In addition to your standard maths resources, you may need place value counters, scissors, glue or sticky tape, playing cards, D9 dice and 1-d die.

Number and Place Value
Maths | Year 5 | Steps to Progression Overview

The aim of this overview is to support teachers using PlanIt Maths to show the most coherent and progressive sequence to teach each area of maths. We also want to fully support teachers who use the White Rose Maths scheme of learning to make full use of the resources available within PlanIt Maths. Wherever possible, lesson packs have been matched to each of the small steps on the White Rose Maths scheme of learning.

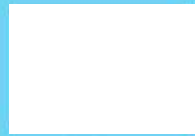
Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value			Number: Addition and Subtraction		Statistics		Number: Multiplication and Division		Perimeter and Area		Consolidation
Spring	Number: Multiplication and Division			Number: Fractions						Number: Decimals and Percentages		Consolidation
Summer	Number: Decimals			Geometry: Properties of Shapes			Geometry: Position and Direction	Measurement: Converting Units		Measurement: Volume		Consolidation

See our [Number and Place Value Steps to Progression](#) document.

Count Forwards and Backwards Through Zero

0



Aim

- To count forwards and backwards through zero.

Success Criteria

- I can use a number line to count forwards and backwards through zero.
- I can use negative numbers when counting through zero.

Remember It



Match the powers of 10 to the correct answers. Find the odd one out.

10^1

10^3

10^5

10^2

10^3

10^4

100

10 000

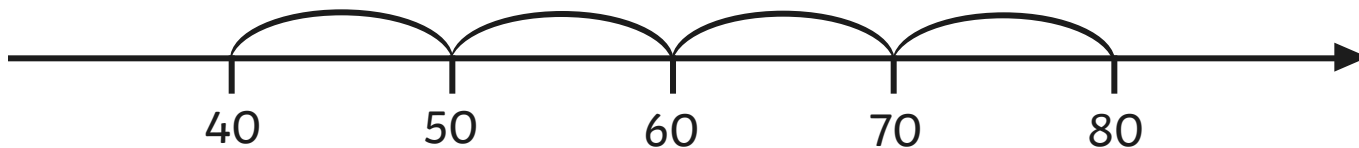
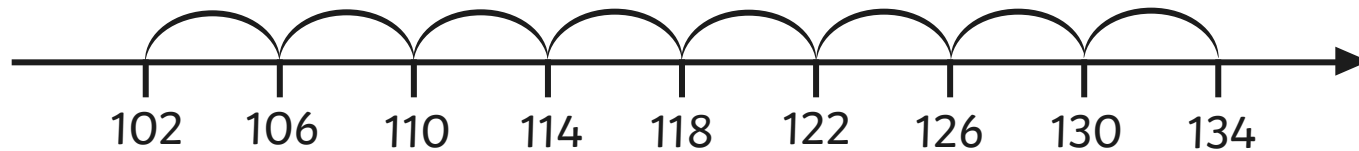
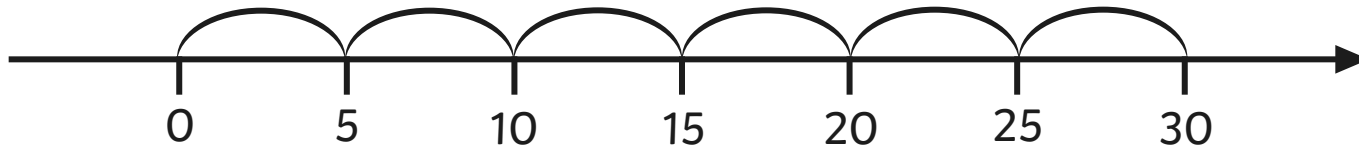
100 000

1 000

Counting Forwards



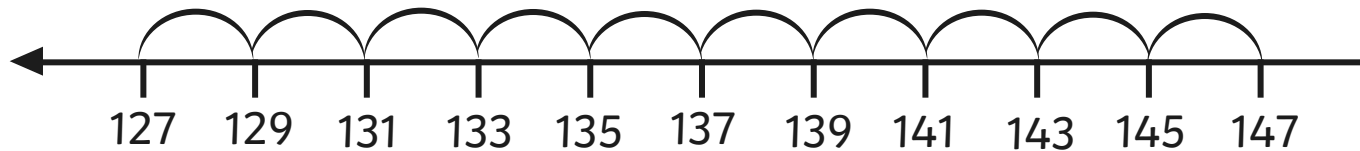
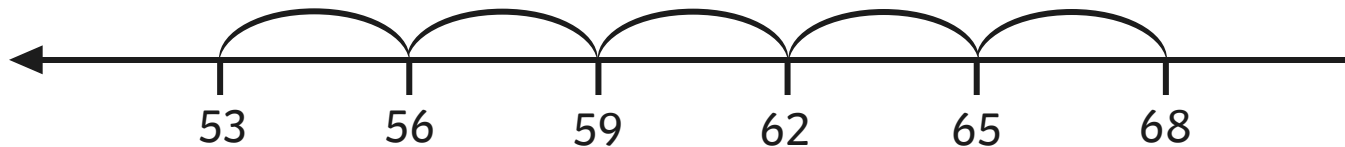
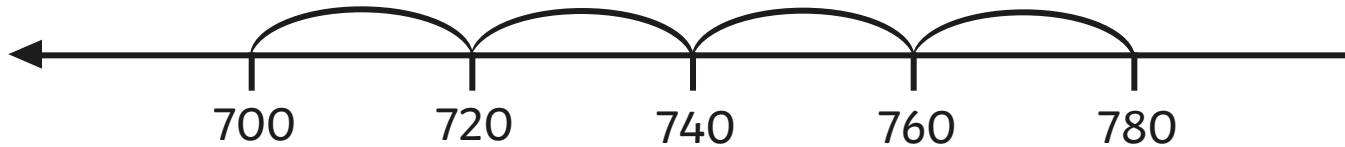
What would be the next number you would count on each line?



Counting Backwards



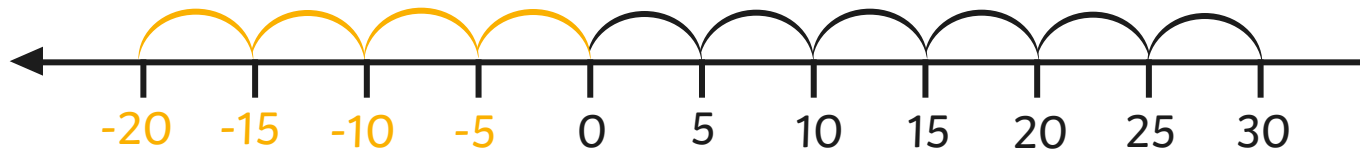
What would be the next number you would count on each line?



Counting Through Zero



What happens if we are counting backwards and we get to 0?



We can keep counting backwards using negative numbers.

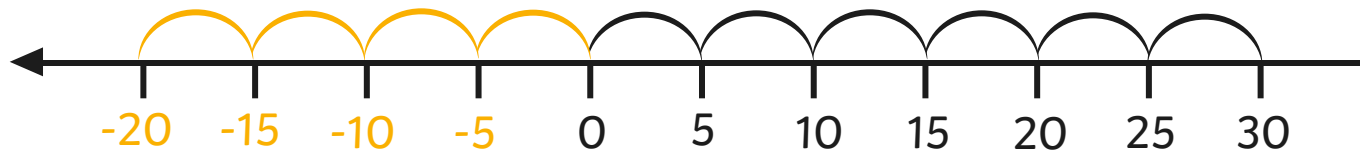
Counting Through Zero



Negative numbers are numbers below 0.
They are expressed with a subtraction sign before the number, like this: -3

We can use negative numbers to describe values on scales that go below 0, such as temperature scales, or to express an absence or opposite of something.

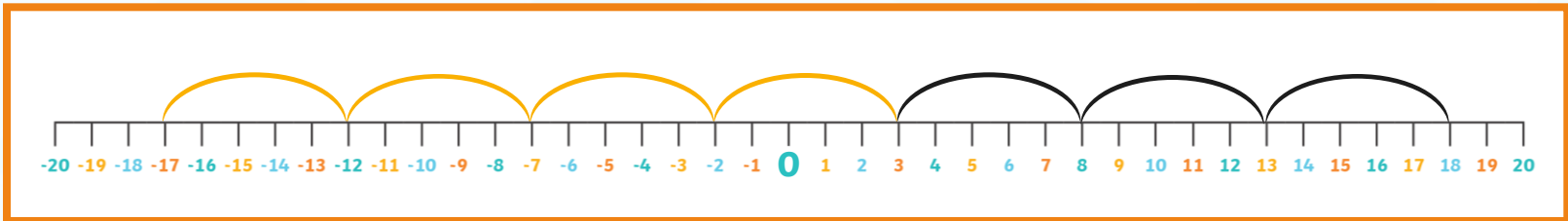
Negative numbers are the opposite of positive numbers. Positive numbers increase above zero and negative numbers decrease below zero. As you move in steps further away from zero, the digits get bigger but in fact, the number is getting smaller.



Counting Through Zero



Let's try another one.



Start at 18, then count back to 13, 8 and then 3.

What are the first four negative numbers in the sequence?

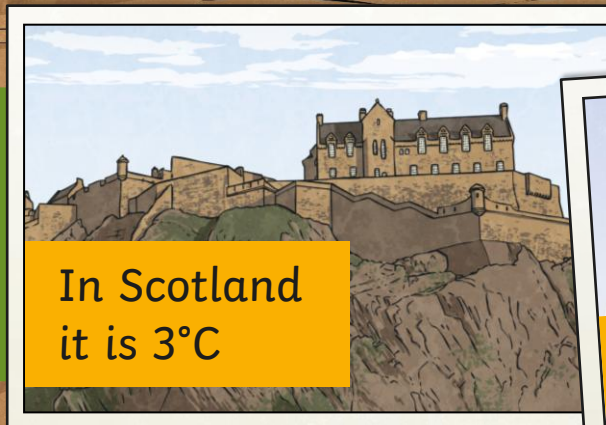
Count through zero into the negative numbers, counting -2 first, then -7, -12 and -17.

Counting Through Zero



David says the difference between the two temperatures is 9°C .
Is David's statement true or false? Explain your answer fully.

The answer is **15 degrees**, not 9 as David suggested.



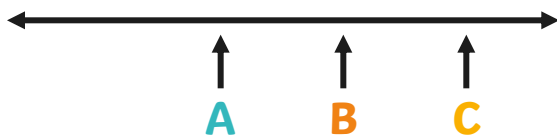
$$12 + 3 = 15$$



Counting Through Zero



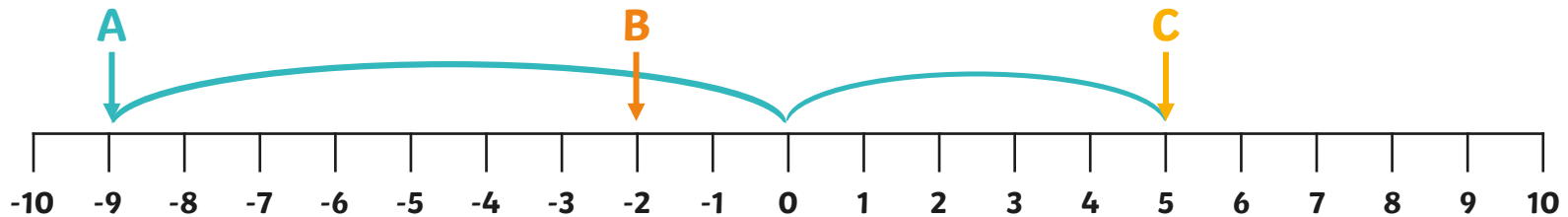
The arrows on the number line represent negative numbers.



A is 14 less than C.

C is 5.

We know B is -2 because it is halfway between A and C.



Race to Zero



Play this game with a partner. You will need a **Negative Number Line**, a **Race to Zero Activity Sheet** and a set of **Race to Zero Cards**.



Race to Zero Cards

To count forwards and backwards through zero.

Cut out these cards and use them to play the Race to Zero game.

Race to Zero Cards

To count forwards and backwards through zero.

Cut out these cards and use them to play the Race to Zero game.

Count backwards $-1 + 2$	Count backwards $\sqrt{16}$	Count forwards $-6 + 7$	Count forwards $5 \times 8 + 2$
Count backwards $(2 \times 10) - (5 \times 3)$	Count backwards $\frac{1}{10}$ of 60	Count forwards $-10 + 15$	Count forwards $\sqrt{36}$
Count backwards $-3 + 10$	Count backwards 10% of 100	Count forwards half of 26	Count forwards $-5 + 15$
Count backwards $5 \times 3 \times 2$	Count backwards 1.2×10	Count forwards $60 \div 3 - 3$	Count forwards 4^2
Count backwards 5^2	Count backwards $(2 \times 2) + (2 + 3)$	Count forwards $\frac{1}{4}$ of 100	Count forwards 10% of 200

Race to Zero



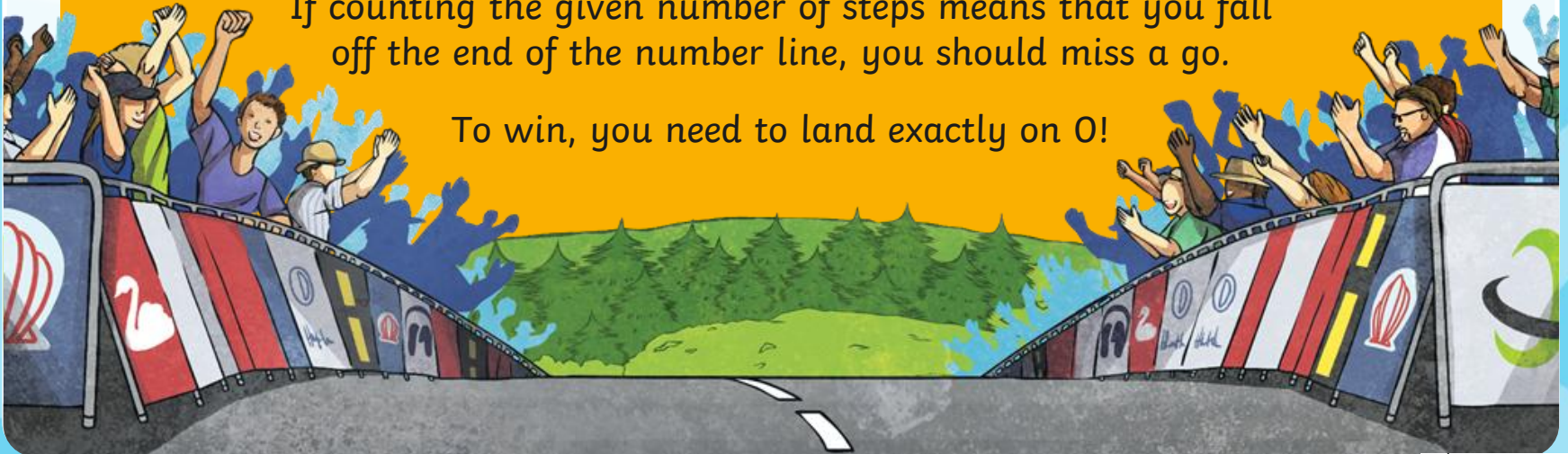
The aim of this game is to be the first player to hit 0 exactly. You will be counting forwards and backwards along the number line.

One player should start at one end of the number line, and the other player should start at the other end of the number line.

Take turns to draw a **Race to Zero Card**. Follow the instructions on the card, counting the given number of steps forwards or backwards.

If counting the given number of steps means that you fall off the end of the number line, you should miss a go.

To win, you need to land exactly on 0!



Race to Zero



Keep a record of the steps you take to reach 0 in a table with two columns: Counting Instruction and New Number.

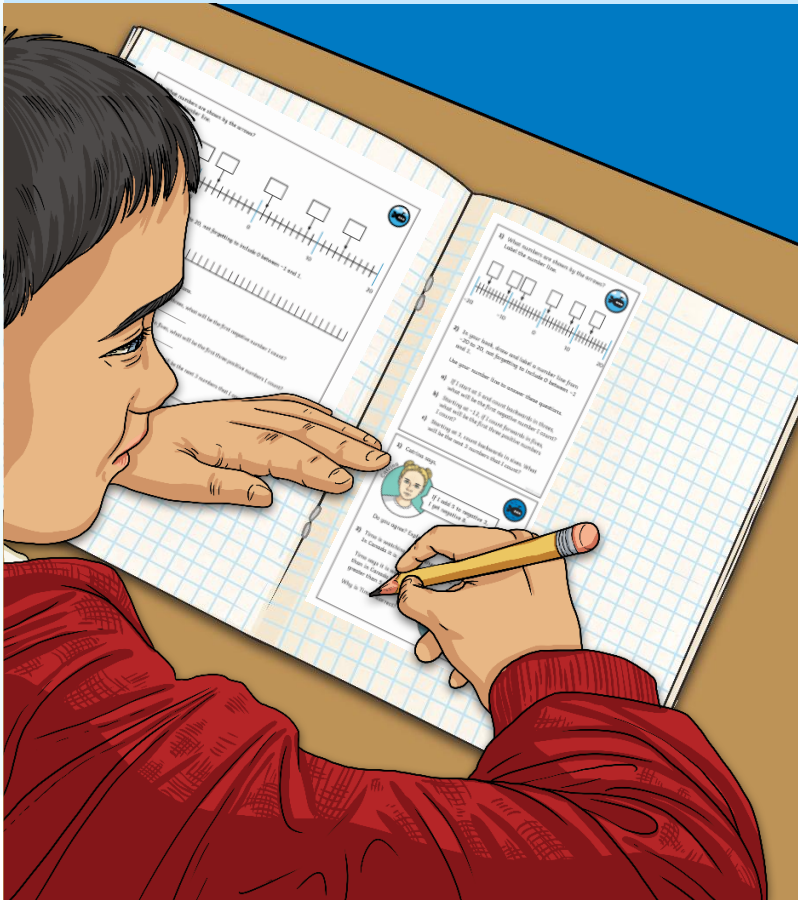
Counting instruction	New Number

Write down the counting instruction off the Race to Zero Card in the first column. Write the new number that you land on in the second column.



Diving into Mastery

Dive in by completing your own activity!



1) Starting right, up

Start

back

fore

back

fore

back

fore

back

2) Here is a

A

A is 6 less

B is less t

C is half

D is 10 m

What cou

Give thre

1) Catrina s

If

Do you e

2) Timo is v

Timo say

Why is TI

1) What numbers are shown by the arrows?
Label the number line.

2) Label this number line from -20 to 20, not forgetting to include 0 between -1 and 1.

Use your number line to answer these questions.

a) If I start at 5 and count backwards in threes, what will be the first negative number I count?

b) Starting at -12, if I count forwards in fives, what will be the first three positive numbers I count?

c) Starting at 3, count backwards in sixes. What will be the next 3 numbers that I count?

Counting Challenge



Use your **Negative Number Line** to set your partner a counting challenge!

Give them a starting number, a direction and a step.

For example, you might say, "Start at 13 and count backwards in fours."
Or you could say, "Start at -26 and count forwards in sevens."

Take turns to complete the counting challenges.

You may use the Negative Number Line to help you.



Aim



- To count forwards and backwards through zero.

Success Criteria

- I can use a number line to count forwards and backwards through zero.
- I can use negative numbers when counting through zero.

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