

Subject

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 ten from one thousand to one million. They scale up and down by multiplying and dividing by powers of ten. Sentence stems demonstrate the correct language focus. The listing by of the concepts introduced and being into Mastery resources include full details.

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
 Using bar model representations and sentence stems will help children divide 10. The Powers of 10 in Equal Parts Measurement Game uses measuring in concept. Fluency, reasoning and problem-solving questions are included in the resource.

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 decimal places;
- order numbers up to 10 000 000;
- compare numbers by working out calculations;
- round numbers 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 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					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

Non-Standard Partitioning



Aim

- To compose and partition numbers up to 10 million using non-standard partitioning.

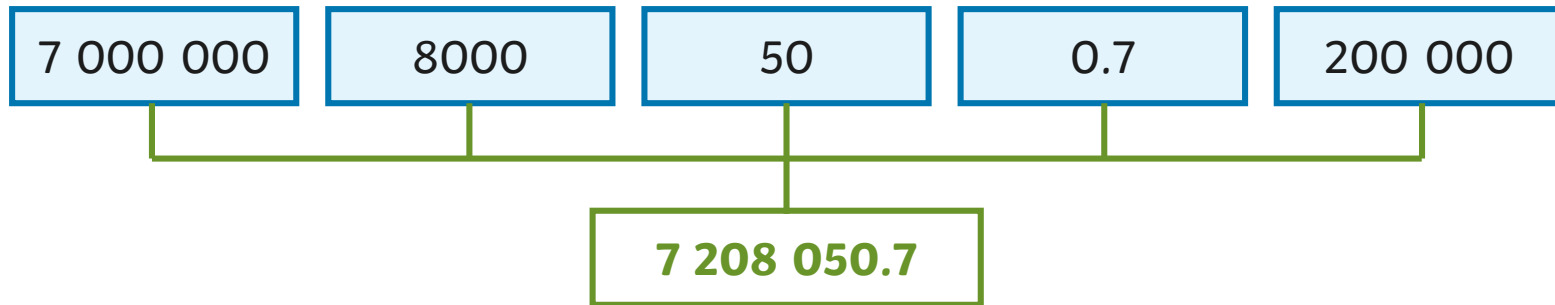
Success Criteria

- I can partition numbers up to 10 million in non-standard ways and write the related addition calculation.
- I can combine non-standard units to compose numbers up to 10 million and write the related addition calculation.
- I can solve problems relating to non-standard partitioning.

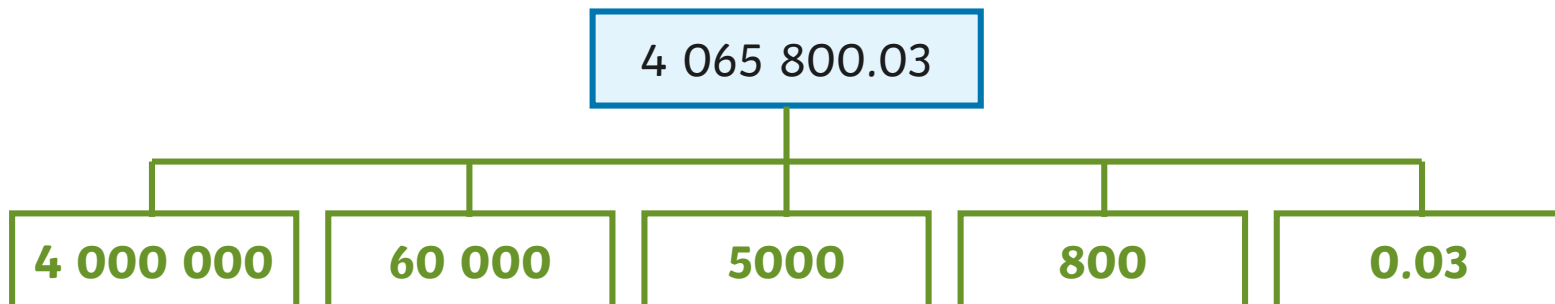
Remember It



Compose the number.



Partition the number.



Non-Standard Partitioning



When we partition a number, we are separating the number into place value unit parts such as millions, hundred-thousands, ten-thousands, thousands, hundreds, tens and ones.

Standard Partitioning

$$5\ 000\ 000 + 700\ 000 + 30\ 000 + 9\ 000 + 400 \\ + 20 + 1 + 0.5 = 5\ 739\ 421.5$$

Non-Standard Partitioning

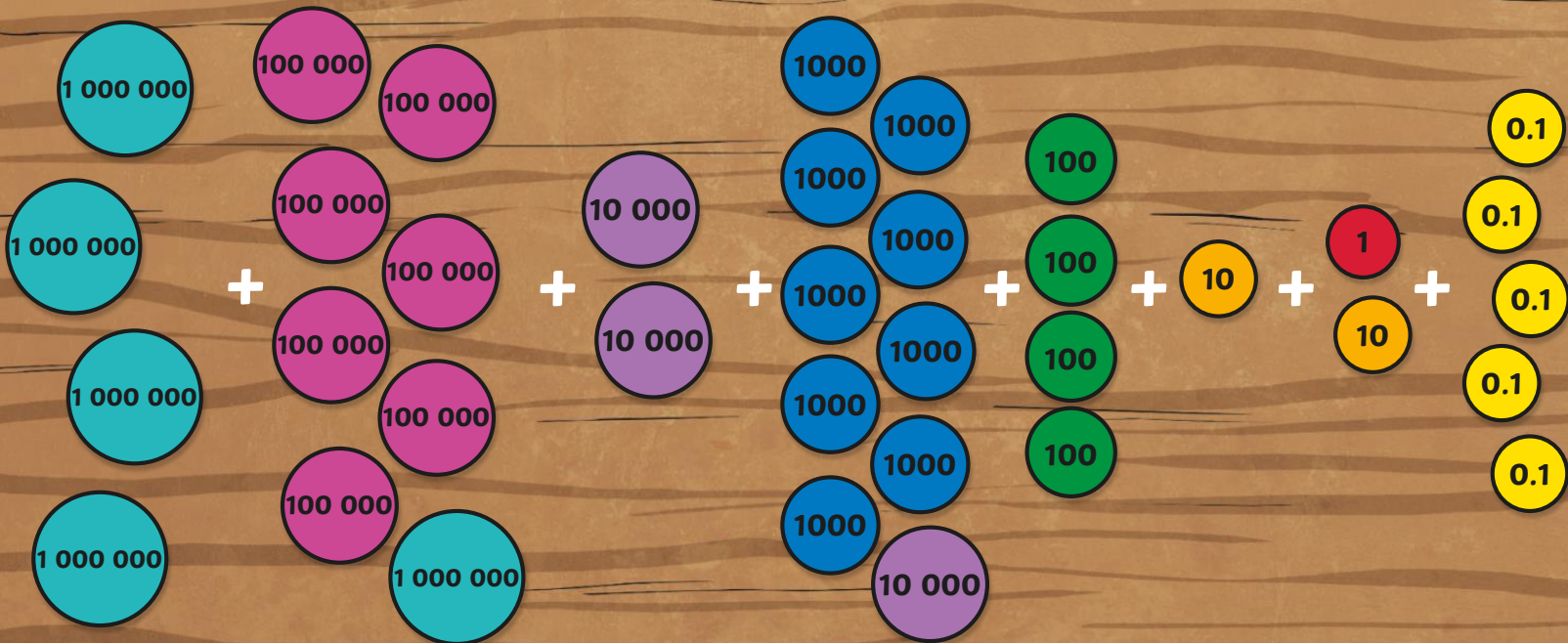
$$4\ 000\ 000 + 1\ 700\ 000 + 20\ 000 + 19\ 000 \\ + 400 + 10 + 11 + 0.5 = 5\ 739\ 421.5$$

One reason we might partition numbers in a non-standard way is to help us add and subtract larger numbers. Did you think of any other reasons?

Non-Standard Partitioning



Compare it with a **non-standard** way of partitioning the same number.



$$4\ 000\ 000 + 1\ 700\ 000 + 20\ 000 + 19\ 000 + 400 + 10 + 11 + 0.5$$

Non-Standard Partitioning

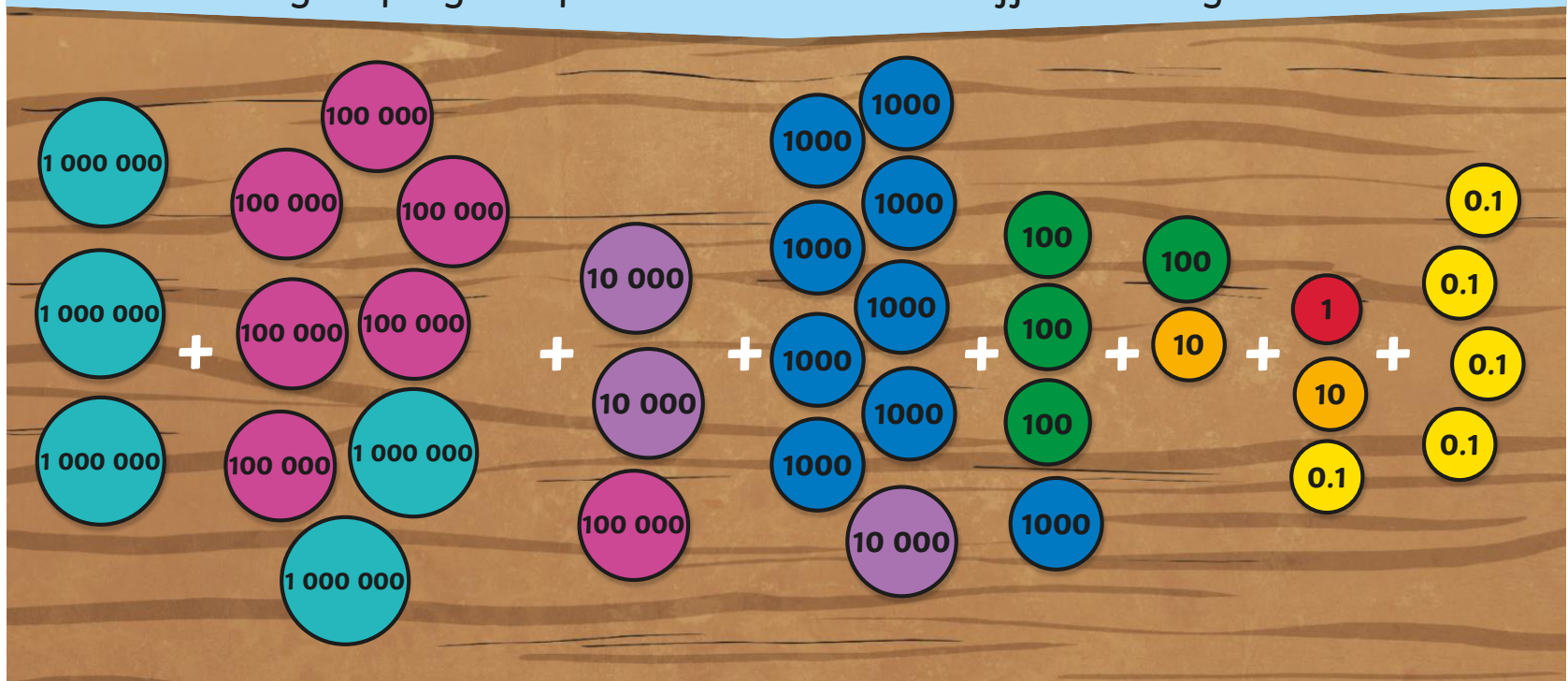


$4\ 000\ 000 + 1\ 700\ 000 + 20\ 000 + 19\ 000 + 400 + 10 + 11 + 0.5$

Non-Standard Partitioning



The value of the partitioned number always stays the same, we are just grouping the place value units in different ways.

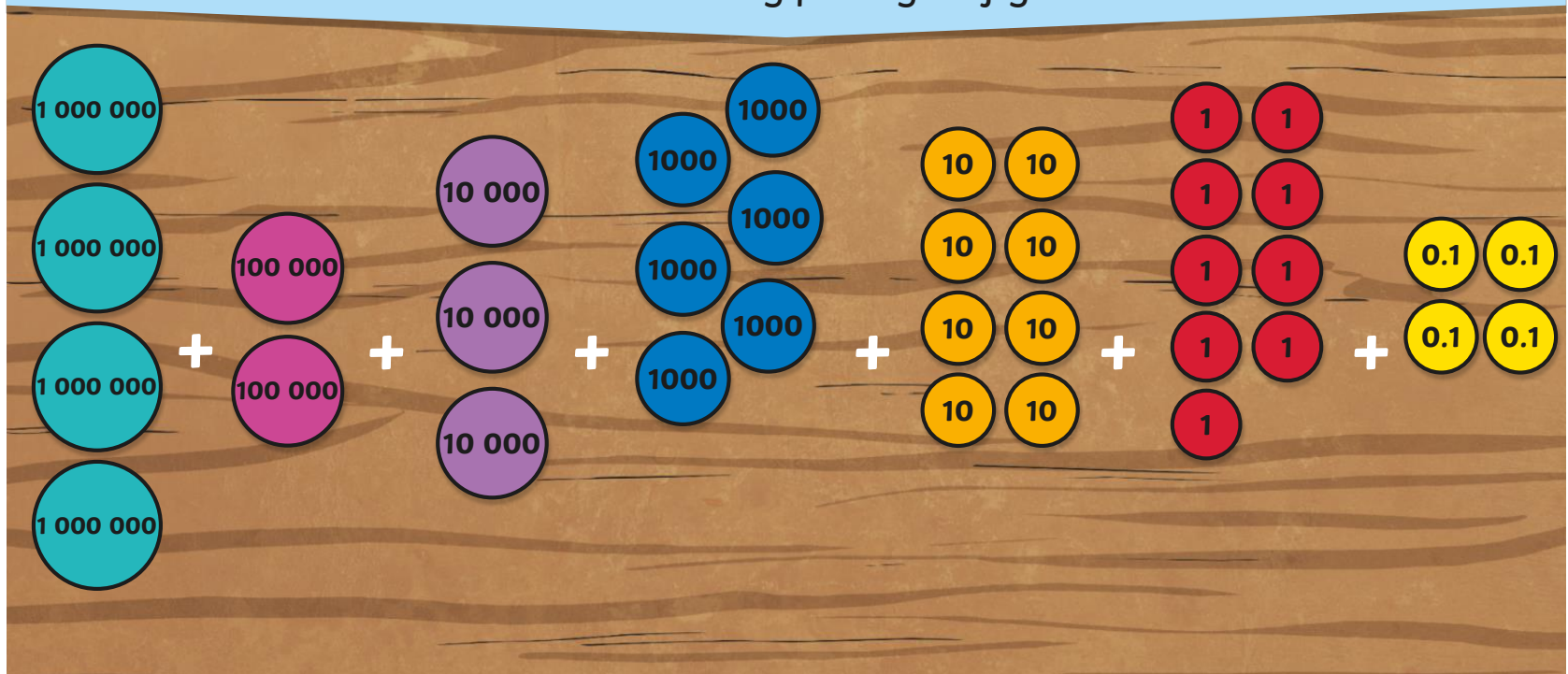


$$3\ 000\ 000 + 2\ 600\ 000 + 120\ 000 + 18\ 000 + 1\ 300 + 110 + 11.1 + 0.4$$

Non-Standard Partitioning



Find three different ways to partition 4 236 089.04 using non-standard addition if you can!

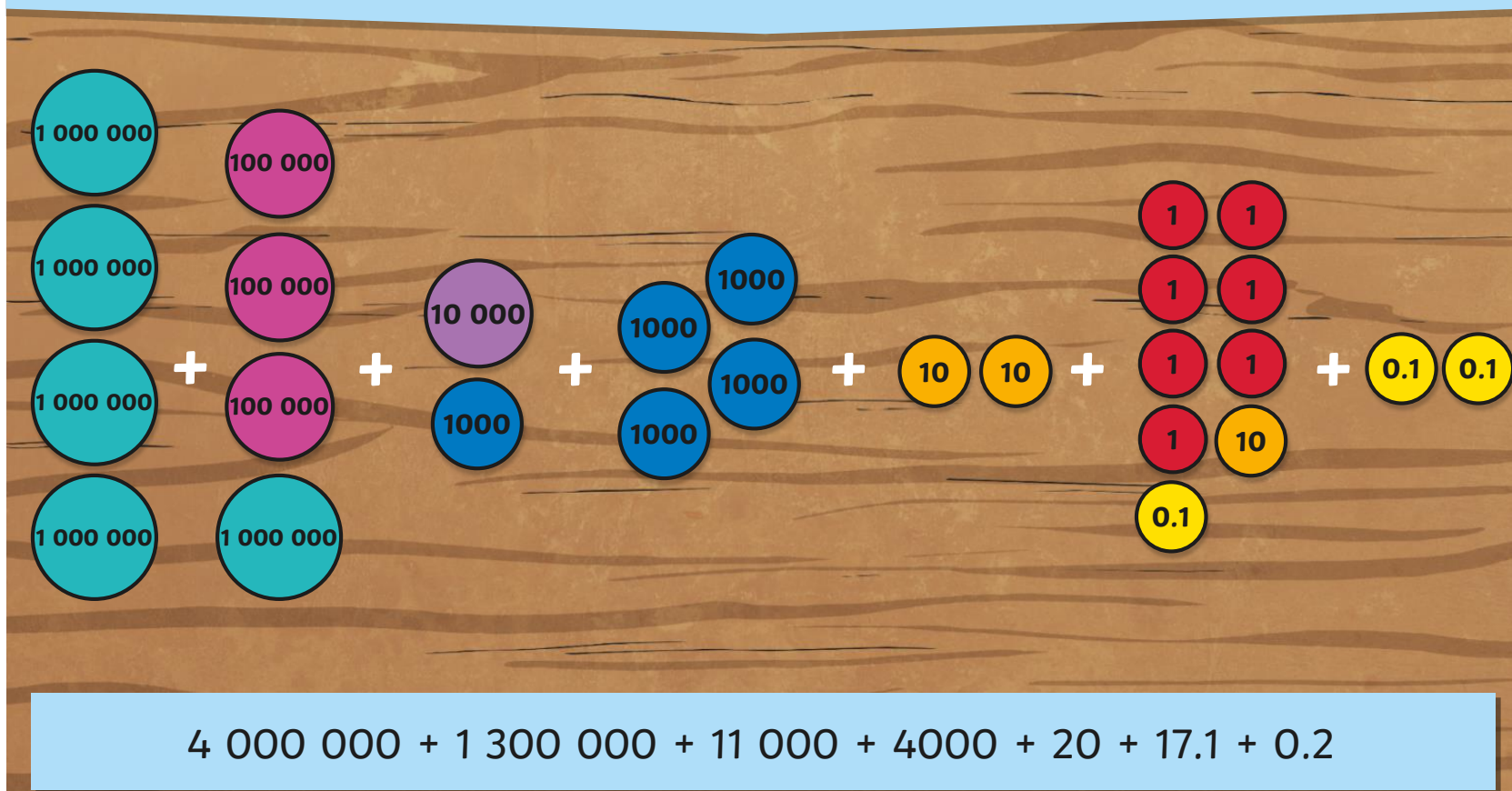


$$3\ 400\ 000\ 000 + 1\ 200\ 000\ 000 + 230\ 000 + 16\ 000 + 800 + 97 + 0.24$$

Non-Standard Composing



What methods did you use to compose the number from the parts?
 What number is shown here using non-standard unit parts?



Non-Standard Composing



What number is shown here using non-standard unit parts?

36 000

1 200 000

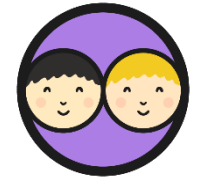
1400

7 500 000

137.4

8 737 537.4

Non-Standard Partitioning: Roll and Read Game



Non-Standard Partitioning: Roll and Read Game

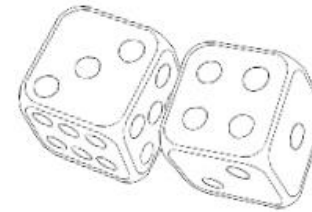
Record your non-stand

Non-Standard Partitioning: Roll and Read Game

To compose and partition numbers up to 10 million using non-standard partitioning.

Instructions

- On your turn, roll the dice.
- Choose one of the numbers on the row that matches the number you rolled.
- Partition the number shown using non-standard partitioning.
- If your partner thinks you are correct, colour and claim that representation.
- Claim four in a line to win.



	2 327 943.5	5 218 045.4	9 045 578.9	4 562 200.56	3 671 004.7	5 783 229.8
	4 236 054.6	1 014 156.5	6 108 789	7 829 311.67	1 731 115.8	2 902 330.9
	8 018 165.7	7 873 267.6	2 565 890	1 179 422.78	9 382 226.9	7 039 441
	3 128 276.8	4 319 378.7	8 246 901	6 463 533.89	4 972 337	8 184 552.1
	9 537 387.9	8 915 489.8	5 309 012	2 030 844.9	7 332 448.1	3 803 663.2
	6 010 100	3 171 500	8 111 100	5 600 000	2 700 500	6 210 700

Numbers to 10 Million: Reasoning



Meera is correct. The order of the non-standard unit parts doesn't matter. When all the parts are regrouped into standard unit parts she has composed the correct number.

124 000

26.2

3 400 000

2 200 000

1030

1.3

14 000

5 million and 739 thousand
and 57 ones and 5 tenths

= 5 739 057.5

Numbers to 10 Million: Reasoning



Look carefully at how Meera has used the part-whole model to solve this word problem. Is she correct? Explain your reasoning.

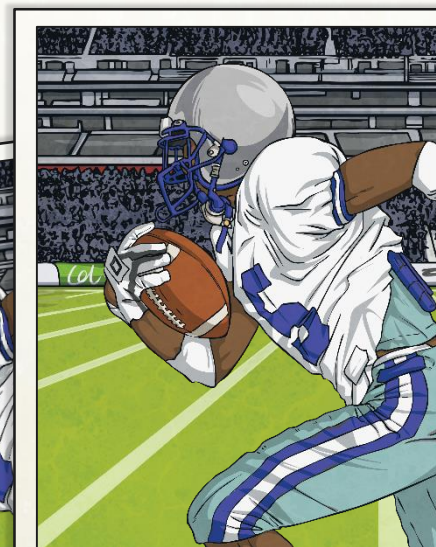
During one month, a football stadium sold 5 735 056 tickets. 28 000 of these tickets were sold in the first seven days. How many tickets were sold during the rest of the month?

Meera is correct. Using the part-whole model to subtract a non-standard unit part is a good method.

Meera

5 735

5 735
tickets

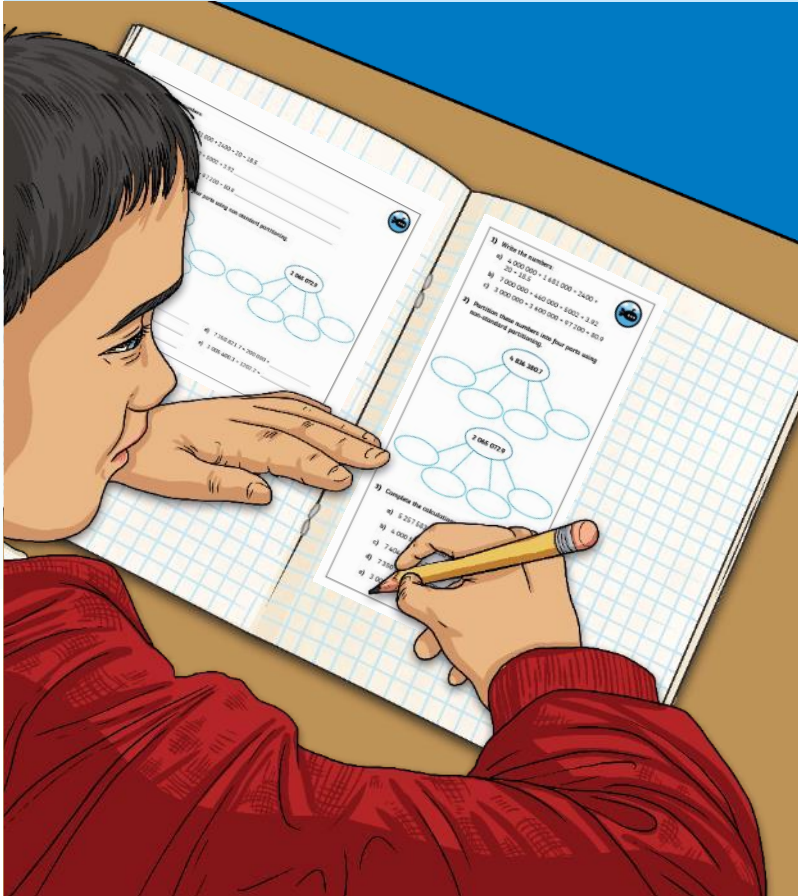


6

5 735 056
tickets
month.

Diving into Mastery

Dive in by completing your own activity!



1) Meera is a professional equipment manager. Explain how you would partition the number 4 836 380.7.

Meera explains that she would partition the number into four parts using non-standard partitioning.

2) Partition these numbers into four parts using non-standard partitioning.

4 836 380.7

2 065 072.9

3) Complete the calculations.

a) $5\,257\,583.4 + 3\,000\,000 =$ _____

b) $4\,000\,500.9 + 2280 =$ _____

c) $7\,404\,523.1 - 200 =$ _____

d) $7\,350\,821.7 - 200\,000 =$ _____

e) $3\,005\,400.3 - 1202.2 =$ _____

3) Explain why the number 4 836 380.7 is partitioned into four parts.

a) 5 724

b) 5 721

c) 5 721

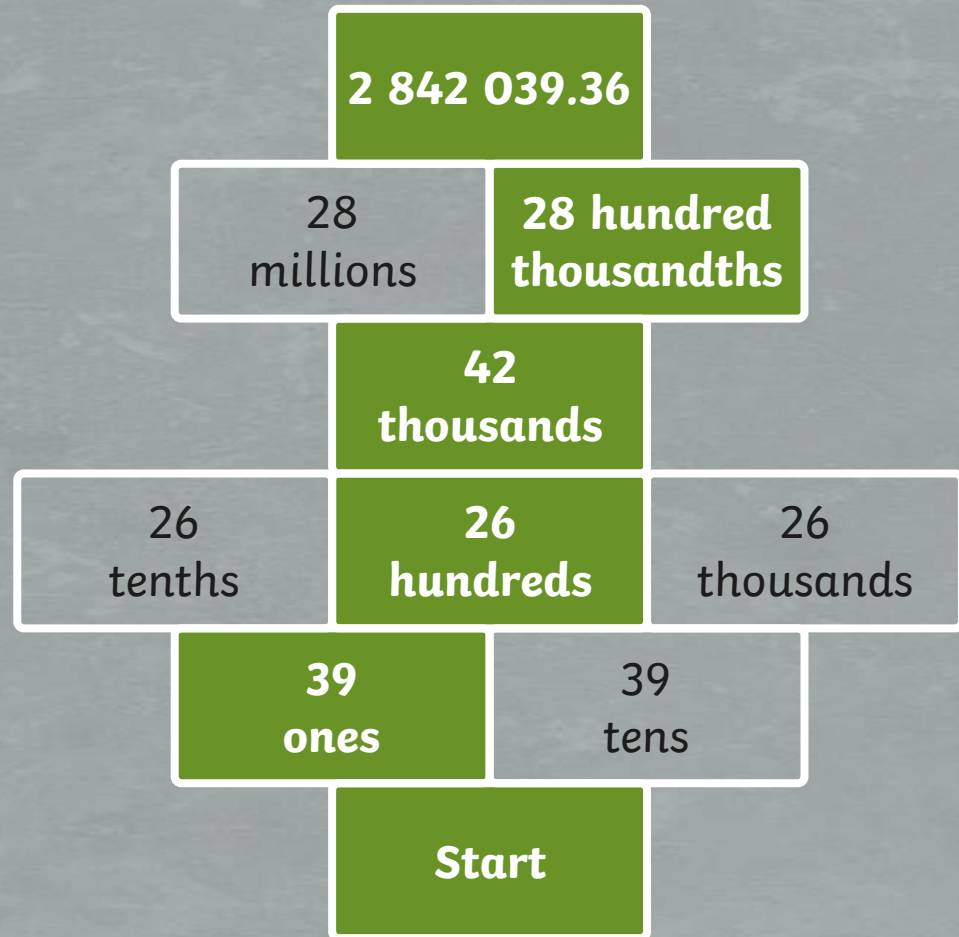
Hopscotch



Meera and Gary are playing a game of hopscotch to practise non-standard partitioning.

From the start grid, they are only allowed to hop to non-standard partitioning representations that when combined together will make the number at the end of the hopscotch.

Find a path they can follow.



Aim



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

