



# 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 PlanIt 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 bar models to show the relationship between powers of 10 from one thousand to one million. They use bar models to show the relationship between powers of 10 from one thousand to one million. They use bar models to show the relationship 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 groups greater than 1000 into 2, 4, 5 or 10 equal parts.**  
 Children make connections between the Powers of 10 in Equal Parts Measurement Game, using measuring in context. Fluency, reasoning and problem-solving questions are included in the game.

**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 calculations to a required degree of accuracy;
- calculate intervals across zero;
- solve problems involving negative numbers in context;
- solve reasoning problems using all of the above.

**Number and Place Value**  
 Maths | Year 5 | 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					Fractions		Ordering: 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

# Place Value Up to 10 Million Including Decimals



# Aim

- To partition and compose numbers up to 10 000 000 including decimal tenths, hundredths and thousandths.

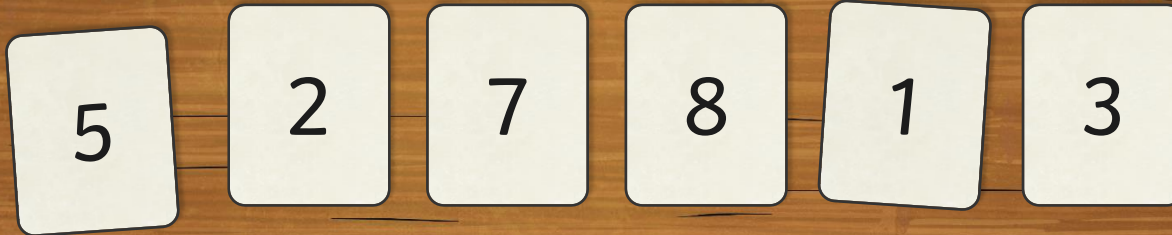
# Success Criteria

- I can read and write decimal numbers up to 10 000 000.
- I can identify the place value of digits in decimal numbers up to 10 000 000.
- I can combine units to compose decimal numbers up to 10 000 000.
- I can partition decimal numbers up to 10 000 000.

# Remember It



Use these digit cards to make a number with **five thousands**.  
Say the number you have written. Write the number in words.



Thousands	Hundreds	Tens	Ones	•	tenths	hundredths	thousandths
				•			

# Remember It



Use these digit cards to make a number with **five hundredths**. Say the number you have written. Write the number in words.



Thousands	Hundreds	Tens	Ones	•	tenths	hundredths	thousandths
				•			

# Remember It



Use these digit cards to make a number with **five tenths**.  
Say the number you have written. Write the number in words.



Thousands	Hundreds	Tens	Ones	• tenths	hundredths	thousandths

# Partitioning



Let's use it to partition the number 21 741.087

10 000 000	20 000 000	30 000 000	40 000 000	50 000 000	60 000 000	70 000 000	80 000 000	90 000 000
1 000 000	2 000 000	3 000 000	4 000 000	5 000 000	6 000 000	7 000 000	8 000 000	9 000 000
100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000
10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000
1000	2000	3000	4000	5000	6000	7000	8000	9000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009



Let's use it to partition the number 21 741.087

10 000 000	20 000 000	30 000 000	40 000 000	50 000 000	60 000 000	70 000 000	80 000 000	90 000 000
1 000 000	2 000 000	3 000 000	4 000 000	5 000 000	6 000 000	7 000 000	8 000 000	9 000 000
100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000
10 000	<b>20 000</b>	30 000	40 000	50 000	60 000	70 000	80 000	90 000
<b>1000</b>	2000	3000	4000	5000	6000	7000	8000	9000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
<b>1</b>	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	<b>0.08</b>	0.09
0.001	0.002	0.003	0.004	0.005	0.006	<b>0.007</b>	0.008	0.009

The 2 represents **2 ten-thousands**, the value is **20 000**.

The 0 represents **0 tenths**, the value is **0**. This is a place holder.

The 7 represents **7 hundreds**, the value is **700**.

The 1 represents **1 thousand**, the value is **1000**.

The 8 represents **8 hundredths**, the value is **0.08**.

The 1 represents **1 one**, the value is **1**.

The 7 represents **7 thousandths**, the value is **0.007**.

Write down your own number with three decimal places.  
Use the sentence stem to say the value of each digit.

10 000 000	20 000 000	30 000 000	40 000 000	50 000 000	60 000 000	70 000 000	80 000 000	90 000 000
1 000 000	2 000 000	3 000 000	4 000 000	5 000 000	6 000 000	7 000 000	8 000 000	9 000 000
100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000
10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000
1000	2000	3000	4000	5000	6000	7000	8000	9000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009

The \_\_\_\_\_ represents \_\_\_\_\_, the value is \_\_\_\_\_.

# Partitioning



Here is the decimal number 940 528.805 shown through standard partitioning.

$$900\ 000 + 40\ 000 + 500 + 20 + 8 + 0.8 + 0.005$$

Write down your own number with three decimal places using standard partitioning.

# Partitioning Problems



Look at the calculations below. Identify the calculations that show partitioning correctly. Tell your partner how you know they're correct. Correct any calculations that show partitioning incorrectly.

$$4\ 523\ 085.341 = 80 + 3000 + 4\ 000\ 000 + 20\ 000 + 5 + 500\ 000$$

$$5\ 333\ 129.953 = 300\ 000 + 100 + 0.9 + 0.5 + 0.3 + 5\ 000\ 000 + 30\ 000$$

$$567\ 330.836 = 500\ 000 + 60\ 000 + 0.6 + 0.30 + 0.8 + 30 + 30 + 700$$

$$4\ 223\ 009.085 = 200\ 000 + 0.08 + 3000 + 20\ 000 + 4\ 000\ 000 + 0.005 + 9$$

$$567\ 330.836 = 500\ 000 + 60\ 000 + 0.006 + 0.03 + 0.8 + 30 + 300 + 7000$$



# Combining



700 000

50 000

2000

700

80

9

0.6

0.05

0.002

Combine these unit parts to  
compose the decimal number.

$$\begin{aligned} &700\ 000 + 50\ 000 + 2000 \\ &+ 700 + 80 + 9 + 0.6 + 0.05 \\ &+ 0.002 = 752\ 789.652 \end{aligned}$$

# Combining



1 000 000

800

2

5000

50

90 000

0.5

400 000

0.003

0.02

Combine these unit parts to compose the decimal number.

$$\begin{aligned} &50 + 800 + 1\,000\,000 \\ &+ 5000 + 90\,000 \\ &+ 400\,000 + 2 + 0.5 + 0.003 \\ &+ 0.02 = 1\,495\,852.523 \end{aligned}$$

# Combining



Hamish has combined the unit parts to compose a decimal number. Do you agree with what he has done? Explain how you know.

3 000 000

700

1

7000

30

90 000

0.2

200 000

0.09

0.003

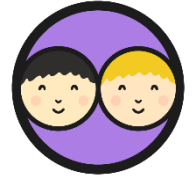


Hamish

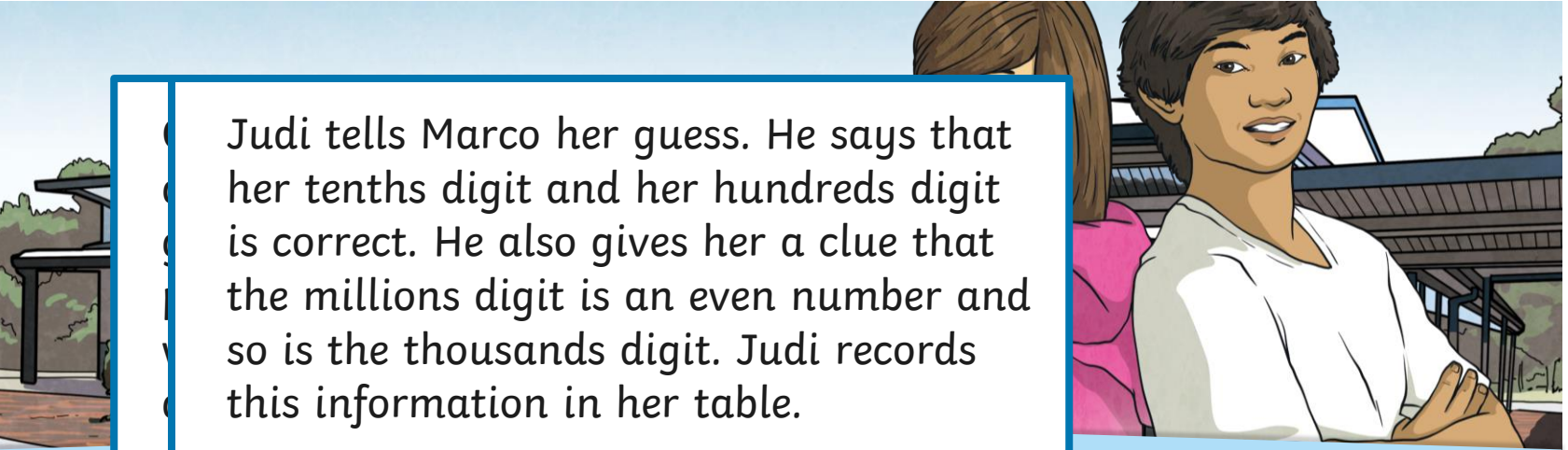
$$\begin{aligned} &30 + 0.2 + 0.09 + 7000 \\ &+ 200\,000 + 90\,000 + 1 \\ &+ 700 + 0.003 + 3\,000\,000 \\ &= 3\,297\,731.293 \end{aligned}$$

**Hamish is correct. Addition is commutative and can be done in any order.**

# Combining



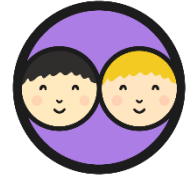
Judi tells Marco her guess. He says that her tenths digit and her hundreds digit is correct. He also gives her a clue that the millions digit is an even number and so is the thousands digit. Judi records this information in her table.



Feedback									
M	Hth	Tth	Th	H	T	O	t	h	th
even			even	✓	✓				



# Place Value Number Guess

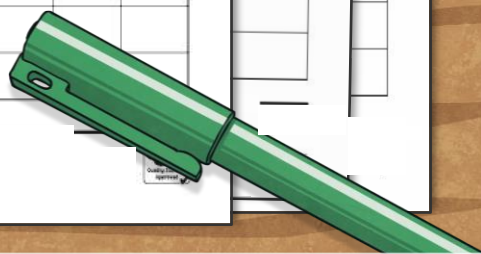


## Place Value Number Guess

To partition and compose numbers up to 10 000 000 including decimal tenths, hundredths and thousandths.

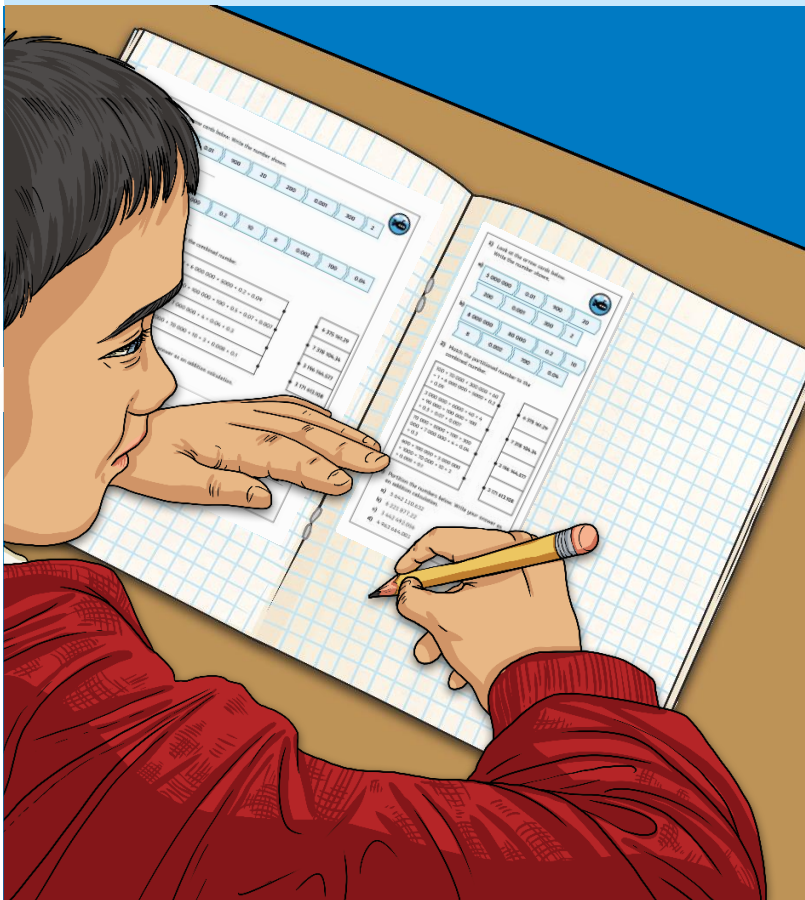
Can you guess your partner's decimal number? Show each guess using partitioning.

Turn	Guess	Partitioned Number	Feedback										
			M	Hth	Tth	Th	H	T	O	t	h	th	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													



## Diving into Mastery

Dive in by completing your own activity!



1) Rishi is making seven-digit numbers.

9 000 000   60 000  
0.002



6 467 413.492  
number I've made

2) Holly has partitioned the number 1103 500.74.  
Explain why.

Number	Partitioned
1103 500.74	$500 + 0.4 + 1000 + 0.007 + 1000000 + 100000$
5 001 741.04	$5\ 000\ 000 + 0.04 + 1000$
660 001.941	$60\ 000 + 0.001 + 600000 + 0.001 + 600000 + 0.001 + 900000$
492 110.041	$0.4 + 0.1 + 200 + 900000 + 4\ 000\ 000$

3) Mo is thinking about the number 8 000 000.



Showing this with standard partitioning will produce 8 parts.

1) Look at the arrow cards below. Write the number shown.

a) 5 000 000   0.01   900   20   200   0.001   300   2

b) 8 000 000   80 000   0.2   10   8   0.002   700   0.04

2) Match the partitioned number to the combined number.

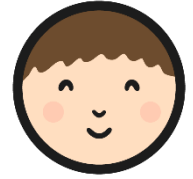
$100 + 70\ 000 + 300\ 000 + 60 + 1 + 6\ 000\ 000 + 5000 + 0.2 + 0.09$	• 6 375 161.29
$3\ 000\ 000 + 6000 + 40 + 4 + 90\ 000 + 100\ 000 + 100 + 0.5 + 0.07 + 0.007$	• 7 378 104.34
$70\ 000 + 8000 + 100 + 300\ 000 + 7\ 000\ 000 + 4 + 0.04 + 0.3$	• 3 196 144.577
$600 + 100\ 000 + 3\ 000\ 000 + 1000 + 70\ 000 + 10 + 3 + 0.008 + 0.1$	• 3 171 613.108

3) Partition the numbers below. Write your answer as an addition calculation.

- 5 642 110.632
- 6 221 877.22
- 3 442 492.056
- 4 963 664.001



# Prove it!



4 507 010.702 shown through standard partitioning produces 10 parts.

Do you agree with Freddy?

No. There are six parts:  
 $4\ 000\ 000 + 500\ 000 +$   
 $7000 + 10 + 0.7 + 0.002$   
 $= 5\ 407\ 010.702$



# Aim



- To partition and compose numbers up to 10 000 000 including decimal tenths, hundredths and thousandths.

# Success Criteria

- I can read and write decimal numbers up to 10 000 000.
- I can identify the place value of digits in decimal numbers up to 10 000 000.
- I can combine units to compose decimal numbers up to 10 000 000.
- I can partition decimal numbers up to 10 000 000.

765.395289873

991 6789 78 096

8 562 853 2234

309 31 238 948

9 5698 435 -31

63 567 892 2.542