



Maths

Number and Place Value

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

Lesson Breakdown

Below is our suggestion for the most coherent and progressive sequence to teach this area of Year 6 Maths. Steps on the White Rose Maths scheme of learning although we have not aimed to mirror the exact order in which they are presented.

Read, write, order and compare numbers (1): Powers of 10 up to 1 Mill
Children identify the relationships between powers of 10 from one thousand to one million. They use their understanding of the relationships between powers of 10 to scale up and down by multiplying and dividing by powers of 10. This is also visually demonstrated using bar models. The focus is on the correct language focus. The focus is on the relationships between powers of 10 from one thousand to one million.

NC Statement: Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
Lesson Aim: To understand the relationship between powers of 10 from 1 hundredth to 10 million.

Read, write, order and compare numbers (2): Dividing Powers of 10 into Smaller Parts
Children identify the relationships between powers of 10 from one thousand to one million. They use their understanding of the relationships between powers of 10 to scale up and down by multiplying and dividing by powers of 10. This is also visually demonstrated using bar models. The focus is on the correct language focus. The focus is on the relationships between powers of 10 from one thousand to one million.

NC Statement: Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
Lesson Aim: To divide powers of 10 into 2, 4, 5 and 10 equal parts.

Introduction

In this unit, the children read and write numbers up to 10 000 000 and continue to identify the value of individual digits in a number. They revisit comparisons of numbers using the greater than and less than symbols and then further develop their skills by reasoning about numbers. Children will focus on rounding numbers to any given degree of accuracy and will also investigate reasoning problems based on rounding numbers. They will work with negative numbers, ordering and comparing them and calculating intervals across zero. They will use negative numbers in context to solve problems. Finally, children will have the opportunity to use all their number and place value skills to solve a range of problems.

Resources
Dice, Gattegno charts, place value charts, place value counters, whiteboards and markers.

Assessment Statements
By the end of this unit, children working towards the expected level will be able to:

- read and write numbers up to 1 000 000;
- identify the value of each digit in a number up to 1 000 000;
- identify the value of a digit in numbers with two decimal places;
- order numbers up to 1 000 000;
- compare numbers using the greater than and less than symbols;
- round numbers to a required degree of accuracy using a number line;
- calculate intervals across zero using a number line;
- compare and order negative numbers;
- solve simple problems involving negative numbers in context;
- solve simple reasoning problems using all of the above.

children working at the expected level will be able to:

- read and write numbers up to 10 000 000;
- identify the value of each digit in a number 000 000;
- identify the value of a digit in numbers with decimal places;
- order numbers up to 10 000 000;
- compare numbers by working out calculated intervals across zero;
- solve problems involving negative numbers in context;
- solve reasoning problems using all of the above.

Number and Place Value
Maths | Year 6 | Skills to Progress Overview

The aim of the 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, Subtraction, Multiplication and Division							Order: Position and Direction	Consolidation
Spring	Number: Decimals		Number: Percentages		Number: Algebra		Measurement: Converting Units		Measurement: Perimeter, Area and Volume		Number: Ratio	Consolidation
Summer	Geometry: Properties of Shapes		Problem Solving			Statistics				Investigations		Consolidation

Compare and Order Decimals



Aim

- To order and compare numbers up to 10 000 000.

Success Criteria

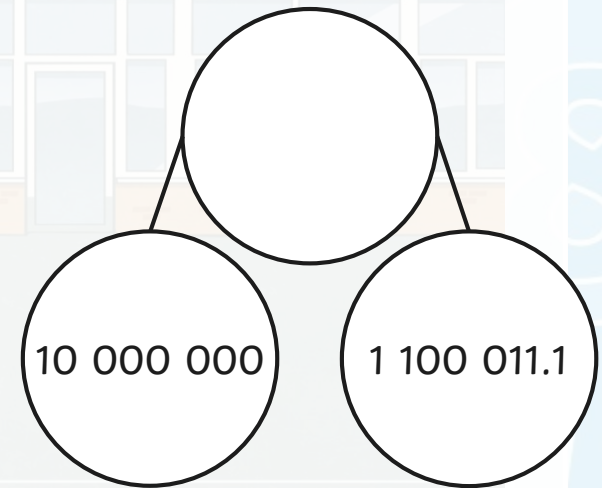
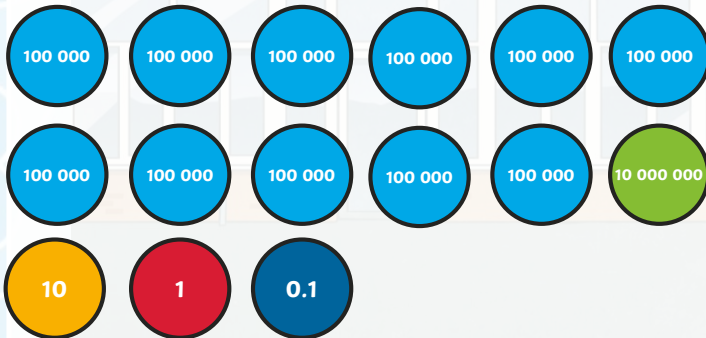
- I can identify the value of each digit in decimal numbers.
- I can compare decimal numbers.
- I can order decimal numbers.

Remember It



Which of these representations is **isolated** is **incorrect**? All other numbers represent **11 000 011.1** except this with **11 010 011.1** is the number represented by the words.

Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths
1	1	1	0	0	0	1	1	1



“Eleven million, one thousand and eleven and one tenth.”

One ten million, one million, one hundred thousand, one ten, one and one tenth.

Get in Line



Each person has a number card.

Your whole class challenge is to stand in a line so that all your numbers are in order from smallest to biggest!

You can show your number card to others, but you are not allowed to talk.



Comparing Decimals



3.27

3.4

3.27 is larger because 27 is larger than 4.

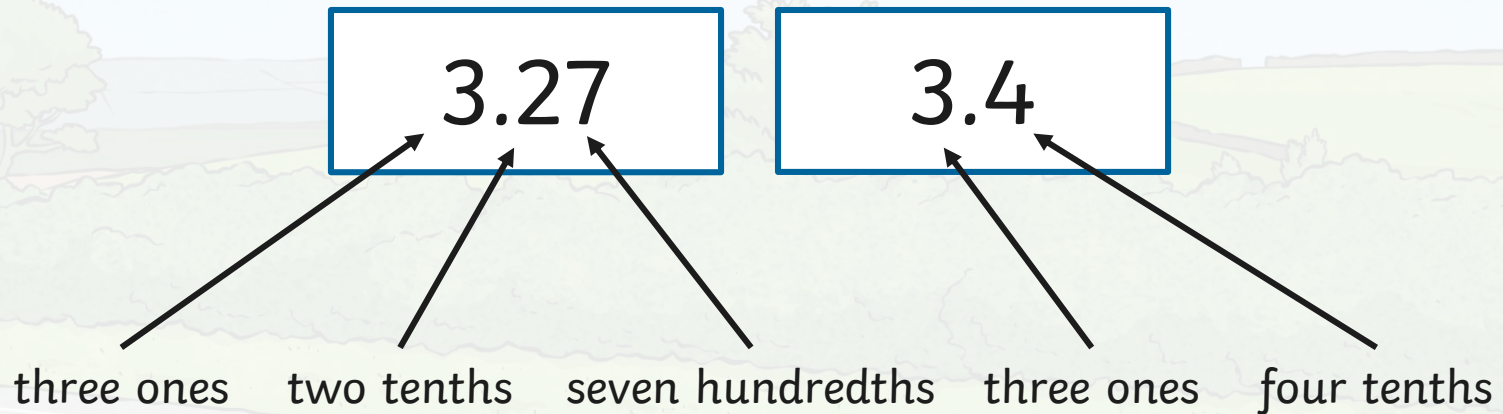
tens	ones	●	tenths	hundredths
	3	●	2	7
	3	●	4	

3.27 is actually smaller than 3.4! Using a place value grid helps to compare numbers with decimals. Reading the number from right to left helps when making comparisons.

Comparing Decimals



We can also partition the numbers to help us explain our ideas.



Both numbers have three ones. However, 3.27 has just two tenths, while 3.4 has four tenths. 3.4 is the biggest number.

Comparing Decimals



Use a place value grid to help find the biggest number in each of these pairs.
Explain how you know.

16.09

16.3

tens	ones	tenths	hundredths	thousandths



Comparing Decimals



Use a place value grid to help find the biggest number in each of these pairs.
Explain how you know.

2.5

2.19

tens	ones	tenths	hundredths	thousandths



Comparing Decimals



Use a place value grid to help find the biggest number in each of these pairs.
Explain how you know.

23.49

23.095

tens	ones	tenths	hundredths	thousandths



Comparing Decimals



Use a place value grid to help find the biggest number in each of these pairs.
Explain how you know.

98.34

98.321

tens	ones	●	tenths	hundredths	thousandths
		●			
		●			



Comparing Decimals



Which mathematical symbol satisfies the calculation shown?
Discuss with a partner.

tens	ones	tenths	hundredths	thousandths
●	●	●		●
●	●	●		
●	●	●		
●	●	●		
●	●	●		
●	●	●		



53.310



Comparing Decimals



Find a number that satisfies the calculation below.

$$456\,121.6 > \underline{\hspace{2cm}} > 135\,733.8$$

There are many possible answers however all answers must be greater than **135 733.8** and smaller than **456 121.6**.

Ordering Decimals



When ordering decimal numbers, we use the same technique of comparing the place value of the digits in each number.

0.4

4.4

0.04

4.04

0.44

Razia puts these decimal numbers in order from smallest to largest. Do you agree with how she has ordered them? Explain why or why not.

0.04

0.4

0.44

4.04

4.4

Ordering Decimals



0.04

0.4

0.44

4.04

4.4

smallest

largest

Razia has ordered these decimal numbers correctly. She has compared the value of each digit in each number.

- 0.04 has zero ones, zero tenths and four hundredths.
- 0.4 has zero ones and four tenths.
- 0.44 has zero ones, four tenths and four hundredths.
- 4.04 has four ones, zero tenths and four hundredths.
- 4.4 has four ones and four tenths.

Ordering Decimals



Choose one set of these decimal numbers and put them in order from smallest to biggest.

2.3

0.3

3.2

0.2

0.03

7.25

7.21

7.125

7.025

7.1

7.15

45.045

45.005

45.405

45.54

45.045

45.445

Ordering Decimals



How did you do?

0.03

0.2

0.3

2.3

3.2

7.025

7.1

7.125

7.15

7.21

7.25

45.005

45.045

45.405

45.445

45.54

45.545

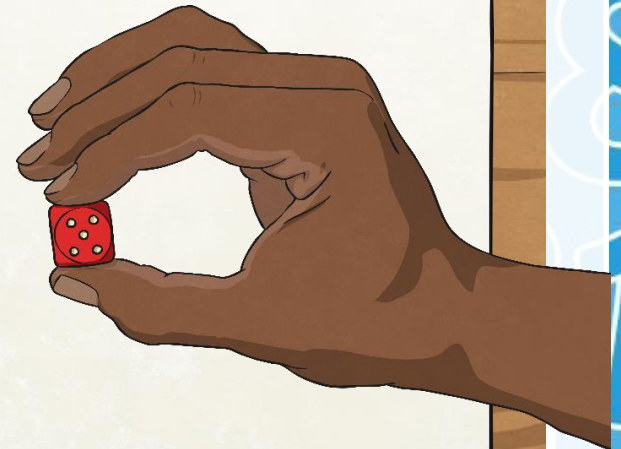
Number Line Squeeze



Play 'Number Line Squeeze' to order and compare decimal numbers. You will work with a partner to play this game. You will need one dice between two.

The game is played on a labelled number line. You will take it in turns to roll a decimal number and write it in the correct place on the number line. Your partner will then do the same - roll a number and write it on the number line.

The aim of the game is to get three numbers in order on the number line without your partner squeezing a number in between them! Let's look at an example now.



Number Line Squeeze



These two children are working together.

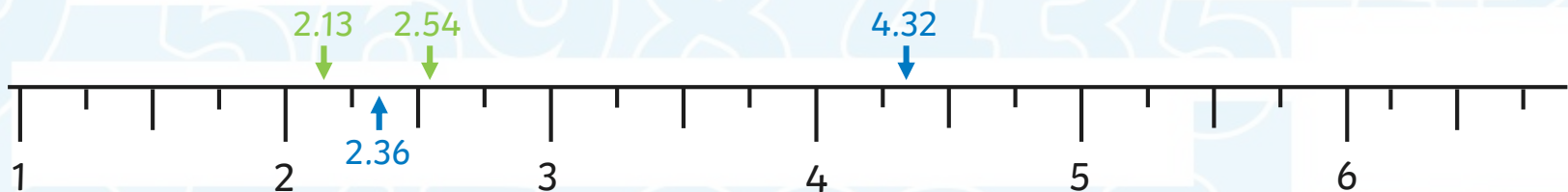


Elisa rolls first. She rolls three times and gets a 3, a 1 and a 2. She decides to make 2.13. She writes it on the number line in green.

Max now rolls the dice. He rolls a 4, a 3 and a 2. He makes 4.32 and writes it on the number line in blue.

Elisa rolls a 2, a 5 and a 4. She makes 2.54 and writes it on the number line. She now has two numbers in order on the number line! She only needs one more to win.

Max rolls a 3, a 2 and a 6. He makes 2.36. He can squeeze this in between Elisa's numbers on the number line.



Number Line Squeeze



Max and Elisa keep playing until one person gets three numbers in order without any of their partner's numbers squeezed in between them.

Now it's over to you!

Number Line Squeeze
To order and compare numbers up to 10 000 000.

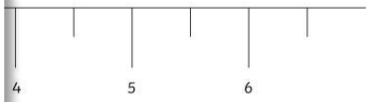
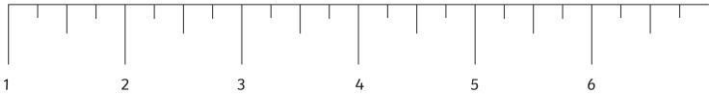
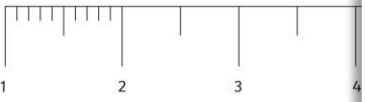
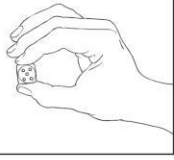
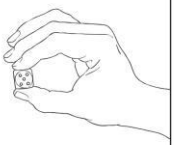
Work with a partner to play this game. You will need one dice between two.
Take it in turns to roll a decimal number with two decimal places. Write it in colour in the correct place on the number line. Your partner will then do the same, using a different colour.
The aim of the game is to get three numbers in order on the number line without your partner squeezing a number in between them!

Number Line Squeeze
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Diving into Mastery

Dive in by completing your own activity!



1) Put the following numbers in ascending order.

a) 56.32, 54.1, 56.3, 56.21, 55.7

b) 7.43, 7.34, 7.3, 7.1

c) 4.09, 4.9, 4.094, 4.4, 4.49

d) 5.22, 5.32, 5.23, 5.55

2) a) Write a number that is larger than the top value and less than the bottom value to complete the comparison statement.

Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
○	○	○	○	●	○	○

Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
○	○	○	○	○	○	○

< <

b) Represent the **greatest** possible number in the place value grid that completes this comparison statement.

Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
○	○	○	○	○	○	○

< 2613.510 <

Make It True



Choose two digits and a symbol from the cards below to make this number sentence true.

$$4.5_1 \quad \square \quad 4._21$$

>

8

<

2

5

=

Make It True



There are several possibilities you could have chosen!
Here are two of the possible ways to make it true:

$$4.5\mathbf{8}1 \quad \boxed{>} \quad 4.\mathbf{2}21 \qquad 4.5\mathbf{2}1 \quad \boxed{=} \quad 4.5\mathbf{2}1$$

>

8

<

2

5

=

Aim



- To order and compare numbers up to 10 000 000.

Success Criteria

- I can identify the value of each digit in decimal numbers.
- I can compare decimal numbers.
- I can order decimal numbers.

765.395289873
991 6789 78 096
8 562 853 2234
309 31 238 948
9 5698 435 -31
63 567 892 2.542

