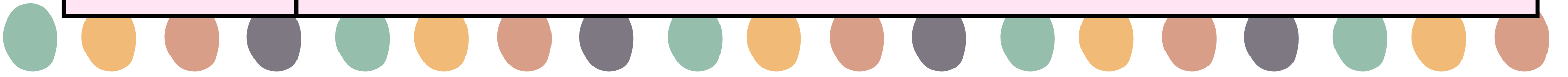


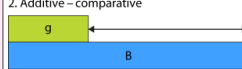
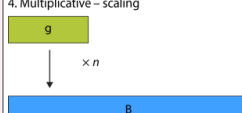
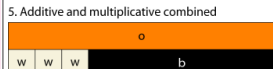
Y6- Overview

	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2			
Unit	1	2	3	4	5	6	7	8	KS2 tests	9	10	11	12	13

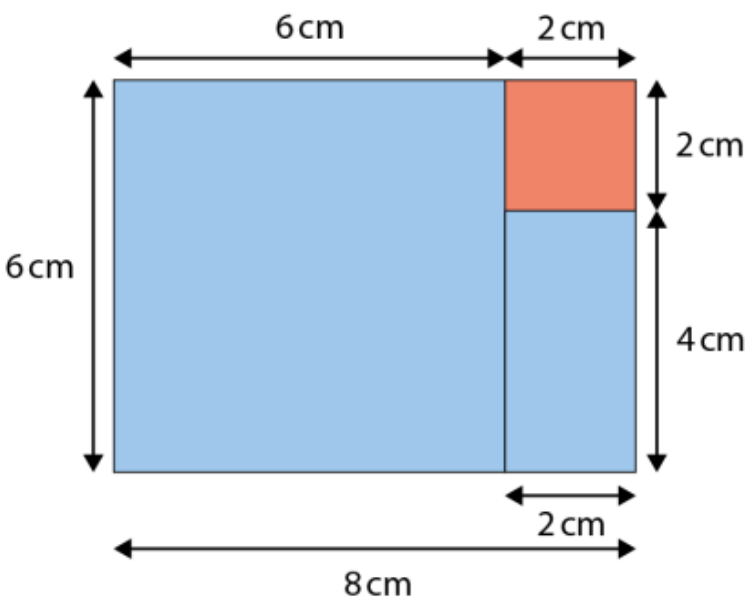
- Number and place value
- Number facts
- Addition and subtraction
- Multiplication and division
- Fractions
- Geometry
- Other

Autumn 1	Use knowledge of part-part-whole structure to solve additive problems (2 weeks)
Ready to progress	6AS/MD-1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number). 6AS/MD-2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding
NCETM documents	WHOLE DOCUMENT - 128 Common structures and the part-part-whole relationship https://www.ncetm.org.uk/media/tuzdfxwh/ncetm_mm_spl_y5_se28_teach.pdf
Small steps	- To explain how a combination of different parts can be equivalent to the same whole. - To identify structures within stories and use knowledge of structures to create stories. - To identify the missing part using knowledge of part-whole relationships and structures. - To use a model to interpret and represent a part-whole problem with three addends. - To create stories to match structures presented in a model. - To use knowledge of additive structure to solve problems. - To use mental strategies and known facts to calculate the value of a missing part. - To use written strategies and known facts to calculate the value of a missing part. - To represent an equation in a part-whole model correctly. - To use part-part-whole structures to solve additive problems in a range of contexts.
Links	NCETM TO SLIDE 64- https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.ncetm.org.uk%2Fmedia%2Fsuwfix0e%2Fcp-year-6-unit-1-calculating-using-knowledge-of-structures-1.pptx&wdOrigin=BROWSELINK OAK https://www.thenationalacademy/teachers/programmes/maths-primary-ks2/units/use-knowledge-of-part-whole-structure-to-solve-additive-problems/lessons?sid-f87701=HwNvMMBQHo&sm=0&src=3 WHITE ROSE https://assets.whiteroseeducation.com/new-schemes/Y6%20Autumn%20Block%202%20SOL%20Addition%20subtraction%20multiplication%20and%20division.pdf Mastery with greater depth https://www.ncetm.org.uk/media/uitjlx5g/mastery_assessment_y6.pdf
Reasoning	Hard and easy questions Which questions are easy / hard? 213323 - 70 = 512893 + 37 = 819354 - 5.9 = Explain why you think the hard questions are hard? Missing symbols Write the missing signs (+ - x ÷) in this number sentence: 6 12.3 = 61.9 11.9 What else do you know? If you know this: 86.7 + 13.3 = 100 what other facts do you know? Convince me Three four digit numbers total 12435. What could they be? Convince me Making an estimate Circle the number that is the best estimate to 932.6 - 931.05 1.3 1.5 1.7 1.9 Always, sometimes, never Is it always, sometimes or never true that the sum of two consecutive triangular numbers is a square number

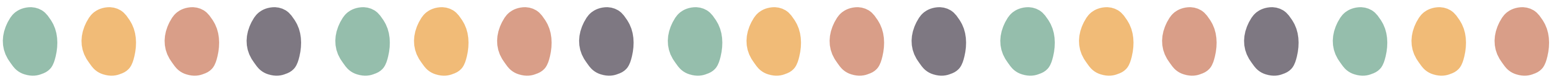


	Use knowledge of part-part-whole structure to solve additive problems (2 weeks)																				
Problem solving	 Click on me																				
Glossary	• Equivalent - Two expressions are equivalent if they have the same value. • Represent - To represent something means to show an idea or concept. One concept can be represented in multiple ways. • Additive - Additive means related to addition. An additive structure is one that is composed by adding parts. • Multiplicative - Multiplicative means related to multiplication. A multiplicative structure is one that is composed by multiplication. • Equivalent - Two or more things are equivalent if they have the same value. • Solution - A solution is a value, or set of values, that can be put in place of an unknown which makes the equation true. • Addend - Addends are any numbers added together.																				
Stem sentences																					
Representations	1. Additive – combining or partitioning  2. Additive – comparative  3. Additive or multiplicative  4. Multiplicative – scaling  5. Additive and multiplicative combined  A group of identical rods and a different rod (additive and multiplicative):  “Three white plus one black is equal to orange.” $3 \times w + b = o$ or $w + w + w + b = o$ Model A (additive):  $B = y + w + g$ Model B (multiplicative/repeated addition):  $B = g + g + g$ or $B = 3 \times g$ Missing-addend problem – example 2: $15.1 = \square + 2.55 + 5.73$ = Bar model <table><tr><td colspan="3">15.1</td></tr><tr><td>?</td><td>2.55</td><td>5.73</td></tr></table> = Using part-whole language to link the equation to the model <table><tr><td>$\frac{15.1}{\downarrow}$</td><td>=</td><td>$\frac{\square}{\downarrow}$</td><td>+</td><td>$\frac{2.55}{\downarrow}$</td><td>+</td><td>$\frac{5.73}{\downarrow}$</td></tr><tr><td>whole</td><td></td><td></td><td></td><td>three parts</td><td></td><td></td></tr></table>	15.1			?	2.55	5.73	$\frac{15.1}{\downarrow}$	=	$\frac{\square}{\downarrow}$	+	$\frac{2.55}{\downarrow}$	+	$\frac{5.73}{\downarrow}$	whole				three parts		
15.1																					
?	2.55	5.73																			
$\frac{15.1}{\downarrow}$	=	$\frac{\square}{\downarrow}$	+	$\frac{2.55}{\downarrow}$	+	$\frac{5.73}{\downarrow}$															
whole				three parts																	

Finding the area by making one large rectangle:
‘What is the area of this shape?’



$A = 8 \text{ cm} \times 6 \text{ cm} - 2 \text{ cm} \times 2 \text{ cm} = 44 \text{ cm}^2$



Y5- Overview

	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1	Summer 2	
Unit	1	2	3	4	5		6	7	8	9	10

	Number and place value
	Number facts
	Addition and subtraction
	Multiplication and division
	Fractions
	Geometry
	Other

Spring 2	Use equivalence and compensation to simplify and solve addition calculations (2 weeks)
Ready to progress	6AS/MD-1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number). 6AS/MD-2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding
NCETM documents	TEACHING POINT 1, 2 AND 3 https://www.ncetm.org.uk/media/k1oc11bp/ncetm_mm_spl_y5_se29_teach.pdf#page=5
Small steps	- To use redistribution to add integers. - To use redistribution to add decimal fractions. - To apply balanced equations when redistributing values. - To calculate unknown parts using a balanced equation. - To understand how changing one part affects the total. - To solve mental addition using known number facts. - To apply mental addition strategies in different contexts. - To solve addition problems with missing values. - To use equivalence and compensation to solve problems. - To apply equivalence and compensation in real-world addition problems.
Links	NCETM-TO SLIDE 64 TO 142 https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.ncetm.org.uk%2Fmedia%2Fsumfix0e%2Fcp-year-6-unit-1-calculating-using-knowledge-of-structures-lpptx&wdOrigin=BROWSELINK OAK https://www.thenationalacademy/teachers/programmes/maths-primary-ks2/units/use-equivalence-and-compensation-to-simplify-and-solve-addition-calculations/lessons?sid-e32659=GiBfEycpSl&sm=0&src=3 WHITE ROSE https://assets.whiteroseeducation.com/new-schemes/Y6%20Autumn%20Block%202%20SOL%20Addition%20subtraction%20multiplication%20and%20division.pdf Mastery with greater depth https://www.ncetm.org.uk/media/uitjlx5g/mastery_assessment_y6.pdf
Reasoning	Top Tips Put these amounts in order starting with the largest: 130,000 cm² 1.2 m² 13 m² Explain your thinking. How did you convert the measurements? Which is the largest when expressed in the same unit? Undoing A school play ends at 6:45pm. It lasted 2 hours and 35 minutes. What time did it start? Use time subtraction and explain your steps. Write More Statements Mr Smith needs to fill buckets with water. - A large bucket holds 6 litres - A small bucket holds 4 litres - A jug holds 250 ml - A bottle holds 500 ml Suggest some different ways to fill the buckets using only jugs and bottles. How many bottles or jugs would be needed for each type of bucket?



Use equivalence and compensation to simplify and solve addition calculations
(2 weeks)

Problem solving



Glossary

- Redistribution - Redistribution is where part of one addend is moved to another addend. It is sometimes known as the same sum rule.
- Sum - The sum is the total when numbers are added together.
- Whole - The whole is all the parts or everything, the total amount.
- Part - A part is some of the whole.
- Decimal fraction - A decimal fraction is a fraction written as a decimal. A decimal point separates whole numbers from decimal fractions.
- Equation - An equation is used to show that one number, calculation or expression is equal to another.
- Expression - An expression contains one or more values, where each value is separated by an operator.
- Adjustment - An adjustment is a change to a number using either subtraction or addition.
- Capacity - Capacity is the amount that something can hold.
- Unknown - An unknown is a quantity that has a set value but it is represented by a symbol or letter.
- Budget - A budget is the total amount of money that you have to spend on something. It is often split into parts and money can be redistributed between these parts.
- Adjust - When you adjust you make a change to a number.
- Redistribution - Redistribution is where some of one part is moved to another part. It is sometimes known as the same sum rule.

Stem sentences

I've added _____ to one addend and kept the other addend the same, so I must add _____ to the sum.

I've subtracted _____ from one addend and kept the other addend the same, so I must subtract _____ from the sum.

Generalise- If one addend is changed by an amount and the other addend is kept the same, the sum changes the same amount.

The sum has increased by _____; one addend has stayed the same, so the other addend must increase by _____.

The sum has decreased by _____; one addend has stayed the same, so the other addend must decrease by _____.

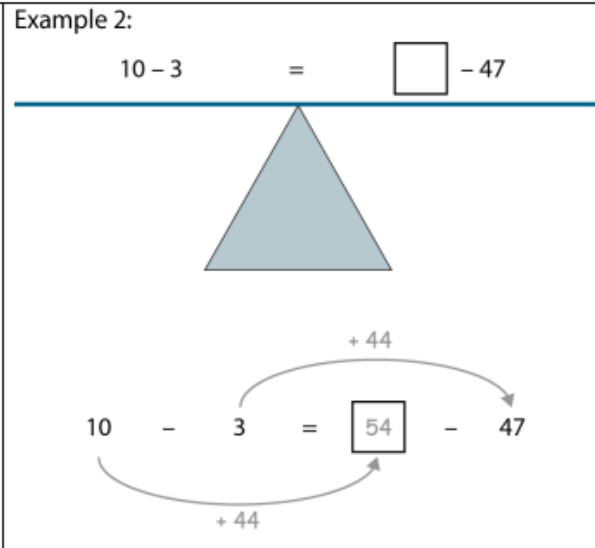
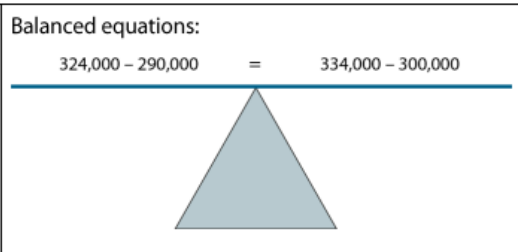
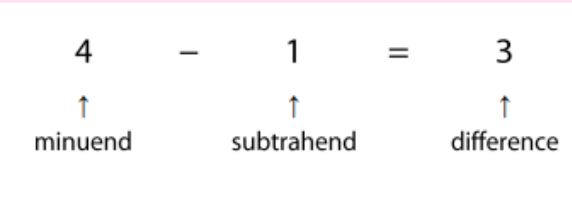
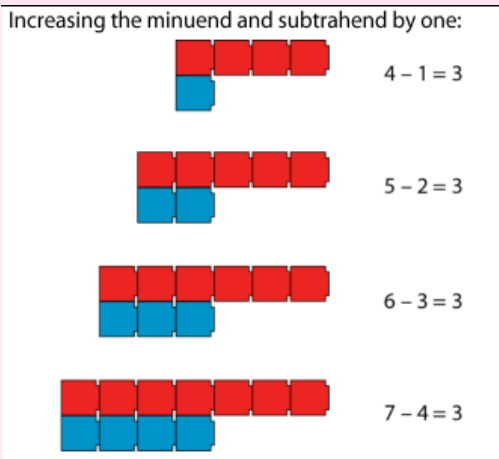
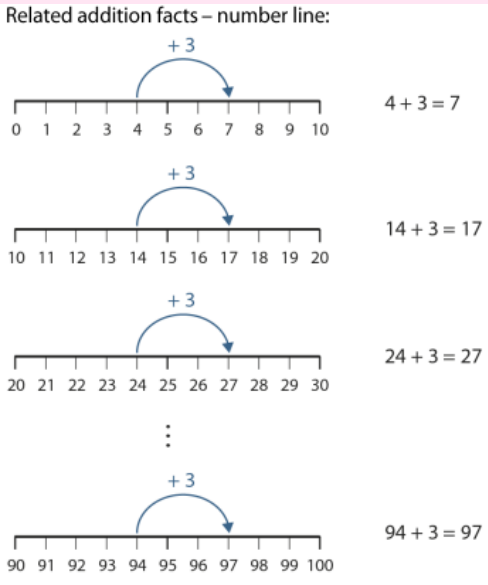
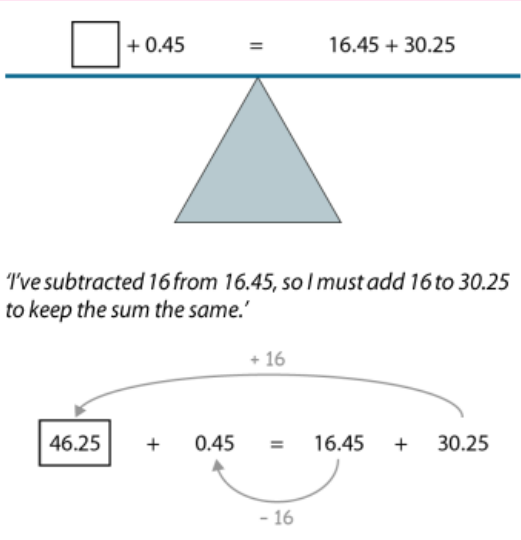
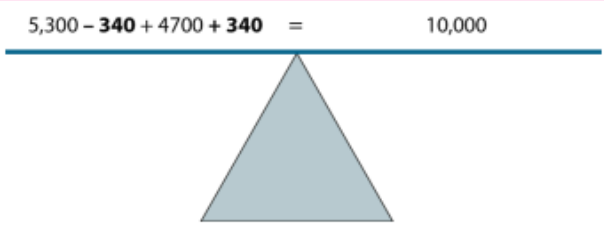
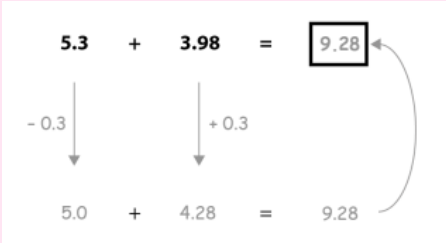
I've added _____ to both the minuend and the subtrahend, so the difference stays the same.

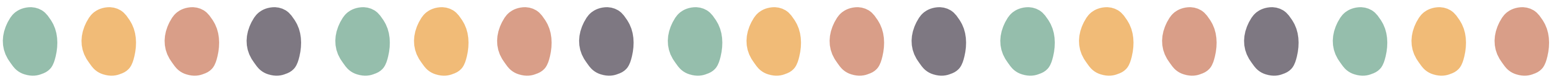
I've added to the minuend (subtrahend), so I need to add the subtrahend (minuend) to keep the difference the same.'

to

I've subtracted _____ from the minuend (subtrahend), so I need to subtract from the subtrahend (minuend) to keep the difference the same

Representations





Y5- Overview

	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1	Summer 2	
Unit	1	2	3	4	5		6	7	8	9	10

	Number and place value
	Number facts
	Addition and subtraction
	Multiplication and division
	Fractions
	Geometry
	Other

Spring 2	Use equivalence and compensation to simplify and solve subtraction problems (2 weeks)
Ready to progress	6AS/MD-1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number). 6AS/MD-2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding
NCETM documents	TEACHING POINT 4 AND 5 https://www.ncetm.org.uk/media/klocllbp/ncetm_mm_sply5_se29_teach.pdf#page=5
Small steps	- To explain and show how constant difference works in subtraction. - To explain how constant difference can make written subtraction more efficient. - To use constant difference to balance subtraction equations and find unknown values. - To understand how changing the minuend changes the difference. - To solve subtraction problems mentally using known number facts. - To explain how adjusting the minuend supports mental subtraction. - To explain how changing the subtrahend affects the result in a reduction structure. - To explain how changing the subtrahend affects the result in a partitioning structure. - To calculate differences using adjusted subtrahends in a difference structure. - To apply equivalence and compensation strategies to solve subtraction problems in various contexts.
Links	NCETM-TO SLIDE 14& TO THE END https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.ncetm.org.uk%2Fmedia%2Fsumfix0e%2Fcp-year-6-unit-1-calculating-using-knowledge-of-structures-lpptx&wdOrigin=BROWSELINK OAK https://www.thenationalacademy/teachers/programmes/maths-primary-ks2/units/use-equivalence-and-compensation-to-simplify-and-solve-subtraction-problems/lessons?sid-82a&lc=b-wru5YznXC&sm=0&src=3 WHITE ROSE https://assets.whiteroseeducation.com/new-schemes/Y6%20Autumn%20Block%202%20SOL%20Addition%20subtraction%20multiplication%20and%20division.pdf Mastery with greater depth https://www.ncetm.org.uk/media/uitjlx5g/mastery_assessment_y6.pdf
Reasoning	More Efficient Methods Calculate 901 - 498. Now, adjust both numbers to make the subtraction easier. - What did you change? - Why did that help? - Explain how using constant difference can help when subtracting numbers that aren't 'friendly'. Balancing Equations Fill in the missing number so the equation is balanced: 675 - ____ = 680 - 310 Use the idea of keeping the difference the same on both sides. Changing the Minuend The difference between 800 and 560 is 240. What would the difference be if the minuend increased to 820? How does changing the minuend affect the difference? Mental Subtraction Using Known Facts What is 60 - 29? Can you use what you know about 30 - 30 or 60 - 30 to help? Try breaking 29 into parts you can subtract easily. Adjusting the Minuend Calculate 500 - 247 What if you adjusted the minuend to 501 or 505 - does it help make the subtraction easier? Explain how and why adjusting the minuend can support mental strategies. Reduction Structure - Changing the Subtrahend If 92 - 7 = 85, What happens to the result if we increase the subtrahend to 9? What if we decrease it to 5? Explain the pattern Partitioning Structure - Changing the Subtrahend You have 150, and subtract 30 + 20. What's the difference if you subtract 40 + 10 instead? Explore how re-partitioning the subtrahend affects the outcome. Adjusted Subtrahends - Difference Structure Use adjusted subtrahends to solve: 700 - 398 300 - 197 - How can you use constant difference or rounding to help you? Compensation Strategies in Context A shop sells a jacket for £49. Customers pay with a £100 note. - What is the change? - Use a compensation strategy: Round £49 to £50 and adjust. - How does this make mental subtraction easier in real-life?



Use equivalence and compensation to simplify and solve subtraction problems
(2 weeks)

Problem solving



Glossary

- Minuend - The minuend is the number being subtracted from.
- Subtrahend - A subtrahend is a number subtracted from another.
- Difference - The difference is the result after subtracting one number from another.
- Constant - A constant is a quantity that has a fixed value that does not change or vary, such as a number.
- Unknown - An unknown is a quantity that has a set value but it is represented by a symbol or letter.
- Partition - Partition is the act of splitting an object or value down into smaller parts.
- Adjust - When you adjust you make a change to a number. This is done to make a calculation easier to solve mentally.
- Inverse - The inverse is the opposite or reverse operation. For example, subtraction is the inverse operation of addition.

Stem sentences

I've added _____ to the minuend and kept the subtrahend the same, so I must add _____ to the difference.

I've subtracted _____ from the minuend and kept the subtrahend the same, so I must subtract _____ from the difference.

If the minuend is changed by an amount and the subtrahend is kept the same, the difference changes by the same amount.

The more we subtract, the less we are left with.
The less we subtract, the more we are left with.

I've kept the minuend the same and added _____ to the subtrahend, so I must subtract _____ from the difference.

I've kept the minuend the same and subtracted _____ to the subtrahend, so I must add _____ to the difference.

Representations

