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 sund 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 a

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 solve problems with more than one step.

Here are some word problems. Some of the word problems have missing information that is required to solve the problem. For these, rewrite the word problem, including any missing information. Solve all of the word problems.

Calculation	Does the calculation have any missing information? If yes, rewrite the calculation.	Working Out	Answer
Kevin buys some pens and a notebook. He pays with a ten pound note. How much change will he receive?			
Here are some height measurements: Zoe and Lily: 270cm Lily and Caleb: 294cm Zoe and Caleb: 294cm How tall is Caleb?			

Class B completed a timed maths challenge. Muhammad completed the challenge first. Elena finished the challenge 20 seconds after Muhammad. Tony finished the challenge 6 seconds faster than Elena. How long did it take Muhammad to finish the challenge?			
Rufus buys two pencils and a rubber. He pays £3.20. Helena buys one pencil and a rubber. How much does a rubber cost?			
Madison has six more chocolates than Aaliyah. Aaliyah has four more chocolates than Ava. Altogether, they have 65 chocolates. How many chocolates does Ava have?			

Extra Challenge **Answers**

Question	Answer
1. Kevin buys some pens and a notebook. He pays with a ten-pound note. How much change will he receive?	
	Depends on the information added.
2. Here are some height measurements: Zoe and Lily: 270cm Lily and Caleb: 294cm Zoe and Caleb: 294cm How tall is Caleb?	
	159cm
3. Class B completed a timed maths challenge. Muhammad completed the challenge first. Elena finished the challenge 20 seconds after Muhammad. Tony finished the challenge 6 seconds faster than Elena. How long did it take Muhammad to finish the challenge?	
	Depends on the information added.
4. Rufus buys two pencils and a rubber. He pays £3.20. Helena buys one pencil and a rubber. How much does a rubber cost?	
	Depends on the information added.

5. Madison has six more chocolates than Aaliyah. Aaliyah has four more chocolates than Ava. Altogether, they have 65 chocolates. How many chocolates does Ava have?	
	17 chocolates

Open the Box

I can solve problems with more than one step.

1. Toy car: £12.49
Board game: £25.38
Building blocks £34.39
Amil and Rikard want to buy one of each toy. Amil rounds the price of each toy to the nearest £10 and adds them together. Rikard adds the exact price of each toy together. What is the difference between Amil's and Rikard's total?

Show your workings.

_____

2. Woolly hat: £11.75
Gloves: £4.95
Aydin has a twenty-pound and a ten-pound note.
How much change will he receive if he buys two woolly hats and a pair of gloves?

Show your workings.

_____

3. Miley and James each have some money. Altogether, they have £3.20.
Miley gives James 20p so that they both have the same amount.
How much money did they each have at the start?

Show your workings.

_____
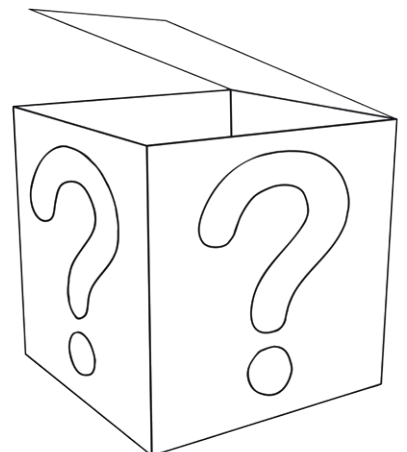
4. Class A have a race. Kat's time is 47 seconds. Charlie finishes nine seconds before Kat. Maria finishes 14 seconds after Charlie. Birkir finishes 26 seconds before Maria. What is Birkir's time in seconds?

Show your workings.

_____

5. Cookies: £0.75 each
Buns: £0.90 each
Serji bought some cookies and buns. He spent £4.20.
How many of each item did he buy?

Show your workings.

_____

6. Phoebe bought a ruler and a pencil. She paid £1.45. Leoh bought a ruler and two pencils. She paid £1.80.
How much does a ruler cost?

Show your workings.

_____

Open the Box **Answers**

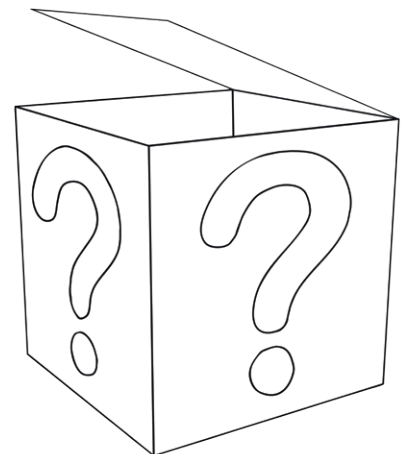| Question	Answer
1.	Toy car £12.49, Board game £25.38, Building blocks £34.39 Amil and Rikard want to buy one of each toy. Amil rounds the price of each toy to the nearest £10 and adds them together. Rikard adds the exact price of each toy together. What is the difference between Amil's and Rikard's total?
	£2.26
2.	Woolly hat: £11.75 Gloves: £4.95 Aydin has a twenty-pound and a ten-pound note. How much change will he receive if he buys two woolly hats and a pair of gloves?
	£1.55
3.	Miley and James each have some money. Altogether, they have £3.20. Miley gives James 20p so that they both have the same amount. How much money did they each have at the start?
	Miley: £1.80 James: £1.40
4.	Class A have a race. Kat's time is 47 seconds. Charlie finishes nine seconds before Kat. Maria finishes 14 seconds after Charlie. Birkir finishes 26 seconds before Maria. What is Birkir's time in seconds?
	26 seconds
5.	Cookies: £0.75 each Buns: £0.90 each Serji bought some cookies and buns. He spent £4.20. How many of each item did he buy?
	Three buns and two cookies
6.	Phoebe bought a ruler and a pencil. She paid £1.45. Leoh bought a ruler and two pencils. She paid £1.80. How much does a ruler cost?
	£1.10

Open the Box

I can solve problems with more than one step.

1. Kieran needs to run 2500 metres. In the first ten minutes he runs 639 metres and in the second ten minutes he runs 794 metres.
How much further does he still need to run?

Show your workings.

_____

2. Chocolate bar: £1.39
Pack of marshmallows: £2.47
Packet of sweets: £1.76
Special Offer: Any three items for £4.10
How much money will Len save by buying one of each item using the special offer?

Show your workings.

_____

3. Yuan and Chan are trying to find out how many star jumps they can do in two minutes. In the first minute, Yuan completes 48 star jumps and in the second minute, he completes 56 star jumps. Chan completes 184 star jumps in two minutes.
What is the difference between the amount of star jumps completed by Yuan and Chan?

Show your workings.
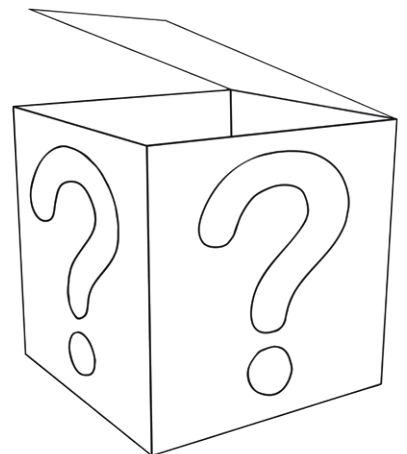
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4. Mrs Flood has 1938 pencils at the beginning of the school year. In term one, 348 pencils are used and in term two, 827 pencils are used.
    How many pencils are left remaining to use in term three?

    Show your workings.

    _____

5. Fish: £3.55
    Chips: £1.29
    Gravy: £0.75
    Peas: £0.90
    Nigel has £5. He wants to buy fish, chips and peas.
    How much more money will Nigel need?

    Show your workings.

    _____

6. A bottle holds two litres of freshly squeezed orange juice. Denver fills three glasses with orange juice. He puts 170 millilitres in each glass.
    How much orange juice is left in the bottle?

    Show your workings.

    _____

Open the Box **Answers**

Question	Answer
1.	Kieran needs to run 2500 metres. In the first ten minutes he runs 639 metres and in the second ten minutes he runs 794 metres. How much further does he still need to run?
	1067 metres
2.	Chocolate bar: £1.39 Pack of marshmallows: £2.47 Packet of sweets: £1.76 Special Offer: Any three items for £4.10 How much money will Len save by buying one of each item using the special offer?
	£1.52
3.	Yuan and Chan are trying to find out how many star jumps they can do in two minutes. In the first minute, Yuan completes 48 star jumps and in the second minute, he completes 56 star jumps. Chan completes 184 star jumps in two minutes. What is the difference between the amount of star jumps completed by Yuan and Chan?
	80
4.	Mrs Flood has 1938 pencils at the beginning of the school year. In term one, 348 pencils are used and in term two, 827 pencils are used. How many pencils are left remaining to use in term three?
	763
5.	Fish: £3.55 Chips: £1.29 Gravy: £0.75 Peas: £0.90 Nigel has £5. He wants to buy fish, chips and peas. How much more money will Nigel need?
	£0.74
6.	A bottle holds two litres of freshly squeezed orange juice. Denver fills three glasses with orange juice. He puts 170 millilitres in each glass. How much orange juice is left in the bottle?
	1490ml

Open the Box

I can solve problems with more than one step.

1. Toy car: £12.49
   Board game: £25.38
   Building blocks £34.39
   Amil and Rikard want to buy one of each toy. Amil rounds the price of each toy to the nearest £10 and adds them together. Rikard adds the exact price of each toy together. What is the difference between Amil's and Rikard's total?

   Show your workings.

   Circle the correct answer.   £2.26   £0.26   £12.26

2. Woolly hat: £11.75
   Gloves: £4.95
   Aydin has a twenty-pound and a ten-pound note.
   How much change will he receive if he buys two woolly hats and a pair of gloves?

   Show your workings.

   Circle the correct answer.   £1.25   £1.65   £1.55

3. Miley and James each have some money. Altogether, they have £3.20. Miley gives James 20p so that they both have the same amount.
   How much money did they each have at the start?

   Show your workings.

   Circle the correct answer.
   Miley: £1.80 James: £1.40   Miley: £1.70 James: £1.50   Miley: £1.70 James: £1.70

4.   Class A has a race. Kat's time is 47 seconds. Charlie finishes nine seconds before Kat. Maria finishes 14 seconds after Charlie. Birkir finishes 26 seconds before Maria. What is Birkir's time in seconds?

Show your workings.

Circle the correct answer.   62 seconds   26 seconds   34 seconds

5.   Cookies: £0.75 each
      Buns: £0.90 each
      Serji bought some cookies and buns. He spent £4.20.
      How many of each item did he buy?

Show your workings.

Circle the correct answer.
Four buns and one cookie   Three buns and two cookies   Seven cookies

6.   Phoebe bought a ruler and a pencil. She paid £1.45. Leoh bought a ruler and two pencils. She paid £1.80.
      How much does a ruler cost?

Show your workings.

Circle the correct answer.   £0.75   £0.35   £1.10

Question	Answer
1.	Toy car £12.49, Board game £25.38, Building blocks £34.39 Amil and Rikard want to buy one of each toy. Amil rounds the price of each toy to the nearest £10 and adds them together. Rikard adds the exact price of each toy together. What is the difference between Amil's and Rikard's total?
	£2.26
2.	Woolly hat: £11.75 Gloves: £4.95 Aydin has a twenty-pound and a ten-pound note. How much change will he receive if he buys two woolly hats and a pair of gloves?
	£1.55
3.	Miley and James each have some money. Altogether, they have £3.20. Miley gives James 20p so that they both have the same amount. How much money did they each have at the start?
	Miley: £1.80 James: £1.40
4.	Class A has a race. Kat's time is 47 seconds. Charlie finishes nine seconds before Kat. Maria finishes 14 seconds after Charlie. Birkir finishes 26 seconds before Maria. What is Birkir's time in seconds?
	26 seconds
5.	Cookies: £0.75 each Buns: £0.90 each Serji bought some cookies and buns. He spent £4.20. How many of each item did he buy?
	Three buns and two cookies
6.	Phoebe bought a ruler and a pencil. She paid £1.45. Leoh bought a ruler and two pencils. She paid £1.80. How much does a ruler cost?
	£1.10

Addition, Subtraction, Multiplication and Division: Open the Box

Aim:	Success Criteria:	Resources:
Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. I can solve problems with more than one step.	I can decide whether a problem involves one, two or multi-step calculations. I can decide if I need to use addition and/or subtraction.	**Lesson Pack** Computers/laptops – 1 per pair Whiteboard and pens
	Key/New Words: Solve, total, more, minus, plus, decrease, increase, sum, difference between, total, altogether, calculate, method, spent, change, problem solving, multi-step.	**Preparation:** **RUCSAC Prompt Posters** – as required Differentiated **Open the Box Activity Sheets** – as required **Extra Challenge Activity Sheet** – as required

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

Learning Sequence

Difference Spinner: Click the spinners on the **Lesson Presentation** to generate two numbers. Using whiteboards, the children find the difference between the two generated numbers.

Unlock the Box: Read through the slides from the **Lesson Presentation**, modelling using RUCSAC to help identify the operation/s and solve word problems. Repeat with further examples if required.

Secret Key: Working with a partner, children use RUCSAC to solve the word problems on the **Lesson Presentation** and select the correct answer on each slide. You could ask the children to 'vote' for the correct answer as a means of assessment. Can the children select the key words in the word problems? Which operation did they choose? Can the children calculate the answer? Did the children check their answer?

Open the Box: Using the differentiated **Open the Box Activity Sheets**, children select and solve the word problems. Remind children to use RUCSAC to help them during the task, providing **RUCSAC Prompt Posters** as required.

★	The children select and solve simple two-step problems involving addition and subtraction by deciding which operation to use.
★★	The children select and solve multi-step problems involving addition and subtraction by deciding which operation to use. Selections of multiple-choice answers are available for the children to choose from.
★★★	The children select and solve multi-step problems involving all four operations by deciding which operation to use. An **Extra Challenge Activity Sheet** is provided as an extension activity if required.

Steps to Success: Children talk in pairs about the lesson. Children develop a set of short instructions to tell someone else how to solve multi-step problems.

Master it

Filmit: Children write a script for a maths-themed game show. During filming, the children explain how they worked out the answers to a series of multi-step problems.

Makeit: In pairs, the children use a   and write a multi-step problem on each face. After, the children cut out and assemble the cube to create a dice. Children exc   dice with another pair of children in the class. Taking turns, the children roll the dice and answer the generated questions.

Maths

Addition, Subtraction, Multiplication and Division

Open the Box

Aim

- I can solve problems with more than one step.

Success Criteria

- I can decide whether a problem involves one, two or multi-step calculations.
- I can decide if I need to use addition and/or subtraction.

Knowing a Number

Click the spinners to generate two numbers.
Find the difference between the two numbers.

Spinner 1:
- 1332
- 529 498
- 958 496
- 5 294 942
- 59 295
- 59 295
- 49 953
- 28 493

Spinner 2:
- 2954
- 59 295
- 59 294
- 20 395
- 824 592
- 58 398
- 329 483
- 394

Spin!

Spin!

Unlock the Box

Welcome to Open the Box and here is your host, Patrick.

Her...
qu...

A school holds a local charity disco for a charity. The expenses are £45 for a DJ, £21.67 for drink and £56.36 for the food. The ticket sales make £198.50, and the food and drink sells for £176.28. How much profit has been raised for the charity?

Unlock the Box

A school holds a local charity disco for a charity. The expenses are £45 for a DJ, £21.67 for drink and £56.36 for the food. The ticket sales make £198.50, and the food and drink sells for £176.28. How much profit has been raised for the charity?

To find out what we need to do to the solve the problem, we need to **r**ead the question carefully.

Unlock the Box

A school holds a local charity disco for a charity. The <u>expenses</u> are £<u>45</u> for a DJ, £<u>21.67</u> for drink and £<u>56.36</u> for the food. The ticket sales make £<u>198.50</u>, and the food and drink sells for £<u>176.28</u>. <u>How much profit</u> has been raised for the charity?

U

Unlock the Box

A school holds a local charity disco for a charity. The underline{expenses} are underline{£45} for a DJ, underline{£21.67} for drink and underline{£56.36} for the food. The ticket sales make underline{£198.50}, and the food and drink sells for underline{£176.28}. underline{How much profit} has been raised for the charity?

Unlock the Box

A school holds a local charity disco for a charity. The <u>expenses</u> are <u>£45</u> for a DJ, <u>£21.67</u> for drink and <u>£56.36</u> for the food. The ticket sales make <u>£198.50</u>, and the food and drink sells for <u>£176.28</u>. <u>How much profit</u> has been raised for the charity?

S

Unlock the Box

A school holds a local charity disco for a charity. The expenses are £45 for a DJ, £21.67 for drink and £56.36 for the food. The ticket sales make £198.50, and the food and drink sells for £176.28. How much profit has been raised for the charity?

How much profit has been raised for the charity? After, we need to **a**nswer the question.
£251.75

Unlock the Box

Hurray! You have managed to unlock the box!

Oh dear, let's see if you can win a better prize!

...holds a local charity disco for a ...e expenses are £45 for a DJ, ...rink and £56.36 for the food. ...sales make £198.50, and the ...k sells for £176.28. How much ...it has ...e raised for the charity?

Check that the answer is correct.

C

Secret Key

Can you find the key to unlock the box?
Solve the problem in order to find the correct key.
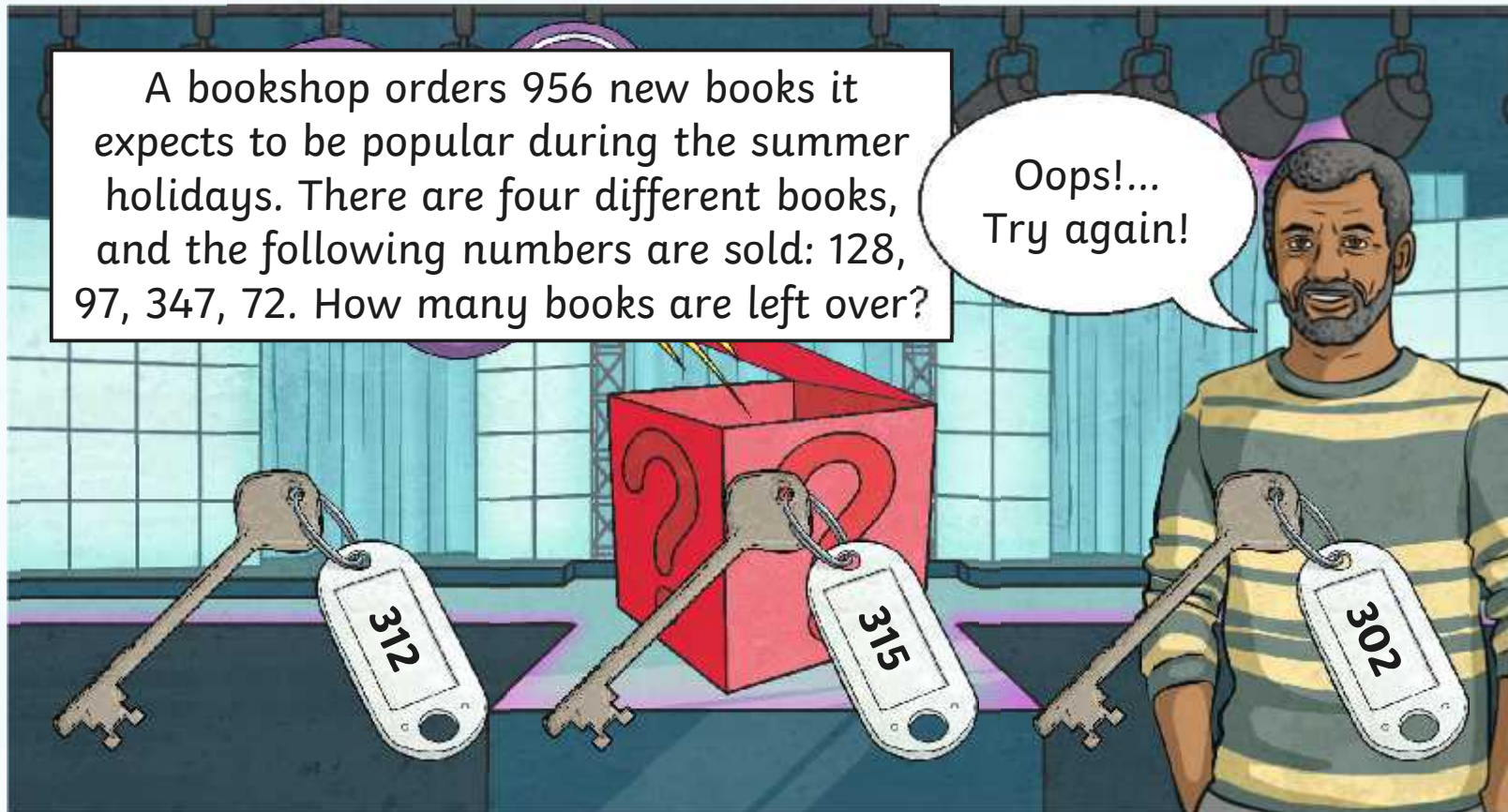
A family live 265 miles away from their grandparents, who they visit over the holidays. While away, they visit friends who live 37 $\frac{1}{2}$ miles from where they are staying, and they drive another 18 miles while away. Including a return trip, how many miles will they travel altogether?

Oops!... Try again!
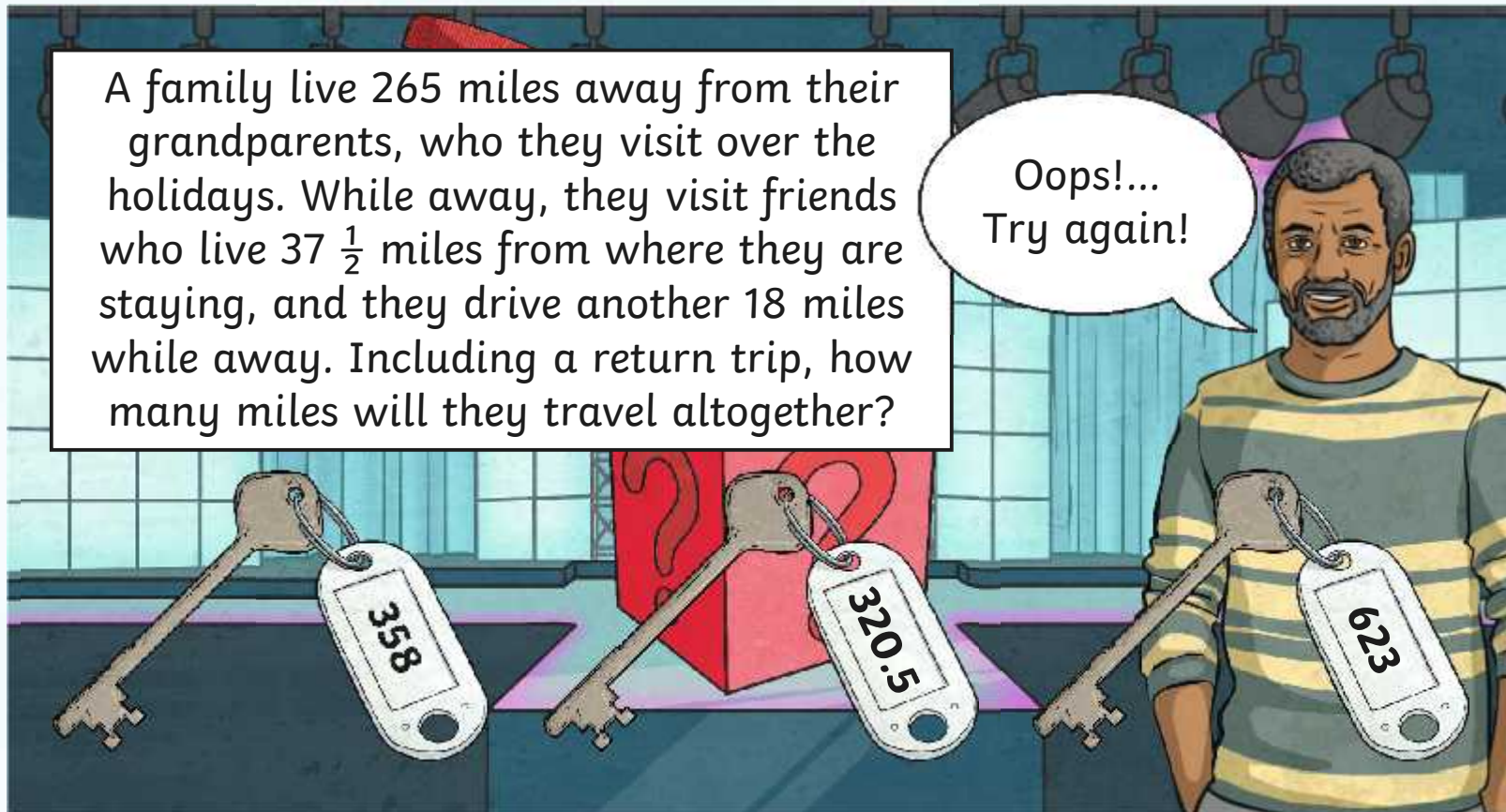
358

320.5

623

Secret Key

Can you find the key to unlock the box?
Solve the problem in order to find the correct key.

Dylan and his brother Lucas save up to buy their father a football shirt for his birthday. A month before their father's birthday, Dylan has £13.45 and Lucas £16.82. The shirt costs £39.75. How much more money do they need to save?
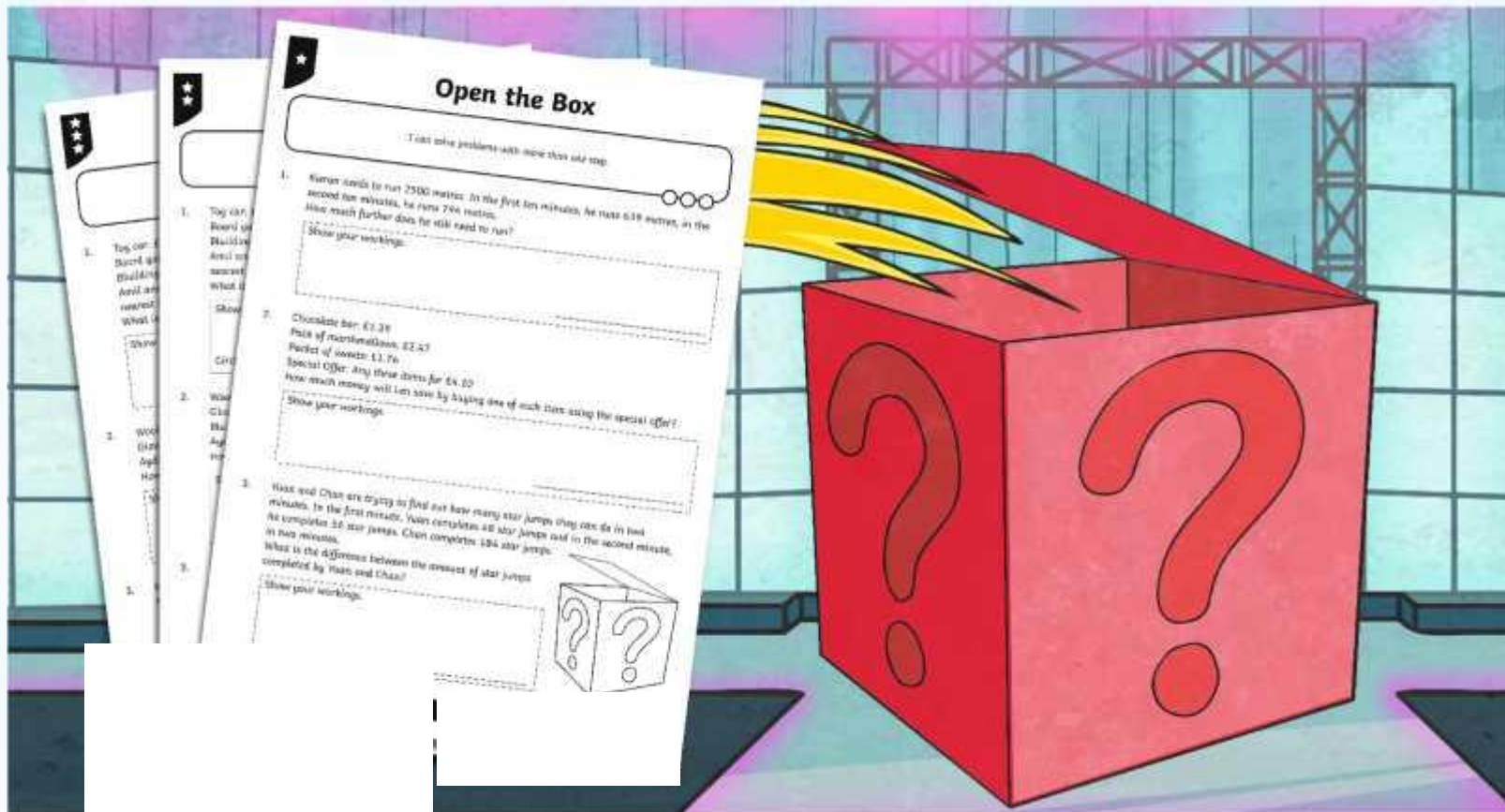
Oops!... Try again!

£30.27

£53.20

£9.48
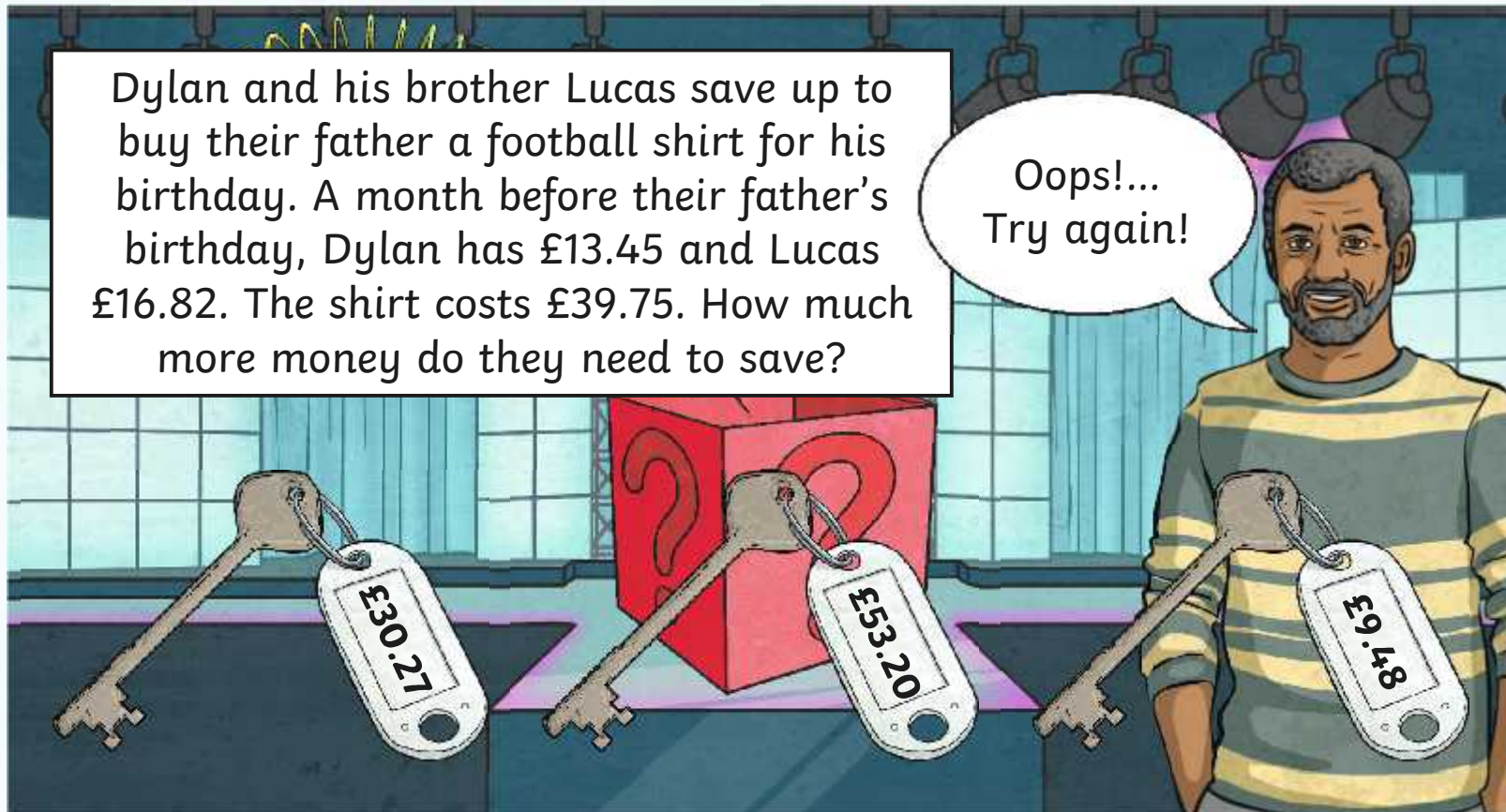
Open the Box

Use your marvellous maths skills to complete these activity sheets:

Steps to Success

In pairs, verbally make a set of short instructions to tell someone else how to solve multi-step problems.
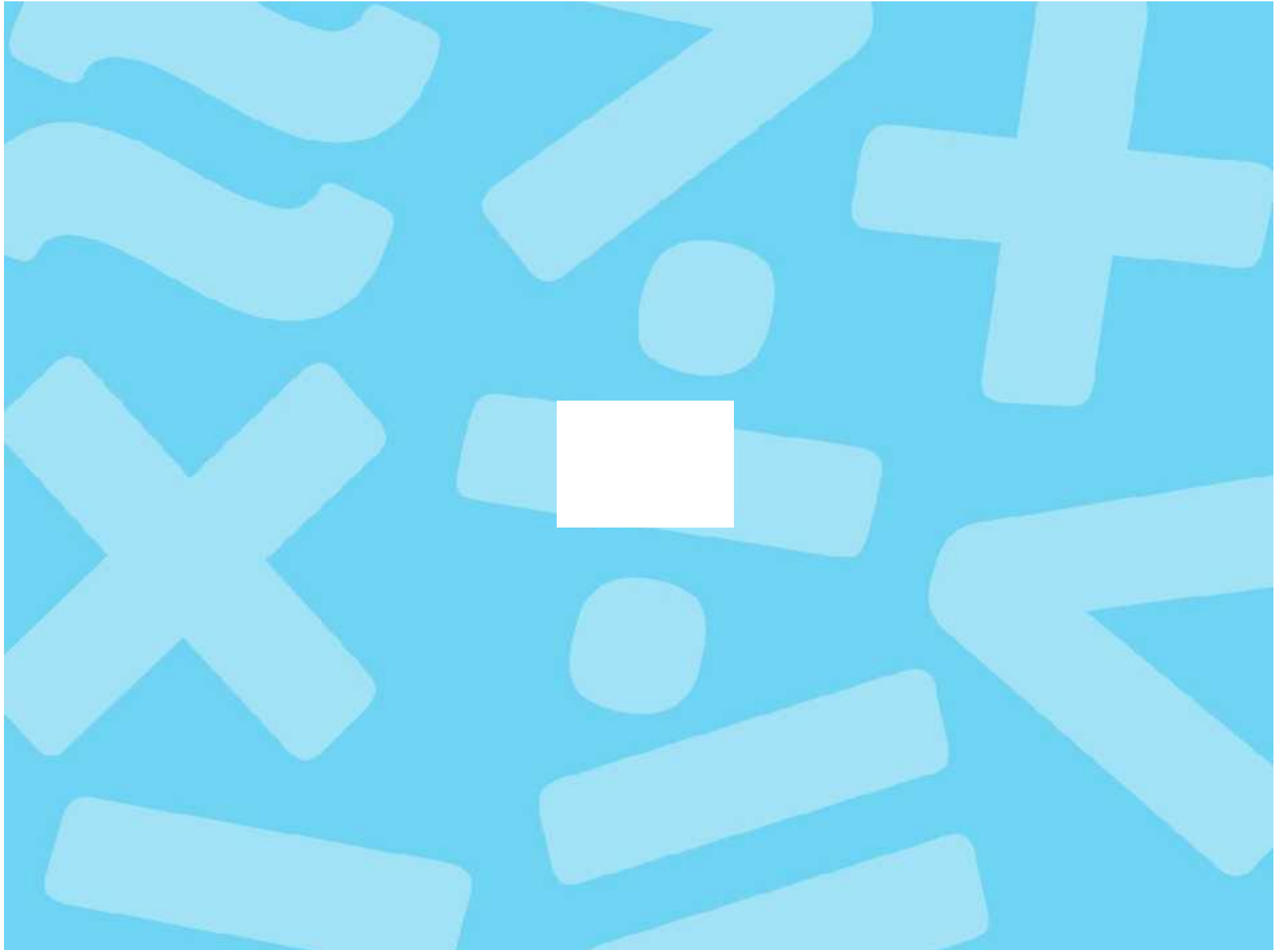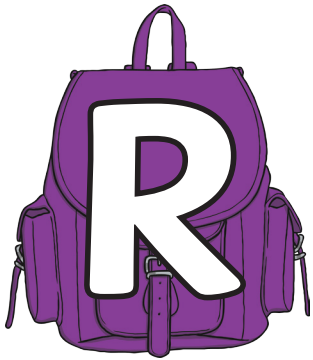
Aim

- I can solve problems with more than one step.
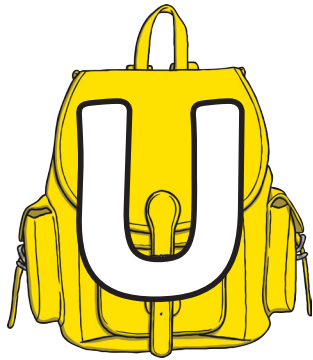
Success Criteria

- I can decide whether a problem involves one, two or multi-step calculations.

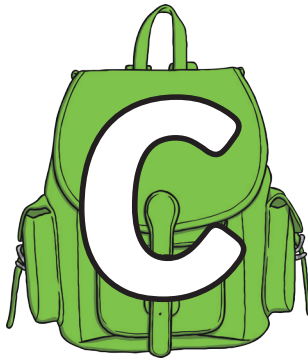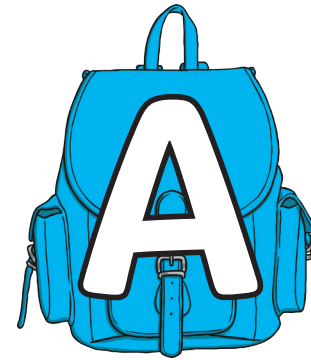- I can decide if I need to use addition and/or subtraction.

Remember
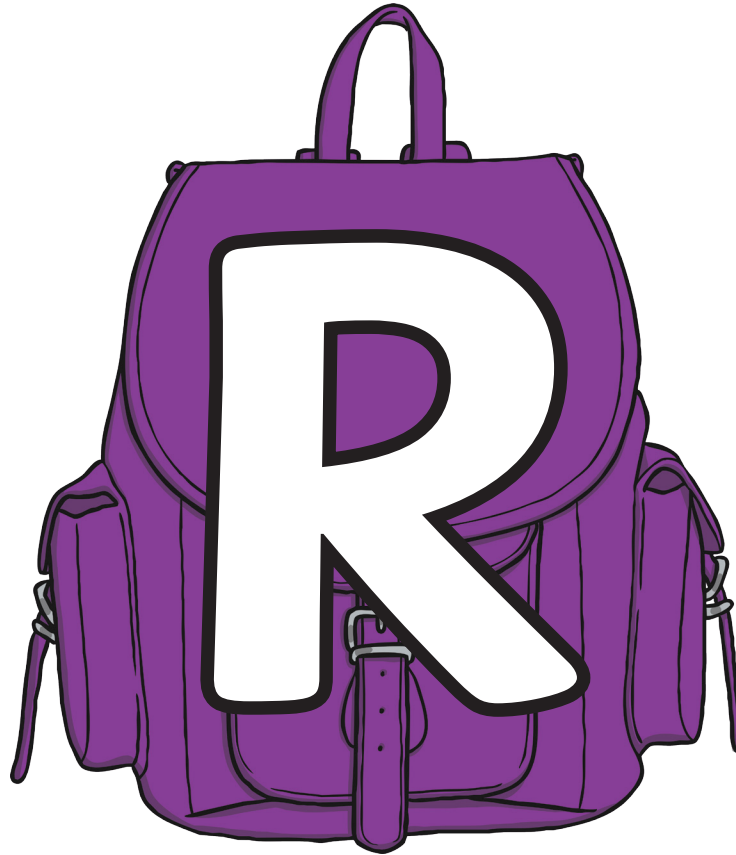## to use

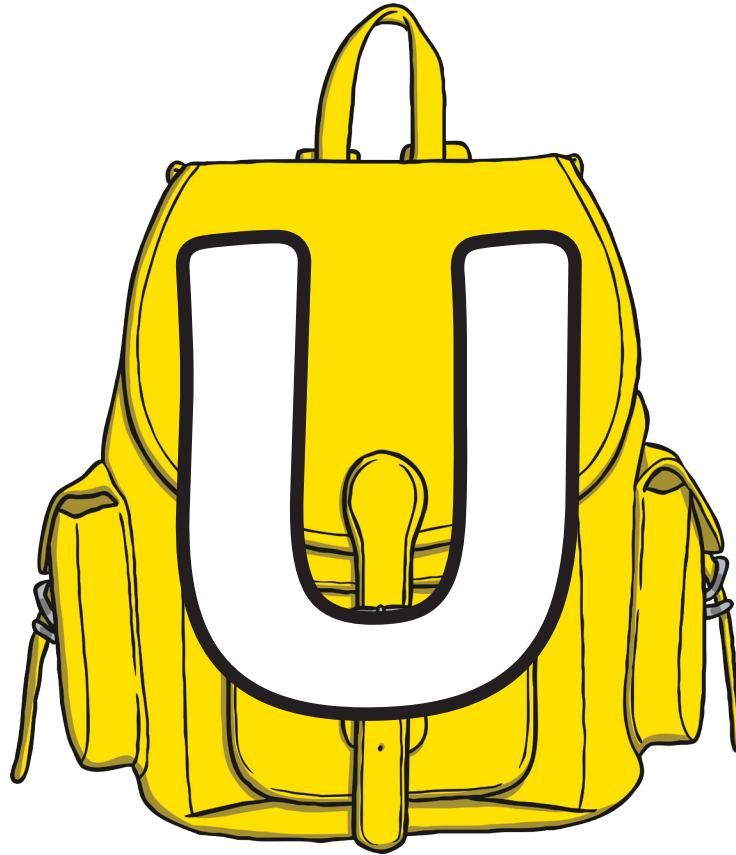**R**ead   **U**nderstand   **C**hoose   **S**olve   **A**nswer   **C**heck

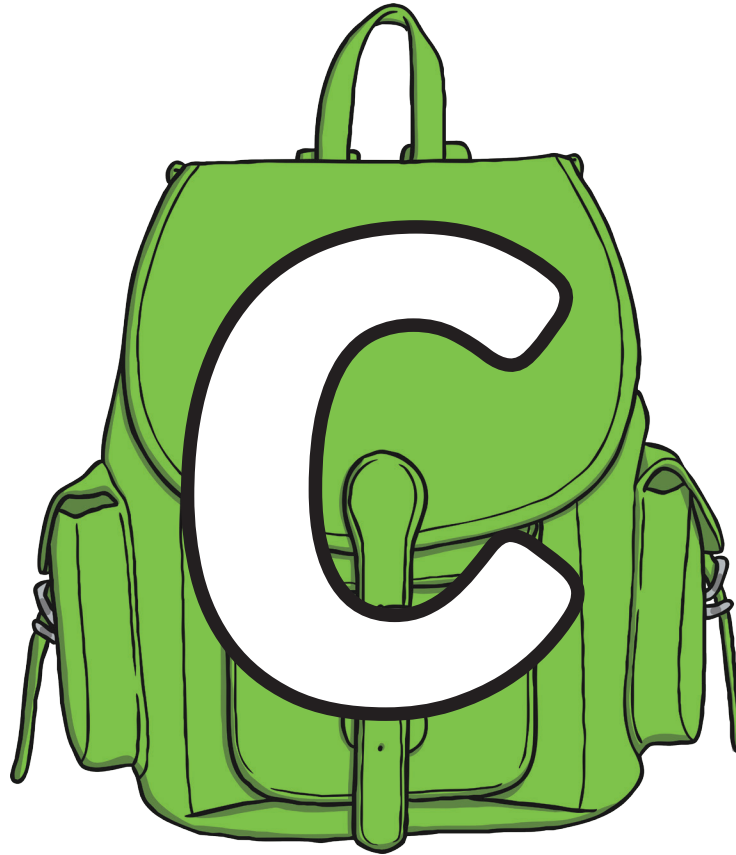# when calculating
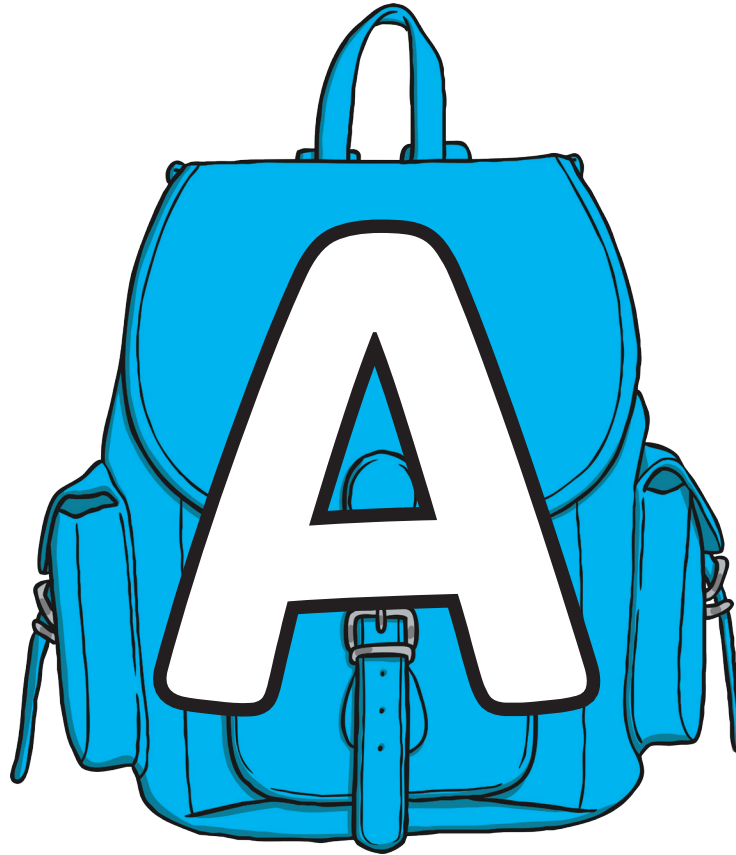# mathematical problems

Read the question carefully

Make sure you **u**nderstand the question

Choose the correct method

Solve the problem

Answer the question

Check your answers

Addition, Subtraction, Multiplication and Division | Open the Box

I can solve problems with more than one step.		
I can decide whether a problem involves one, two or multi-step calculations.		
I can decide if I need to use addition and/or subtraction.		

Addition, Subtraction, Multiplication and Division | Open the Box

I can solve problems with more than one step.		
I can decide whether a problem involves one, two or multi-step calculations.		
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Addition, Subtraction, Multiplication and Division | Open the Box

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Addition, Subtraction, Multiplication and Division | Open the Box

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Addition, Subtraction, Multiplication and Division | Open the Box

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Addition, Subtraction, Multiplication and Division | Open the Box

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Addition, Subtraction, Multiplication and Division | Open the Box

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Addition, Subtraction, Multiplication and Division | Open the Box

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I can decide if I need to use addition and/or subtraction.		

Maths I Year 6 I Addition, Subtraction, Multiplication and Division I Addition and Subtraction Multi–Step Problems I Lesson 2 of 3: Open the Box

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