Addition, Subtraction, Multiplication and Division

The aim of this overview is to support teachers using PlanIt Maths to show the most logical 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. Whenever possible, lesson packs have been matched to each of the small steps on the **White Rose Maths** scheme of learning.

Y6 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				Geometry: 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

Teacher Note:

The White Rose small step **Mental calculations and estimation** appears in more than one sequence of lessons within this unit and is covered within two National Curriculum objectives in our _____

_____ : 'perform mental calculations, including with mixed operations and large numbers' and 'use estimation to check answers to calculations sand determine, in the context of a problem, an appropriate degree of accuracy'.

Introduction

In Year 6 Addition, Subtraction, Multiplication and Division, children develop their ability to solve problems demanding efficient written and mental methods of calculation and use estimation to check answers to calculations. Children will build upon previous learning of addition and subtraction written methods and use long and short written methods for multiplication and division. Children will begin to use their knowledge of the order of operations to carry out calculations involving the four operations and identify common multiples, common factors and prime numbers.

Resources

In addition to your standard maths resources, you will need: a beanbag, sports equipment, bottle-top lids or large counters, packs of cards with the Jack, Queen and King cards taken out, googly eyes, marbles, scissors and glue sticks.

SolveIt Lesson Pack: Number Combo

How many different answers can you create whilst using the same numbers? Children investigate how many different answers can be generated using three given numbers for each calculation. Children complete the number calculations using their knowledge of the order of operations. This lesson includes paired and individual activity sheets with given ideas for extension.

Assessment Statements

By the end of this unit…

…all children should be able to:

- multiply numbers by a one-digit number using long multiplication;
- solve reasoning questions using the formal method of long multiplication;
- divide numbers by a two-digit number using long division;
- solve one-step division problems, rounding the answer depending on the context;
- divide four-digit numbers by a two-digit number using short division without remainders;
- perform one-step mental calculations with increasingly large numbers;
- solve reasoning questions involving mental addition, subtraction, multiplication and division;
- add and subtract whole numbers using a formal written method;
- correctly use the order of operations to carry out calculations;
- explore the order of operations using brackets;
- find missing numbers using the inverse;
- select the correct operation/s to use and solve a problem, checking the answer using estimation;
- solve one-step problems and check their answer using estimation;
- round numbers to a specified degree of accuracy;
- use rounding to check answers to problems;
- sort one-step problems in a sorting diagram;
- solve two-step problems involving addition and subtraction.

…most children will be able to:

- multiply numbers by a two-digit number using long multiplication;
- divide using a formal written method and use rounding depending on the context;
- solve two-step division problems, rounding the answer depending on the context;
- divide four-digit numbers (with decimals) by a two-digit number using short division;
- practise mental calculations with increasingly large numbers using all four operations;
- perform mental calculations with mixed operations;
- perform two-step mental calculations with increasingly large numbers;
- add and subtract numbers, including decimals, using a formal written method;
- identify missing brackets within a calculation;
- solve two-step problems and check their answer using estimation;
- round a number taking into account the context;
- sort one and two-step problems in a Venn diagram;
- solve multi-step problems involving addition and subtraction.

…some children will be able to:

- solve missing digit problems involving long multiplication;
- divide using a formal written method and use rounding depending on the context in multi-step calculations;
- solve missing digit problems involving long division;
- create comparison sentences involving long division calculations;
- create their own word problems involving addition, subtraction, multiplication and division;
- solve multi-step problems and check their answer using estimation;
- sort and solve one, two and multi-step problems in a Venn diagram;
- solve complex multi-step problems.

Addition and Subtraction Multi-Step Problems (1): Pop-Up Shop

NC Statement: solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

White Rose Maths Small Step: Add and subtract whole numbers

Description: Children are introduced to RUCSAC as a method for working through contextual problems requiring them to add and subtract whole numbers. They work through RUCSAC one step at a time, led by the teacher, then decide which operations to use as a class for a range of word problems. Children learn to add and subtract whole numbers.

Addition and Subtraction Multi-Step Problems (2): Open the Box

NC Statement: solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

White Rose Maths Small Step: Add and subtract whole numbers

Description: Using RUSCAC, children are guided through multi-step problems, working out how many steps are required. They then complete differentiated multi-step problems independently. Children learn to add and subtract whole numbers.

Addition and Subtraction Multi-Step Problems (3): Multi-Step Problems Reasoning

NC Statement: solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

White Rose Maths Small Step: Add and subtract whole numbers

Description: As a class, children complete a series of multi-step reasoning problems with increasingly large numbers of steps required to solve them. They move on to complete problems in pairs, where they are required to explain if a given answer is correct through checking each step. Children learn to add and subtract whole numbers.

Long Multiplication (1): Tell a Joke

NC Statement: multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

White Rose Maths Small Step: Multiply up to a 4-digit by 1-digit number

Description: Children revise the long multiplication method to multiply a 4-digit number by a 1-digit number by identifying incorrect answers from children on the Lesson Presentation. Children then find the punchline to a joke by performing multiplications and using the answers to crack a code. Children learn to multiply up to a 4-digit by 1-digit number.

Long Multiplication (2): Multiplication Battle

NC Statement: multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

White Rose Maths Small Step: Multiply up to a 4-digit by 1-digit number

Description: Children are introduced to multiplying 3-digit numbers by 2-digit numbers using the formal written method. The method is modelled several times for children to follow and join in with before they move on to work in pairs to practise the method. Children learn to multiply up to a 4-digit by 2-digit number.

Long Multiplication (3): Multiplying Millipede

NC Statement: multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

White Rose Maths Small Step: Multiply up to a 4-digit by 1-digit number

Description: The teacher models how to multiply a 4-digit number by a 2-digit number and children practise this alongside them. Children then apply their long multiplication skills to complete a set of differentiated loop cards. Children learn to multiply up to a 4-digit by 2-digit number.

Long Multiplication (4): Long Multiplication Reasoning

NC Statement: multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

White Rose Maths Small Step: Multiply up to a 4-digit by 1-digit number

Description: Children apply their knowledge of how to multiply using the formal method of long multiplication to a variety of reasoning and mastery style questions, both teacher-led and independently. Children learn to multiply up to a 4-digit by 2-digit number.

Long Division (1): Jungle Division

NC Statement: divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

White Rose Maths Small Step: Long division (1). Long division (2). Long division (3). Long division (4).

Description: Children are introduced to the formal written method of long division. They have the method modelled by the teacher. This lesson requires children to divide 3-digit numbers by 1-digit numbers as a class and individually, then challenges them to answer a reasoning question in the plenary. Children learn to use long division.

Long Division (2): Monster Maths

NC Statement: divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

White Rose Maths Small Step: Long division (1). Long division (2). Long division (3). Long division (4).

Description: Children begin to divide by 2-digit numbers using the formal written method of long division. They will find decimal remainders to 2 decimal places and are asked to explain their working in the plenary. Children learn to use long division.

Long Division (3): Tic-Tac-Toe Problem Solving

NC Statement: divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

White Rose Maths Small Step: Long division (1). Long division (2). Long division (3). Long division (4).

Description: This lesson asks children to continue practising long division, with the addition of contexts. They will apply the formal written method to a range of scenarios and decide when to round a remainder up or down as appropriate. Children learn to use long division.

Long Division (4): Long Division Reasoning

NC Statement: divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

White Rose Maths Small Step: Long division (1). Long division (2). Long division (3). Long division (4).

Description: Children are taken step by step through a variety of reasoning and mastery level long division problems. They will complete an activity sheet, guided by the teacher, then move on to working in a pair. They will be shown how to take relevant information from a longer word problem and decide if they need to find a remainder, decimal remainder or round their answer. Children learn to use long division.

Short Division (1): Gone Fishing

NC Statement: divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

White Rose Maths Small Step: Short division

Description: Children have short division modelled for them, dividing by single-digit numbers. They are presented with short division problems in context, led by the teacher, then practise their method through playing a fishing game. Children learn to use short division.

Short Division (2): Engines Ready

NC Statement: divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

White Rose Maths Small Step: Short division

Description: Children have short division modelled for them, dividing 4-digit numbers by 2-digit numbers. They are presented with short division problems in context, led by the teacher. They will also decide whether to round remainders up or down depending on the context, then play a differentiated pairs game. Children learn to use short division.

Short Division (3): Inspector Clue

NC Statement: divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

White Rose Maths Small Step: Short division

Description: Children are asked to search for clues in contextual division problems to help them decide whether their remainders need rounding up or down. They will be challenged to set their own division problems for a partner. Children learn to use short division.

Short Division (4): Short Division Reasoning

NC Statement: divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

White Rose Maths Small Step: Short division

Description: Children are asked to solve a variety of reasoning and mastery level questions using short division. They will be taken through problems with a teacher to pick out the relevant information for each context, then complete differentiated word problems independently. Children learn to use short division.

Mental Calculations (1): Number Puzzle

NC Statement: perform mental calculations, including with mixed operations and large numbers

White Rose Maths Small Step: Mental calculations and estimation

Description: Children are asked to choose the most appropriate strategies for mentally calculating using increasingly large numbers, before applying them as a class. They are encouraged to explain why they chose a particular method. They use mental calculations and estimation in pairs to complete the Number Puzzle activity. Children learn to perform mental calculations and estimation.

Mental Calculations (2): Players, Are You Ready?

NC Statement: perform mental calculations, including with mixed operations and large numbers

White Rose Maths Small Step: Mental calculations and estimation

Description: Children recap how to choose an appropriate mental method. They use mental calculations and estimation to solve problems involving increasingly large numbers and all four operations. In pairs, children compete with each other to complete a 4-in-a-row game. Children learn to perform mental calculations and estimation.

Mental Calculations (3): Code Busters

NC Statement: perform mental calculations, including with mixed operations and large numbers

White Rose Maths Small Step: Mental calculations and estimation

Description: Children recap how to choose an appropriate mental method. They use the strategies learned in previous lessons to solve problems involving increasingly large numbers and all four operations in context. Children apply RUCSAC to work through word problems which reveal an answer through cracking a code. Children learn to perform mental calculations and estimation.

Mental Calculations (4): Gotta Find Em All!

NC Statement: perform mental calculations, including with mixed operations and large numbers

White Rose Maths Small Step: Mental calculations and estimation

Description: Children look more in depth at the reasons for picking certain strategies when performing mental calculations. In pairs, they will compete in a star grid battleships-style game, performing mental calculations to uncover squares on a grid. As a plenary, they will be asked to explain why an answer is incorrect, drawing on their knowledge of order of operations. Children learn to perform mental calculations and estimation.

Mental Calculations (5): Calcu-late!

NC Statement: perform mental calculations, including with mixed operations and large numbers

White Rose Maths Small Step: Mental calculations and estimation

Description: Children review mental strategies, in particular making notes on the important information in a problem and the order of steps needed. They play a simple board game in pairs that requires them to perform mental calculations and estimation. Children learn to perform mental calculations and estimation.

Mental Calculations (6): Mental Calculations Reasoning

NC Statement: perform mental calculations, including with mixed operations and large numbers

White Rose Maths Small Step: Mental calculations and estimation

Description: Children apply their knowledge of mental calculations and estimation to a variety of reasoning questions. They will work through a number of problems as a class, guided by a teacher, before tackling problems independently. Finally, they will look at the answers as a class and discuss why answers are incorrect or correct. Children learn to perform mental calculations and estimation.

Common Factors, Multiples and Prime Numbers (1): Fun Factory

NC Statement: identify common factors, common multiples and prime numbers

White Rose Maths Small Step: Common factors

Description: Children are introduced to 'factor' as a piece of mathematical vocabulary and are asked to find common factors shared by two numbers and record these in a diagram. Children learn to identify and use common factors.

Common Factors, Multiples and Prime Numbers (2): Marine Multiples

NC Statement: identify common factors, common multiples and prime numbers

White Rose Maths Small Step: Common multiples

Description: Children are reminded of the word 'multiple' and find common multiples of numbers rolled on a dice. They discuss 'lowest common multiple'. In pairs, they will complete a painting-by-numbers-style activity using their knowledge of common multiples before moving on to problems involving common multiples in context. Children learn to identify and use common multiples.

Common Factors, Multiples and Prime Numbers (3): Prime Detectives

NC Statement: identify common factors, common multiples and prime numbers

White Rose Maths Small Step: Primes

Description: Children are introduced to prime numbers and are given a timed task to find as many as they can in five minutes, followed by a whole-class activity where they identify consecutive primes. Detective skills are put into practice to reveal a saboteur using their knowledge of prime numbers. Finally, children generate their own prime numbers using the digits given. Children learn to identify primes.

Common Factors, Multiples and Prime Numbers (4): Common Factors, Common Multiples an

NC Statement: identify common factors, common multiples and prime numbers

White Rose Maths Small Step: Primes. Common factors. Common multiples

Description: Children work through a range of reasoning and contextual problems led and modelled by a teacher involving primes, factors and common multiples. They try similar problems independently and check their answers as a class. Children learn to apply their knowledge of primes, common factors and common multiples.

Order of Operations (1): Pyramid Puzzles

NC Statement: use their knowledge of the order of operations to carry out calculations involving the 4 operations

White Rose Maths Small Step: Order of operations. Add and subtract whole numbers

Description: Children are reminded of the formal written methods for addition and subtraction. They complete number pyramids, adding or subtracting to find the next tier of the pyramid. Children learn about the order of operations.

Order of Operations (2): Colour Me In

NC Statement: use their knowledge of the order of operations to carry out calculations involving the 4 operations

White Rose Maths Small Step: Order of operations. Add and subtract whole numbers

Description: Children practise using the formal written method for addition and subtraction. They complete calculations with increasingly large numbers to complete a paint-by-numbers-style activity. Children learn about the order of operations.

Order of Operations (3): Monster Multiplication

NC Statement: use their knowledge of the order of operations to carry out calculations involving the 4 operations

White Rose Maths Small Step: Order of operations. Multiply up to a 4-digit by 1-digit number

Description: Children recap long multiplication with a teacher leading, then independently work across a variety of tasks. Children learn about the order of operations.

Order of Operations (4): Division Doughnuts

NC Statement: use their knowledge of the order of operations to carry out calculations involving the 4 operations

White Rose Maths Small Step: Order of operations. Long division (1). Long division (2). Long division (3). Long division (4). Short division

Description: Children recap long and short division methods, including contextual word problems, led by a teacher. They move on to a differentiated independent task. Children learn about the order of operations.

Order of Operations (5): Bonkers BODMAS

NC Statement: use their knowledge of the order of operations to carry out calculations involving the 4 operations

White Rose Maths Small Step: Order of operations

Description: Children are introduced to the correct order of operations where there are multiple steps to a problem, using BODMAS to remember. They will apply this rule to some practice questions before working independently. Children learn about the order of operations.

Order of Operations (6): Bonkers Brackets

NC Statement: use their knowledge of the order of operations to carry out calculations involving the 4 operations

White Rose Maths Small Step: Order of operations

Description: Children are introduced to performing calculations inside brackets first when looking at the order of operations. They work through teacher-led examples and complete similar work independently. In the plenary, children are invited to add operations to make the calculations correct. Children learn about the order of operations.

Order of Operations (7): Bonkers Brackets 2

NC Statement: use their knowledge of the order of operations to carry out calculations involving the 4 operations

White Rose Maths Small Step: Order of operations

Description: Children apply their knowledge of brackets from the previous lesson to add missing brackets from multistep calculations to make them correct. As a class, they then consider how the location of brackets can change an answer drastically and use < and > symbols to show this. Children learn about the order of operations.

Order of Operations (8): Order of Operations Reasoning

NC Statement: use their knowledge of the order of operations to carry out calculations involving the 4 operations

White Rose Maths Small Step: Order of operations

Description: Children are guided through a selection of contextual problems requiring BODMAS to help solve them. They apply their knowledge of order of operations to a variety of reasoning and mastery questions. Children learn about the order of operations.

Solve Problems (1): The Vault

NC Statement: solve problems involving addition, subtraction, multiplication and division

White Rose Maths Small Step: Reasoning from known facts

Description: Children are reminded of the term 'inverse' and how we can use inverse operations to find missing numbers. They work in pairs to complete a missing number pyramid puzzle, before solving missing number problems to reveal a code to the vault. Children learn about reasoning from known facts.

Solve Problems (2): Problem Sorter

NC Statement: solve problems involving addition, subtraction, multiplication and division

White Rose Maths Small Step: Reasoning from known facts

Description: Children complete quiz-show-style multiple-choice word problems. They will be asked to identify the operations needed in a range of problems by moving to the correct sign in the classroom, before independently working through a variety of problems. Children learn about reasoning from known facts.

Solve Problems (3): Cupcake Creator

NC Statement: solve problems involving addition, subtraction, multiplication and division

White Rose Maths Small Step: Reasoning from known facts

Description: Children apply their known facts to a range of baking problems. They will work in pairs to complete problems in context to complete a cake. Children learn about reasoning from known facts.

Solve Problems (4): Games Galore

NC Statement: solve problems involving addition, subtraction, multiplication and division

White Rose Maths Small Step: Reasoning from known facts

Description: Children briefly review how to apply RUCSAC to a word problem and use estimation to check answers. They quickly match a problem to a correct answer using estimation and move on to playing a problem-solving game in pairs. They are also tasked with writing their own problems to add to the game. Children learn about reasoning from known facts.

Solve Problems (5): Problem Solving Reasoning

NC Statement: solve problems involving addition, subtraction, multiplication and division

White Rose Maths Small Step: Reasoning from known facts

Description: Children are led by a teacher through a series or longer multi-step problems, each involving more than one operation, some including measures and money. They then independently solve problems and show their working for each one. They are given the opportunity to see the correct answers and working for each on the Lesson Presentation. Children learn about reasoning from known facts.

Estimation (1): Tabletop Olympics

NC Statement: use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

White Rose Maths Small Step: Mental calculations and estimation

Description: By looking at various pictorial representations, children are asked to estimate values and explain their answers. They are asked to perform mental calculations and use estimation to check their answers to record times and distances in sporting events. Children learn to apply mental calculations and estimation.

Estimation (2): The Dog Chewed My Home Learning

NC Statement: use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

White Rose Maths Small Step: Mental calculations and estimation

Description: Children discuss the usefulness of rounding numbers when checking answers, as a form of estimation. They use rounding to check answers, choosing an appropriate degree of accuracy. Independently, children perform calculations, explain how they would use rounding and estimation to check their answer and use this information to decide if their answer looks correct. Children learn how to use estimation.

Estimation (3): Estimation Reasoning

NC Statement: use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

White Rose Maths Small Step: Mental calculations and estimation

Description: In pairs, children practise using estimation in context, then calculate the accurate answer to see if their estimation was close. They independently tackle mastery-style reasoning questions and work through their answers to self-assess after. Children learn how to use estimation.

Extra Challenge

I can perform mental calculations with mixed operations.

For this part of the activity, you will need a set of playing cards.

For each question, choose a card from the deck and insert the card value in the star-shaped box; jacks, queens and kings have a value of 10 and aces have a value of 1 or 11. Complete the calculation and then think of a suitable question that would complete the number sentence.

$$\boxed{} = \bigstar \times 25 + 35.6 - 5.06$$

$$\boxed{} = 50 \times (\bigstar + 5.30 + 6.04 + 1.75)$$

$$3.6 \times \bigstar \div 2 > \boxed{}$$
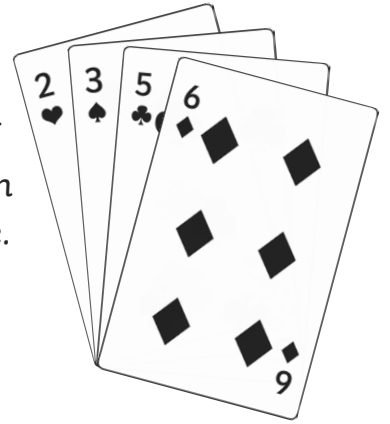
$$\bigstar \div 4 + 7.059 + 9.495 < \boxed{}$$

$$3200 \times \bigstar - 550 \neq \boxed{}$$

Pyramid Puzzle

I can perform mental calculations with mixed operations.

100
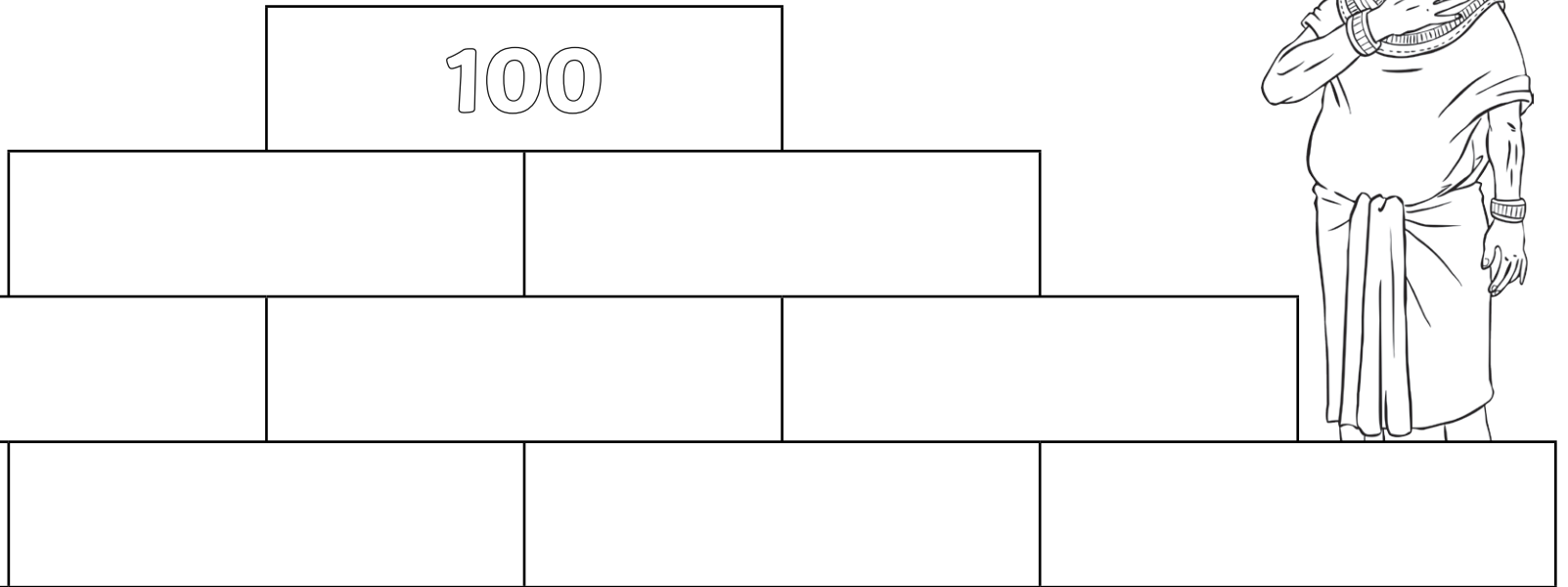
Blank Decimal Place Value Chart

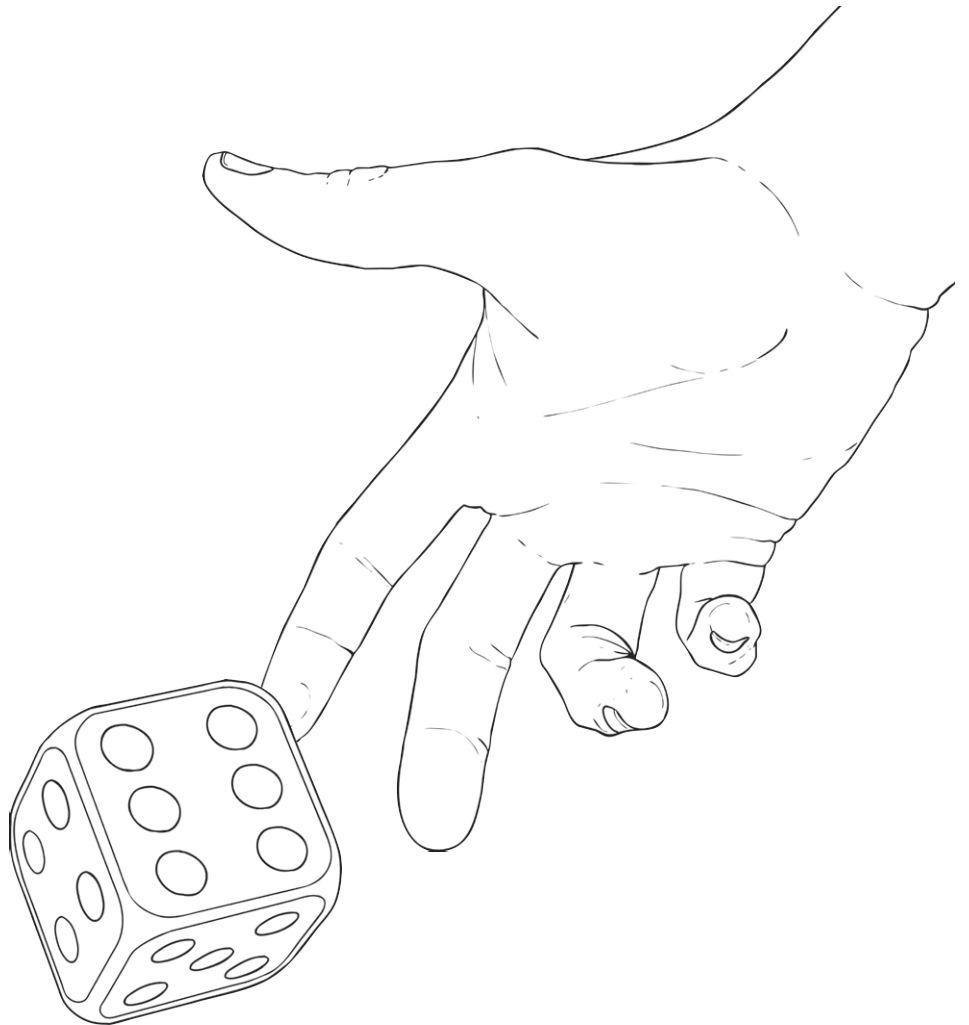| Hundred Thousands (100 000)	Ten Thousands (10 000)	Thousands (1000)	Hundreds (100)	Tens (10)	Ones (1)	tenths (0.1)	hundredths (0.01)	thousandths (0.001)
					●			

Mental Calculation Board Game

I can perform mental calculations with mixed operations.

Taking turns, roll the dice and move your counter the desired number of spaces on the board. Complete the calculation that you land on. Get your partner to check your answer. If your answer is incorrect, move your counter back to its original position on the board. The first player to the end wins!

Mental Calculations

Start

(59.39 + 39.53) × 50
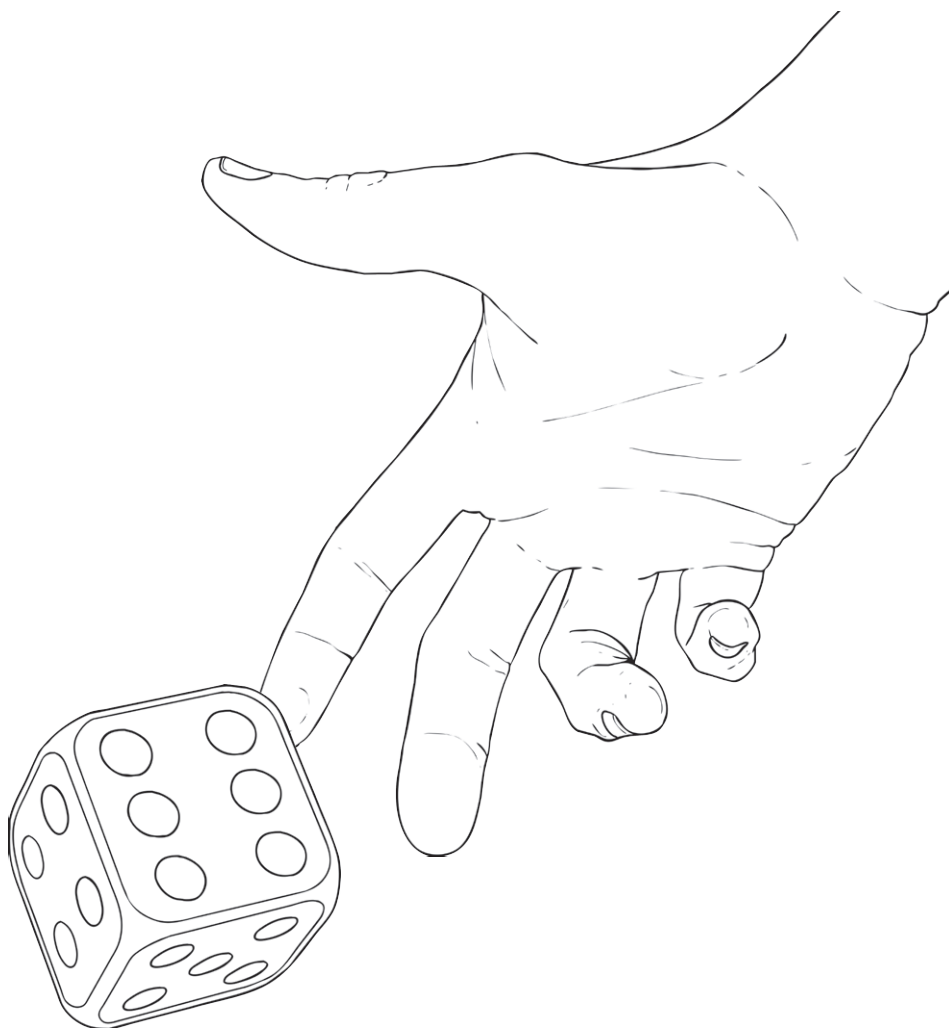
20 × (53 − 29)

39.4 + 59.7 + 29.05 + 3.05

67 ÷ 2 × 20 + 330

3.5 × 20 + 45.67 − 63.46

14.5 × 25 + 35.6

Go back to start

2500 ÷ 50 − 25

Go forward one space

5600 ÷ 4 ÷ 2 × 1.5

56.04 + 1034 + 492.5

(6.7 + 5.6 + 8.35) × 4

Miss a go

8.8 × 8 × 10 ÷ 2

67 × 25 × 2 ÷ 5

Move back to 14.5 × 25 + 35.6

0.456 + 2.50 + 6.046

7200 ÷ 6 ÷ 2 ÷ 4

5.7 × 8 + 54.4 − 0.35

Go forward two spaces

150 ÷ 50 × 4.5

9.5 × 25 − 73

(69 + 31 + 50) ÷ 3 × 1.5

70.54 − 35 − 6.49

2100 ÷ 300 × 4 − 5.56

6.704 ÷ 10 + 1.3

Go backwards three spaces

30.006 + 30.6 + 306

Move forward one space

800 ÷ 400 ÷ 1 × 20

Move back to 7200 ÷ 6 ÷ 2 ÷ 4

50 × 30 + 250.5 + 250.5

934.5 + 240.05 + 210.50

Finish

Who will be first to finish?
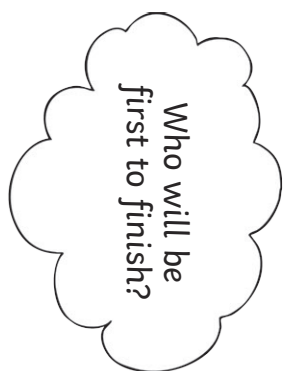
Mental Calculation Board Game **Answers**

(59.39 + 39.53) × 50 =	
	4946
20 x (53 - 29) =	
	480
39.4 + 59.7 + 29.05 + 3.05 =	
	131.2
67 ÷ 2 × 20 + 330 =	
	1000
3.5 × 20 + 45.67 - 63.46 =	
	52.21
14.5 × 25 + 35.6 =	
	398.1
2500 ÷ 50 - 25 =	
	25
5600 ÷ 4 ÷ 2 × 1.5 =	
	1050
56.04 + 1034 + 492.5 =	
	1582.54

(6.7 + 5.6 + 8.35) × 4 =	
	82.6
8.8 × 8 × 10 ÷ 2 =	
	352
67 × 25 × 2 ÷ 5 =	
	670
0.456 + 2.50 + 6.046 =	
	9.002
7200 ÷ 6 ÷ 2 ÷ 4 =	
	150
5.7 × 8 + 54.4 - 0.35 =	
	99.65
150 ÷ 50 × 4.5 =	
	13.5
9.5 × 25 - 73 =	
	164.5
(69 + 31+50) ÷ 3 × 1.5 =	
	75

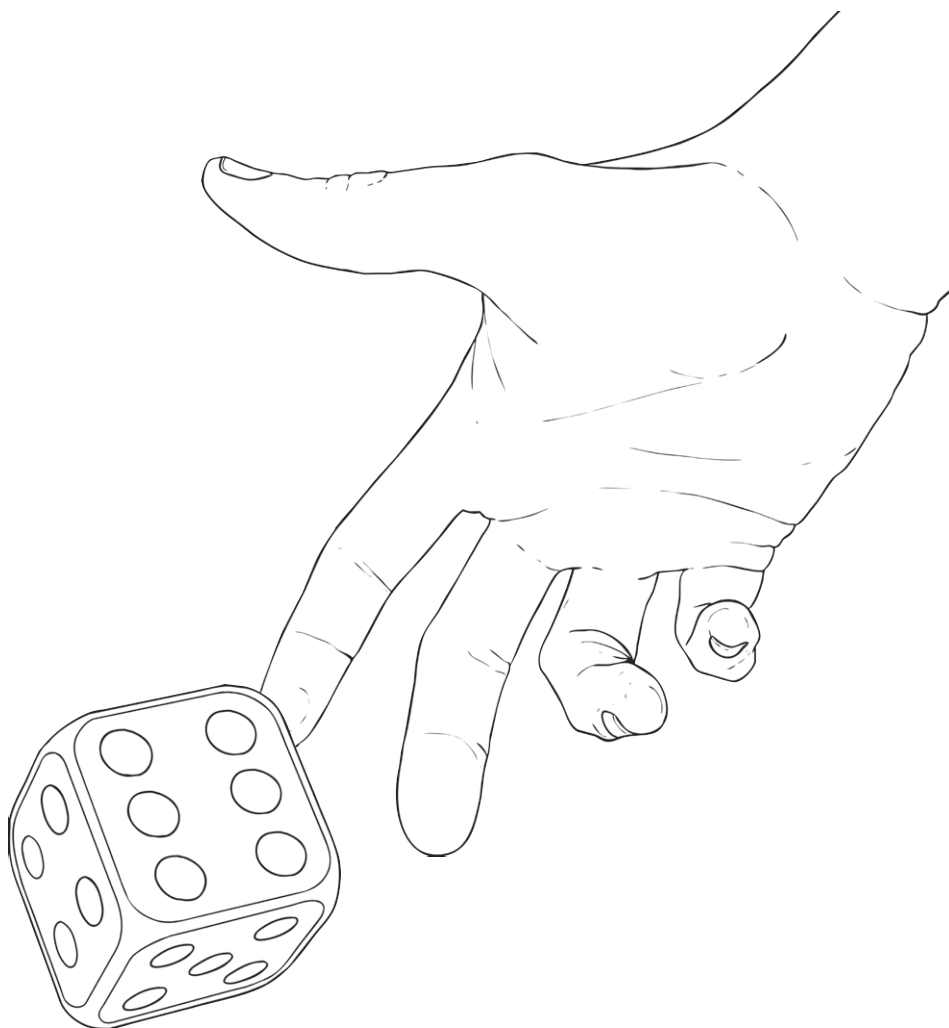|	
70.54 - 35 - 6.49 =	
	29.05
2100 ÷ 300 × 4 - 5.56 =	
	22.44
6.704 ÷ 10 + 1.3 =	
	1.9704
30.006 + 30.6 + 306 =	
	366.606
800 ÷ 400 ÷ 1 × 20 =	
	40
50 × 30 + 250.5 + 250.5	
	2001
934.5 + 240.05 + 210.50 =	
	1385.05

Mental Calculation Board Game

I can perform mental calculations with mixed operations.

Taking turns, roll the dice and move your counter the desired number of spaces on the board. Complete the calculation that you land on. Get your partner to check your answer. If your answer is incorrect, move your counter back to its original position on the board. The first player to the end wins!

Mental Calculations

Start

3.2 × 8
+ 54.7

5.4 + 2.6
+ 4.9

27 × 4
- 92

8 × 2.5
× 100

746.3
- 395.3
- 70.1

50.5 × 2
× 10

Go
back to
start

67.3 + 49.9
- 110

Go forward
1 space

34 × 4
- 65

4.5 × 10
× 100

583.6
÷ 10
- 23.4

Miss
a go

43.6
× 100
+ 67.4

506 + 429
+ 1021

Move back
to 4.5
× 10 × 100

76.4 - 3.7
- 10.4

48 × 20
+ 10

7.4 ÷ 2
× 5

5.7
× 20
- 110

Go forward
two spaces

5.6 + 10.3
+ 50.6

285 + 1938
- 435

18.1 × 4
+ 3.7

1084
+ 2953
+ 3012

19 ÷ 2
× 100

Go
backwards
three spaces

Move
forward one
space

56.3 × 2
- 45.3

Move back
to 7.4
÷ 2 × 5

674
× 20 × 2

5.7 × 20
× 2

180
÷ 3
- 54.3

Finish

Who will be
first to finish?

Mental Calculation Board Game **Answers**

3.2 × 8 + 54.7 =	583.6 ÷ 10 - 23.4 =	18.1 × 4 + 3.7 =
80.3	34.96	76.1
5.4 + 2.6 + 4.9 =	43.6 × 100 + 67.4 =	1084 + 2953 + 3012 =
12.9	4427.4	7049
27 × 4 - 92 =	506 + 429 + 1021 =	19 ÷ 2 × 100 =
16	1956	950
8 × 2.5 × 100 =	76.4 - 3.7 - 10.4 =	56.3 × 2 - 45.3 =
2000	62.3	67.3
746.3 - 395.3 - 70.1 =	48 × 20 + 10 =	674 × 20 × 2 =
280.9	970	26 960
50.5 × 2 × 10 =	7.4 ÷ 2 × 5 =	5.7 × 20 × 2 =
1010	18.5	228
67.3 + 49.9 - 110 =	5.7 × 20 - 110 =	180 ÷ 3 - 54.3 =
7.2	4	5.7
34 × 4 - 65=	5.6 + 10.3 + 50.6 =	
71	66.5	
4.5 × 10 × 100 =	285 + 1938 - 435 =	
4500	1788	

Mental Calculation Board Game

I can perform mental calculations with mixed operations.

Taking turns, roll the dice and move your counter the desired number of spaces on the board. Complete the calculation that you land on. Get your partner to check your answer. If your answer is incorrect, move your counter back to its original position on the board. The first player to the end wins!

Mental Calculations

Start

24 ÷ 3 × 4

5.63 × 2 × 10

5.38 + 5.4 + 6.39

29 ÷ 2 × 5

59.924 × 10 + 25.76

5.46 × 20 × 2

Go back to start

30.006 + 30.6 + 306

Go forward one space

9.54 + 10.5 + 7.03

7.32 × 20 × 2

150 ÷ 50 × 4.5

Miss a go

62.5 + 6.25 + 0.625

934.5 + 240.05 + 210.50

Move back to 5.38 + 5.4 + 6.39

2500 ÷ 50 - 25

14.5 × 25 + 35.6

51.1 × 5 - 100

Go forward two spaces

68 ÷ 4 - 6.7

9.5 × 25 - 73

91 ÷ 7 + 7.75

6.704 ÷ 10 + 1.3

1049 + 2946 + 4920

670 - 7.7 - 67.3

Go backwards three spaces

701 ÷ 2 ÷ 5

Move forward one space

Move back to 934.5 + 240.05 + 210.50

4967 + 1050 + 1001

6.1 × 50 - 150

7.5 × 4 × 8

Finish

Who will be first to finish?
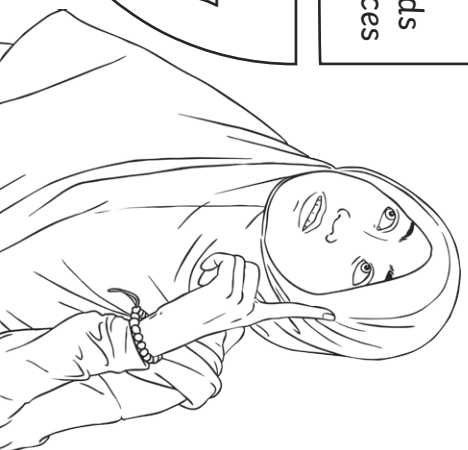
Mental Calculation Board Game **Answers**

24 ÷ 3 × 4 =	
	32

5.63 × 2 × 10 =	
	112.6

5.38 + 5.4 + 6.39 =	
	17.17

29 ÷ 2 × 5 =	
	72.5

5.46 × 20 × 2 =	
	218.4

59.924 × 10 + 25.76 =	
	625

30.006 + 30.6 + 306 =	
	366.606

9.54 + 10.5 + 7.03 =	
	27.07

7.32 × 20 × 2 =	
	292.8

150 ÷ 50 × 4.5 =	
	13.5

62.5 + 6.25 + 0.625 =	
	69.375

934.5 + 240.05 + 210.50 =	
	1385.05

2500 ÷ 50 - 25 =	
	25

14.5 × 25 + 35.6 =	
	398.1

51.1 × 5 - 100 =	
	155.5

68 ÷ 4 - 6.7 =	
	10.3

9.5 × 25 - 73 =	
	164.5

91 ÷ 7 + 7.75 =	
	20.75

6.704 ÷ 10 + 1.3 =	
	1.9704

1049 + 2946 + 4920 =	
	8915

670 - 7.7 - 67.3 =	
	595

701 ÷ 2 ÷ 5 =	
	70.1

4967 + 1050 + 1001 =	
	7018

6.1 × 50 - 150 =	
	155

7.5 × 4 × 8 =	
	240

Addition, Subtraction, Multiplication and Division: Calcu-late!

Aim: Perform mental calculations, including with mixed operations and large numbers. I can perform mental calculations with mixed operations.	Success Criteria: I can partition a variety of numbers. I can add or subtract the nearest multiple of 10 or 100 then adjust. I can identify near doubles. I can use repeated doubling or halving. I can solve problems using known number facts.	Resources: **Lesson Pack** Dice Counters Playing Cards – if extension is required
Key/New Words: Multiple, add, plus, subtract, minus, take away, sum, total, nearest, partition, partitioning, repeated steps, mental, strategy, adjust, nearest multiple, doubling, halving, equivalent calculation, multiply, multiplication, lots of, groups of, divide, division.		Preparation: **Pyramid Puzzle Activity Sheet** – 1 per pair Differentiated **Mental Calculation Board Game** – 1 per pair **Extra Challenge Activity Sheet** – as required **Blank Decimal Place Value Chart** – as required

Prior Learning: It will be helpful if children have a secure understanding of place value, multiplication facts and corresponding number facts.

Learning Sequence

	Pyramid Puzzle: In pairs, the children fill in the **Pyramid Puzzle Activity Sheet** by working backwards from 100, finding two numbers that add up to the number in the box above. The children continue the activity until they have completed the pyramid. There are various answers.	◓
	Mental Method Madness: Revise mental strategies on the **Lesson Presentation**. Repeat with additional examples if necessary.	◓
	Calcu-late! Using the **Lesson Presentation**, the children work in pairs to match the calculations with the corresponding answers on the slides against the timer. Can the children explain how they completed the calculation? Which mental calculation method they choose? Did anybody use a different mental calculation method?	◓
	Game Time! In pairs, the children play the **Mental Calculation Board Game**. Taking turns, each child rolls the dice and moves the desired amount of spaces on the board. The child completes the calculation. If the answer is incorrect, they child must move their counter back to its original place. The first player to the end wins. Support can be given through the use of **Blank Decimal Place Value Charts** for children to make jottings on.	●

★	★★	★★★
The children complete the calculations they land on by selecting and using an appropriate mental calculation method to answer the two-step whole number and simple decimal calculations.	The children complete the calculations they land on by selecting and using an appropriate mental calculation method to answer the two-step whole number and decimal calculations.	The children complete the calculations they land on by selecting and using an appropriate mental calculation method to answer multi-step calculations. An **Extra Challenge Activity Sheet** is provided as an extension activity if required.

|		
Whole Class	**Being the Teacher:** Using the **Lesson Presentation**, invite children to imagine they are the teacher and think of two questions that they could ask the class to ensure they have met the learning objective. Select children to share their ideas. Can children answer the questions giving reasoning?	◓

Masterit
   Quizit: Children have a go at answering the questions on this fabulous

Maths

Addition, Subtraction, Multiplication and Division
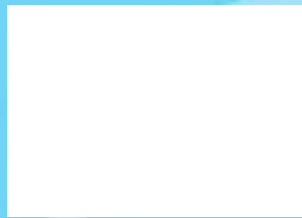
Calcu-late!

Aim

I can perform mental calculations with mixed operations.

Success Criteria

- I can partition a variety of numbers.
- I can add or subtract the nearest multiple of 10 or 100 then adjust.
- I can identify near doubles.
- I can use repeated doubling or halving.
- I can solve problems using known number facts.

Pyramid Puzzle

Get into pairs.

Write your solution on your Pyramid Puzzle Activity Sheet.
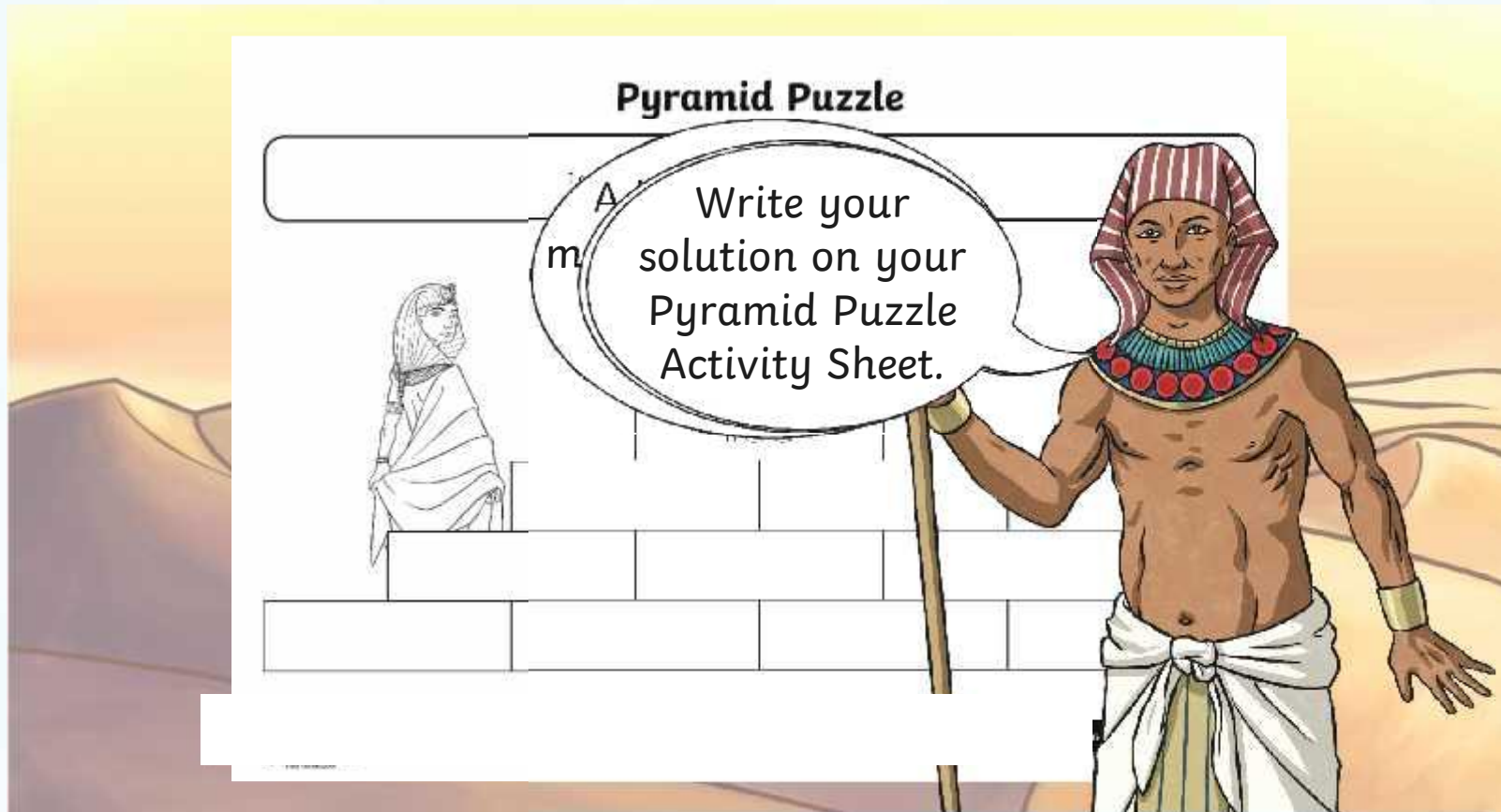
Mental Method Madness
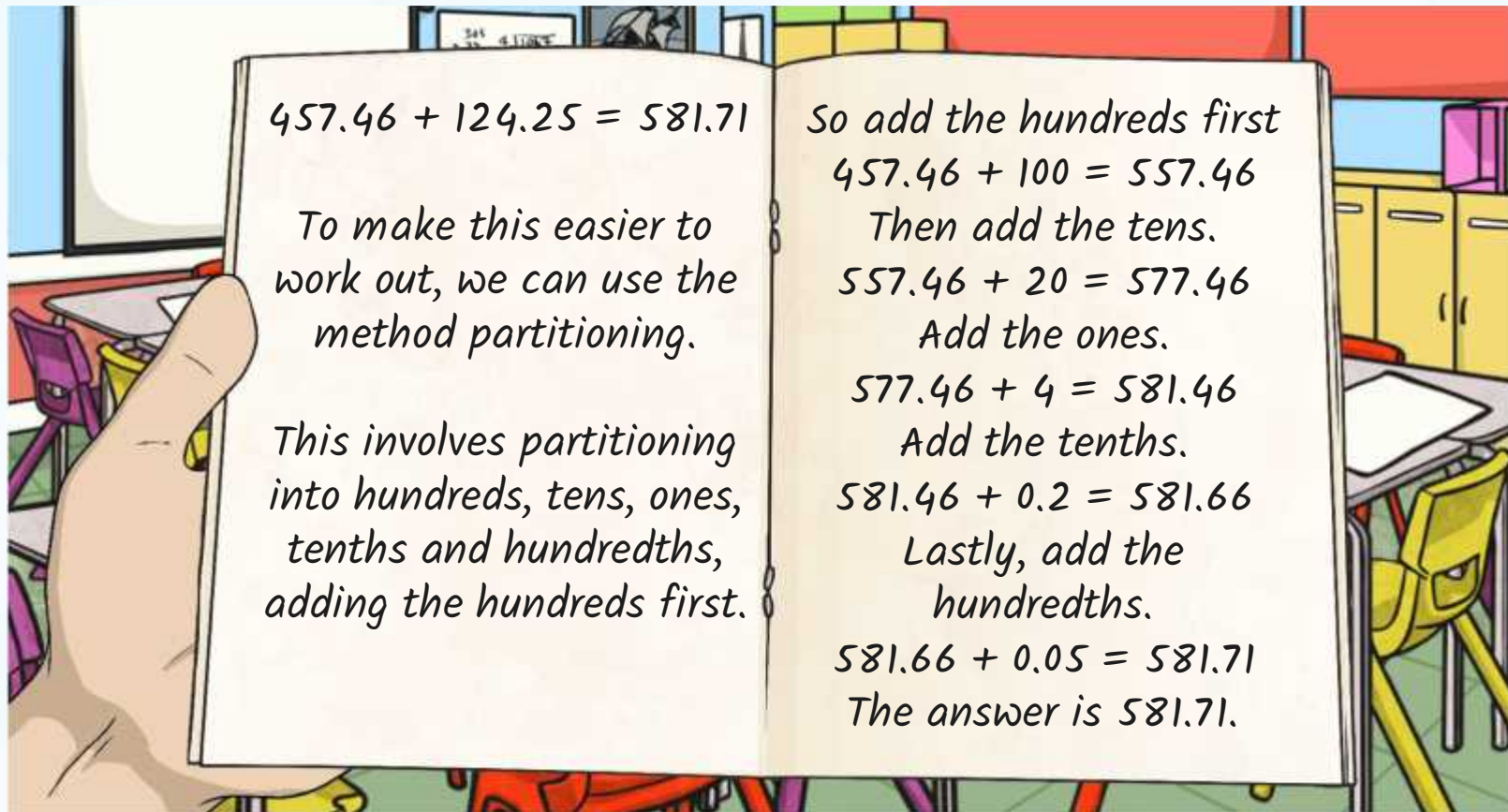
Some calculations we can do in our head mentally. We can write notes to help us remember key numbers while working out the answer.

Let's have a look at some now!

Mental Method Madness

Which strategy will be most useful when completing this calculation?

457.46 + 124.25 = 581.71

To make this easier to work out, we can use the method partitioning.

This involves partitioning into hundreds, tens, ones, tenths and hundredths, adding the hundreds first.

So add the hundreds first
457.46 + 100 = 557.46
Then add the tens.
557.46 + 20 = 577.46
Add the ones.
577.46 + 4 = 581.46
Add the tenths.
581.46 + 0.2 = 581.66
Lastly, add the hundredths.
581.66 + 0.05 = 581.71
The answer is 581.71.
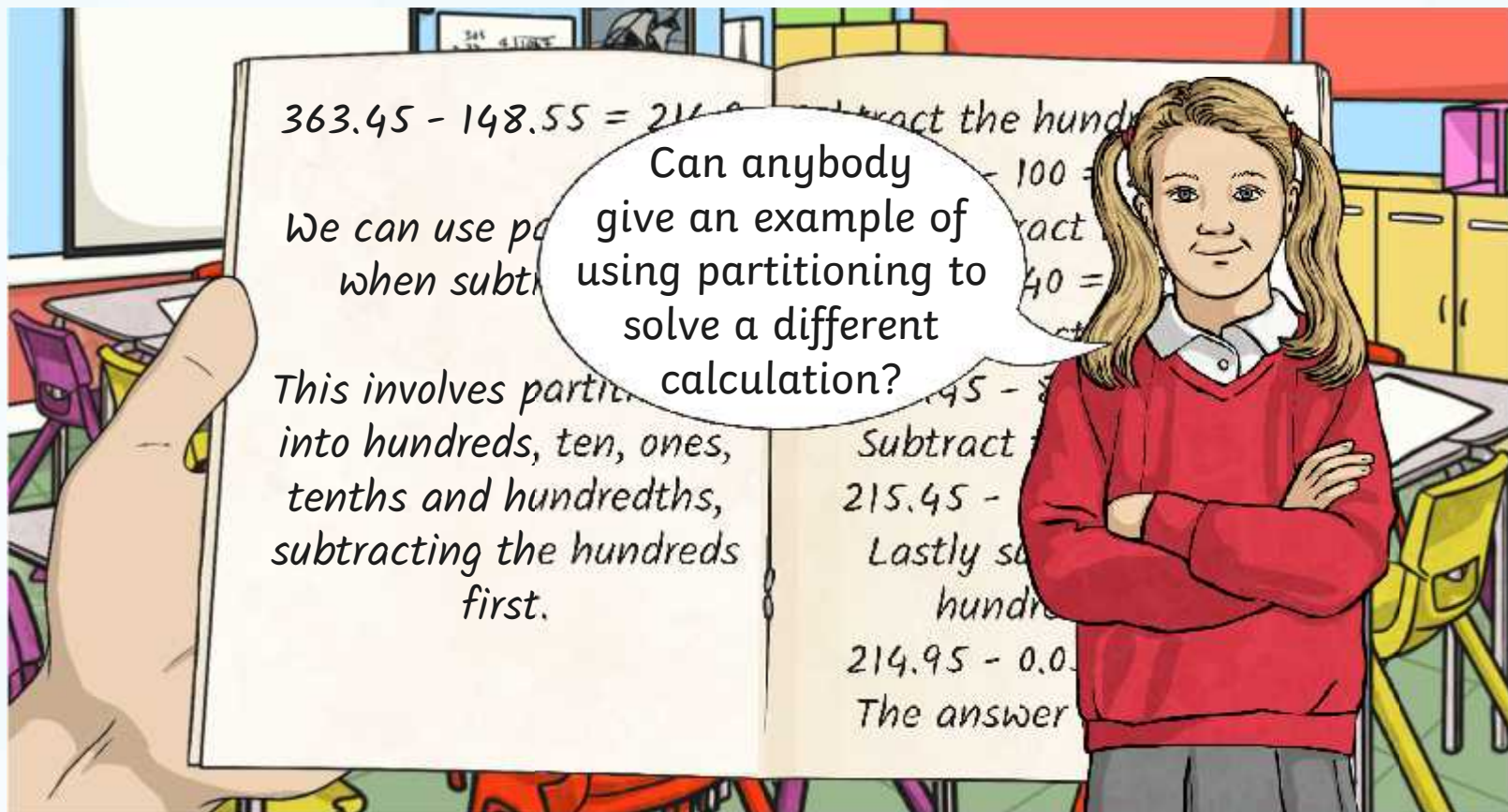
Mental Method Madness

Which strategy will be most useful when completing this calculation?

Mental Method Madness

Which strategy will be most useful when completing this calculation?

1459 + 294 = 1753

To make this easier to work out, we can use a method called compensation.

This involves adding to the nearest multiple of ten or 100 then adjusting.

The nearest multiple of ten to 294 is 300. This is six more than 294.
1459 + 300 = 1759
We then need to adjust our answer to make up for the six that we added to get to 300.
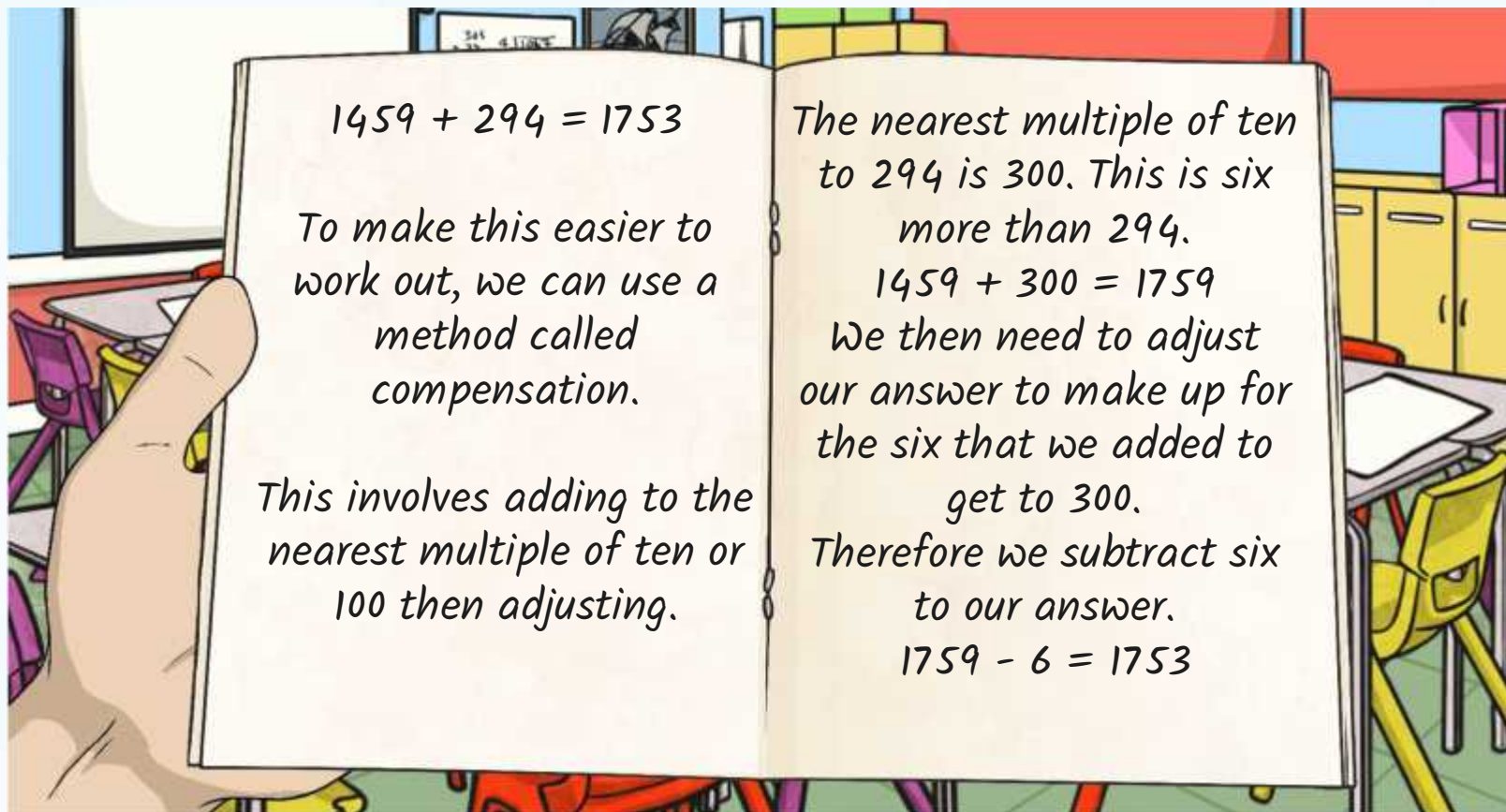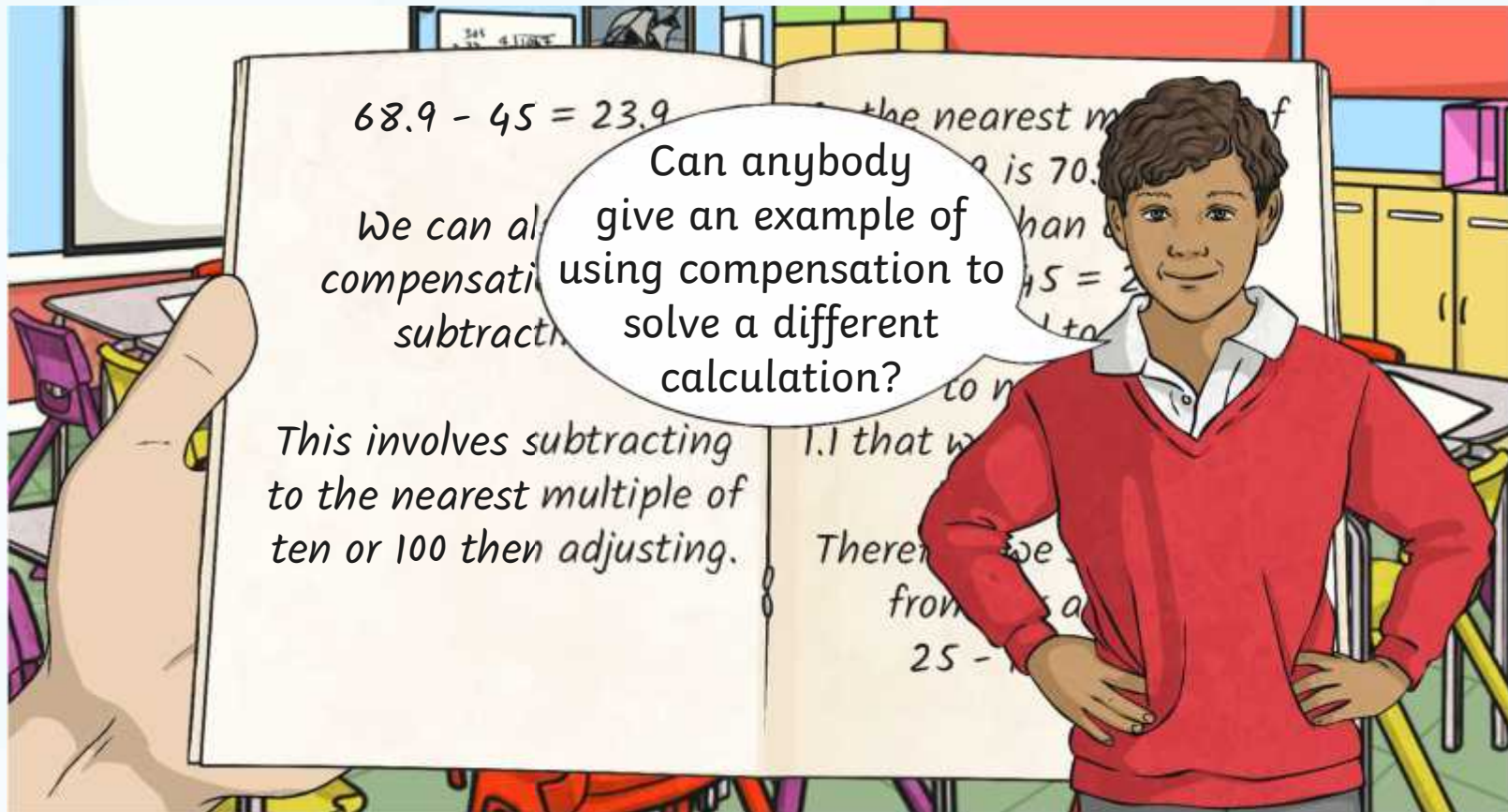Therefore we subtract six to our answer.
1759 – 6 = 1753

Mental Method Madness

Which strategy will be most useful when completing this calculation?

Mental Method Madness

Which strategy will be most useful when completing this calculation?

$164.5 + 170.1 = 334.6$

To make this easier to work out, we can use the method near doubles.

This involves doubling, then adjusting.

Double 164.5

$164.5 + 164.5 = 329$

We then need to adjust, as we needed to add 170.1 not 164.5. Therefore we add 5.6 onto our answer.

$329 + 5.6 = 334.6$
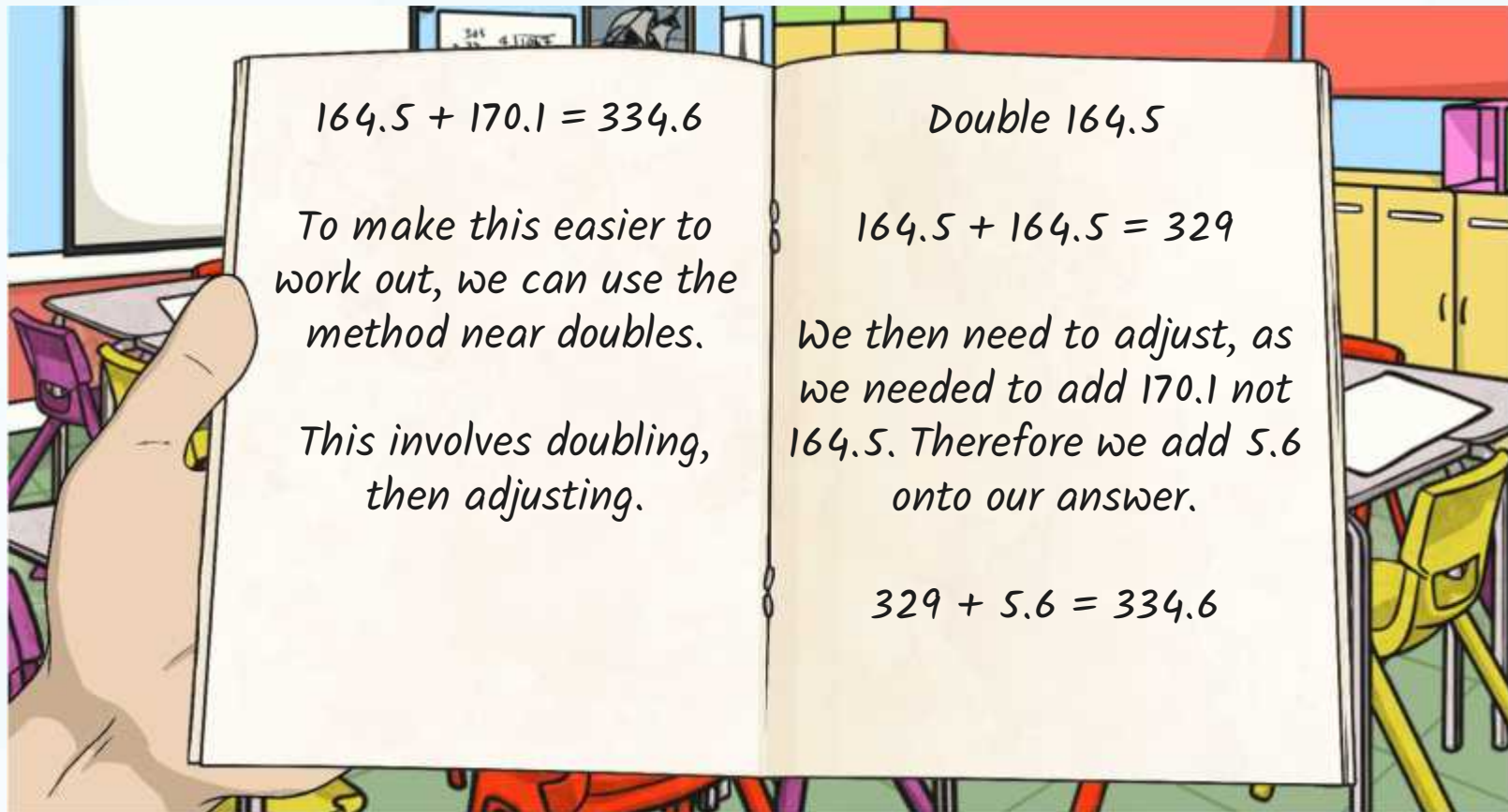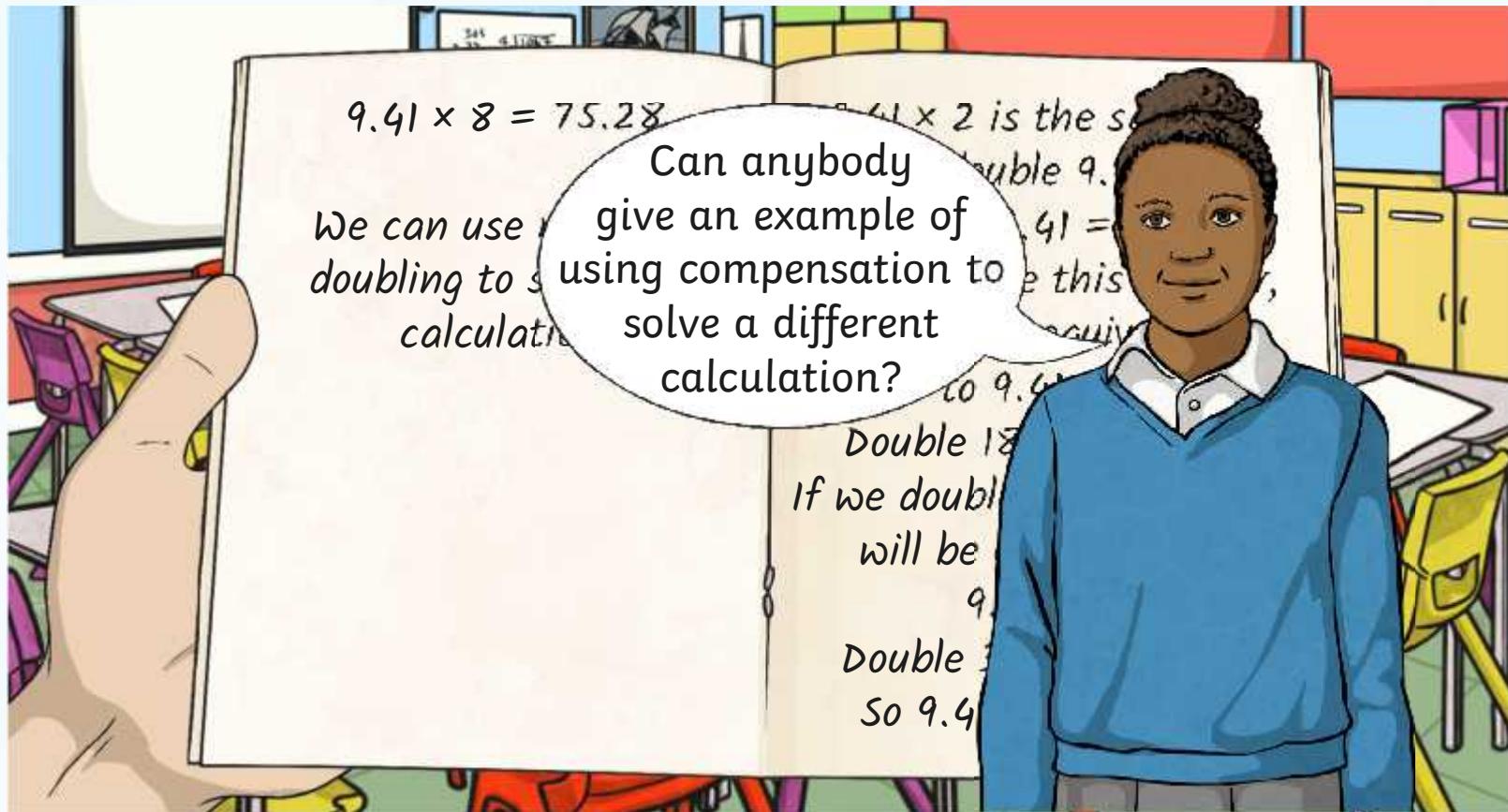
Mental Method Madness

Which strategy will be most useful when completing this calculation?

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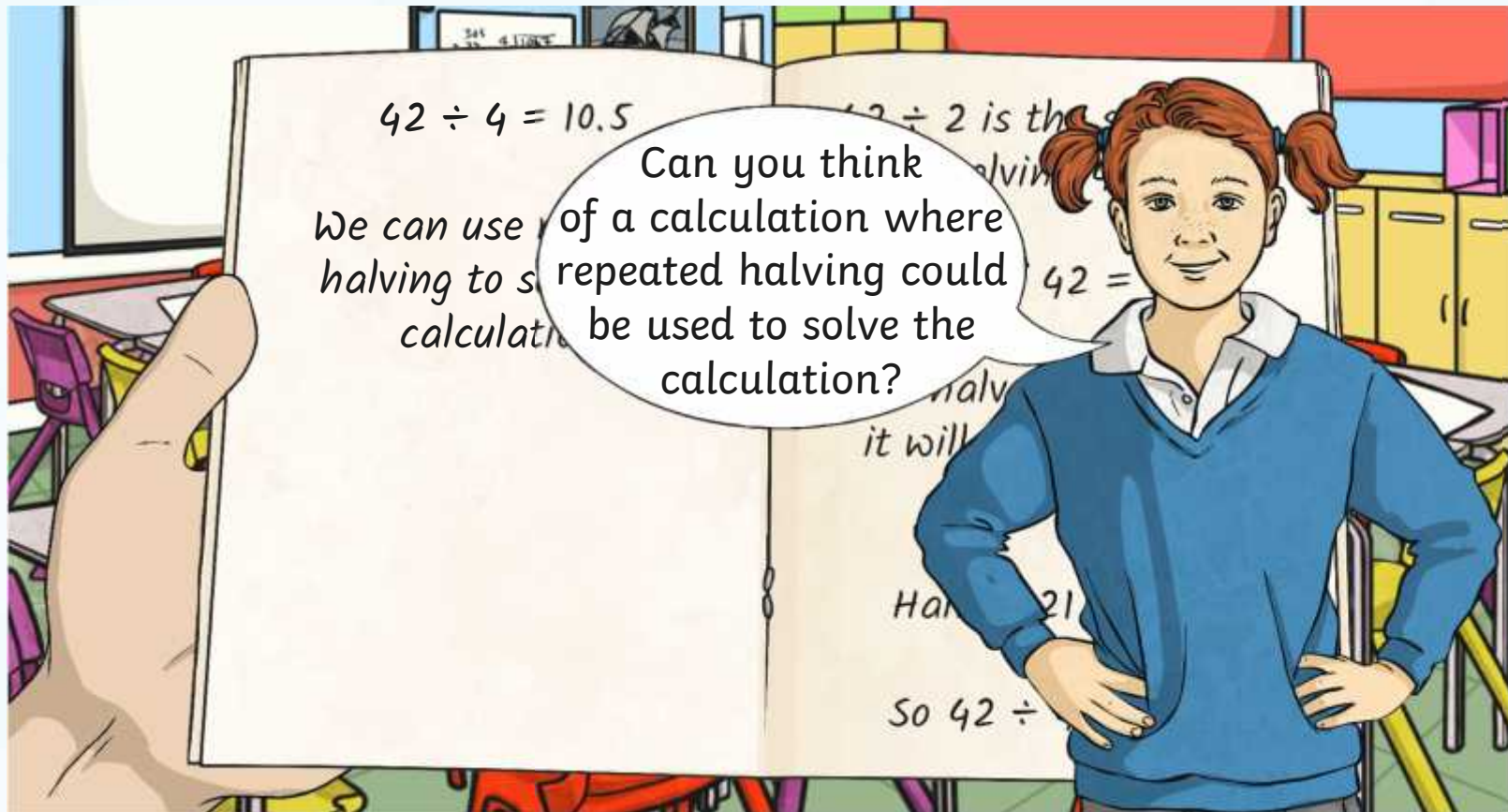
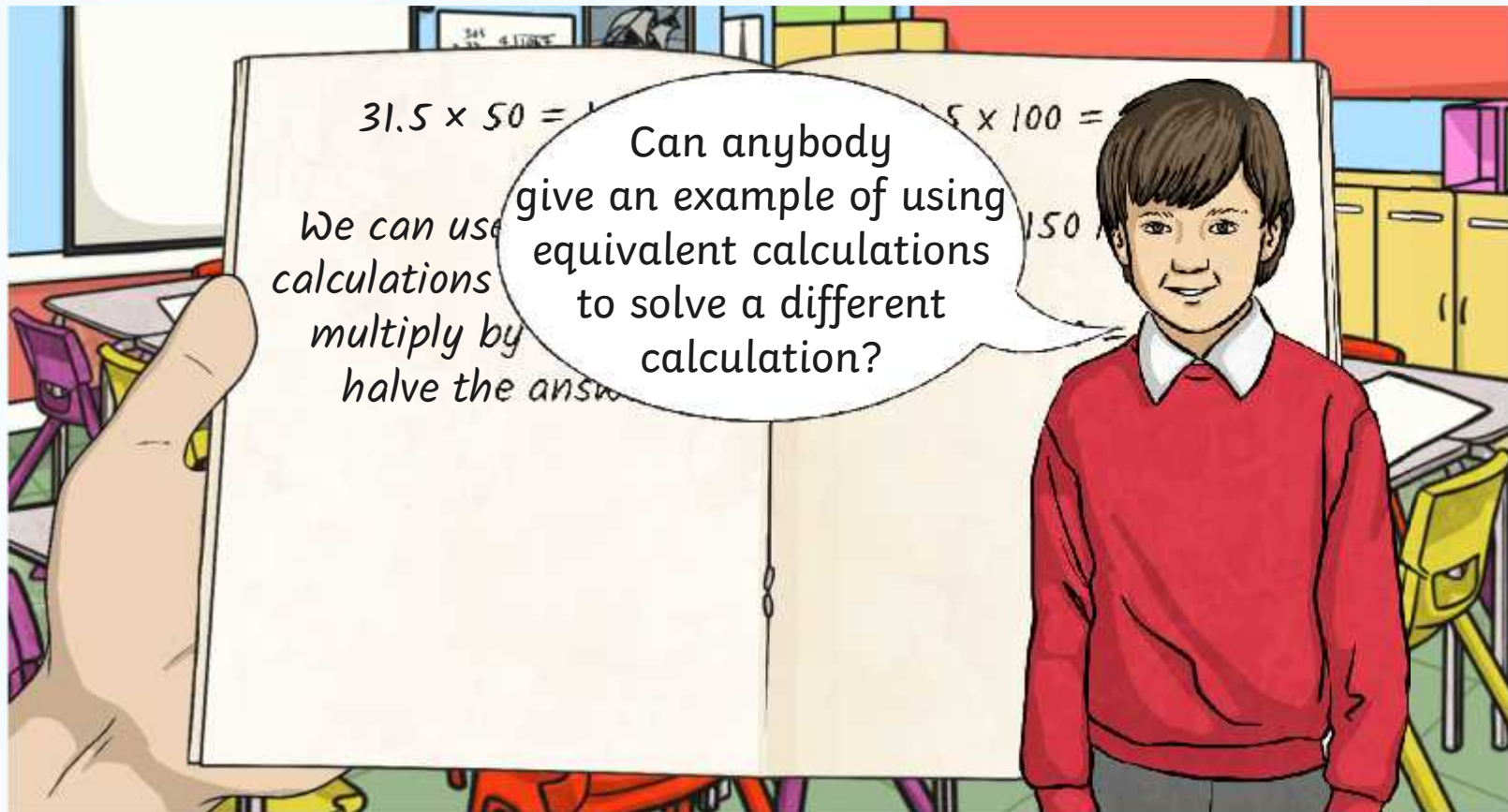# Mental Method Madness

Which strategy will be most useful when completing this calculation?

Mental Method Madness

Which strategy will be most useful when completing this calculation?

Calcu-late!

In pairs, can you match the number calculation with its
corresponding answer before the timer runs out and you are too late?

$3200 ÷ 8 × 2$ 327.32

$14.4 × 50 + 302$ 1022

$15.4 × 4 - 3.9$ 57.7

$98.43 + 294.5 - 65.61$ 800

Game Time!

You will be playing a board game in pairs.

If your answer is incorrect, move your

The first player to the finish wins!

the board.

Aim

I can perform mental calculations with mixed operations.

Success Criteria

- I can partition a variety of numbers.

- I can add or subtract the nearest multiple of 10 or 100 then adjust.

- I can identify near doubles.

- I can use repeated doubling or halving.

- I can solve problems using known number facts.

Addition, Subtraction, Multiplication and Division | Calcu-late!

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Maths I Year 6 I Addition, Subtraction, Multiplication and Division I Mental Calculations I Lesson 5 of 6: Calcu-late!

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