

**Subtraction
(Counting back)
Stage 1a**

Understand subtraction as 'taking away'.

Vocab/Key Questions

Take away: partitioning or counting out

I had 6 sweets and ate 3 of them. How many are left for tomorrow?



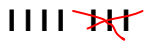
There were five frogs. Two jumped into the pond. How many were left?



$$5 - \square = 3 \quad \square - 2 = 3$$

7-3=

Mum baked 7 biscuits. I ate 3. How many were left?



Count back, less, less than, take away

How many are left?

**Subtraction
(Counting back)
Stage 1b**

Understand subtraction as 'taking away'.

Vocab/Key Questions

See Stage 1a.

Counting back from: reduction

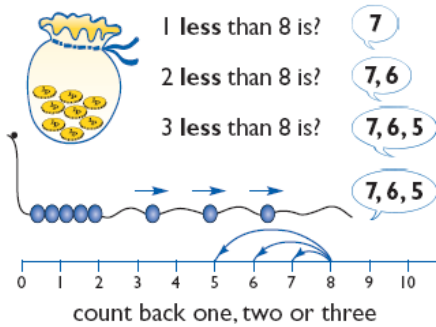
1 less than 10



1 less than 10 is 9
10 **subtract** 1 equals 9
 $10 - 1 = 9$

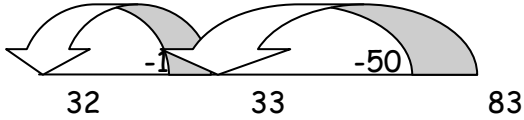
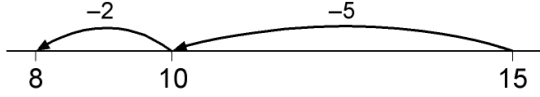
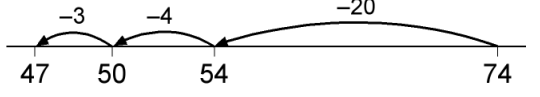

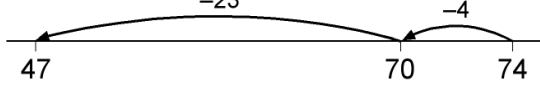


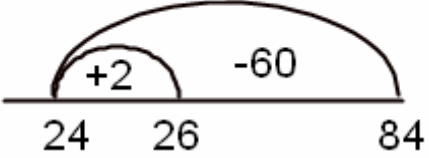

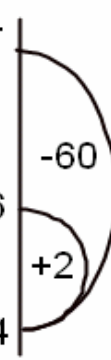
A chocolate bar cost 8p. The shopkeeper had a sale and took 3p off. How much does the chocolate bar cost now?



10 and 4 less



Subtraction (Counting back) Stage 2	Partition 1 number and subtract.	Vocab/Key Questions
<p>83 - 51 = 83 - 50 - 1 = 33 - 1 = 32</p> <p>Steps in subtraction can be recorded on a number line:</p>  <p>The steps often bridge through a multiple of 10: 15 - 7 = 8</p>  <p>74 - 27 = 47 worked by counting back:</p>  <p>The steps may be recorded in a different order:</p>  <p>or combined:</p> 		<p>Partition, value, digit, count back, take away</p> <p><i>Why does the starting number go at the end of the line?</i></p> <p><i>How many tens do we need to subtract to get to the next 'friendly number'?</i></p> <p><i>How many more tens are left?</i></p> <p><i>Where is the answer?</i></p> <p><i>How could we check our answer?</i></p>

Subtraction (Counting back) Stage 3a	Compensation on a number line (take away too much and add on).	Vocab/Key Questions
<p>84 - 58</p> 		<p>Friendly number, round number, boundary, 'pay back'</p> <p><i>When is this strategy useful?</i></p> <p><i>When is it unhelpful?</i></p>
Subtraction (Counting back) Stage 3b	Vertical number line - can be used with either of the previous methods.	Vocab/Key Questions
<p>Vertical line in context e.g. temperature: Vertical line using compensation:</p> <div style="display: flex; justify-content: space-around;"> <div> <p>16 - 20</p>  </div> <div> <p>84 - 58</p>  </div> </div>		<p>Negative number, below zero, count up/count down</p> <p><i>When might a vertical number line make more sense than a horizontal one?</i></p>

Subtraction (Counting back) Stage 4	Partition 1 number and subtract using vertical method.	Vocab/Key Questions
<p>Partitioning and vertical subtraction - with jottings:</p> $\begin{array}{r} 6467 \\ - 2684 \\ \hline 4467 \end{array} \quad (- 2000)$ $3867 \quad (- 600)$ $3787 \quad (- 80)$ $3783 \quad (- 4)$	<p>Partitioning and vertical subtraction - without jottings:</p> $\begin{array}{r} 6467 \\ - 2684 \\ \hline 4467 \\ 3867 \\ 3787 \\ 3783 \end{array}$	<p>Thousands, hundreds, tens, units, sub-total</p> <p><i>How is this similar to subtracting on a number line?</i></p> <p><i>How is it different?</i></p>

Subtraction (Counting back) Stage 5	Partition both numbers and subtract.	Vocab/Key Questions
<p>Partitioned numbers are written under one another:</p> <p>74 - 27</p> $\begin{array}{r} 70 + 4 \\ - 20 + 7 \\ \hline \end{array}$ $\begin{array}{r} \overset{60}{70} + \overset{14}{4} \\ - 20 + 7 \\ \hline 40 + 7 \end{array}$ $\begin{array}{r} \overset{6}{7} \overset{14}{4} \\ - 27 \\ \hline 47 \end{array}$ <p>741 - 367</p> $\begin{array}{r} 700 + 40 + 1 \\ - 300 + 60 + 7 \\ \hline \end{array}$ $\begin{array}{r} \overset{600}{700} + \overset{130}{40} + \overset{11}{1} \\ - 300 + 60 + 7 \\ \hline 300 + 70 + 4 \end{array}$ $\begin{array}{r} \overset{6}{7} \overset{13}{4} \overset{11}{1} \\ - 367 \\ \hline 374 \end{array}$ <p>Adjust when crossing barriers:</p> <p>93 - 47 =</p> $\begin{array}{r} 90 \quad 3 \longrightarrow 80 \quad 13 \\ - \\ \hline 40 \quad 7 \longrightarrow 40 \quad 7 \\ \quad \quad \quad 40 \quad 6 \end{array}$		<p><i>Why do we need to start with the units now?</i></p> <p><i>Can you take 7 away from 4? Why not?</i></p> <p><i>If we take a thousand, how much will we now have in the hundreds column?</i></p>

Subtraction (Counting back) Stage 6	Partition and subtract leading to column subtraction.	Vocab/Key Questions
<p>Each of the following examples is in order of difficulty.</p> <p>563 - 271, adjustment from the hundreds to the tens, or partitioning the hundreds:</p> $\begin{array}{r} 500 + 60 + 3 \\ - 200 + 70 + 1 \\ \hline \end{array}$ $\begin{array}{r} 400 \quad 160 \\ 500 + 60 + 3 \\ - 200 + 70 + 1 \\ \hline 200 + 90 + 2 \end{array}$ $\begin{array}{r} 4 \quad 16 \\ 563 \\ - 271 \\ \hline 292 \end{array}$ <p>563 - 278, adjustment from the hundreds to the tens and the tens to the ones:</p> $\begin{array}{r} 500 + 60 + 3 \\ - 200 + 70 + 8 \\ \hline \end{array}$ $\begin{array}{r} 150 \\ 400 \quad 50 \quad 13 \\ 500 + 60 + 3 \\ - 200 + 70 + 8 \\ \hline 200 + 80 + 5 \end{array}$ $\begin{array}{r} 4 \quad 15 \quad 1 \\ 563 \\ - 278 \\ \hline 285 \end{array}$ <p>503 - 278, dealing with zeros when adjusting:</p> $\begin{array}{r} 500 + 0 + 3 \\ - 200 + 70 + 8 \\ \hline \end{array}$ $\begin{array}{r} 90 \\ 400 \quad 100 \quad 13 \\ 500 + 0 + 3 \\ - 200 + 70 + 8 \\ \hline 200 + 20 + 5 \end{array}$ $\begin{array}{r} 4 \quad 9 \quad 1 \\ 503 \\ - 278 \\ \hline 225 \end{array}$		See Stage 5

**Subtraction
(Counting up)
Stage 1a**

Understand subtraction as 'finding the difference between' and 'how many more to make'.

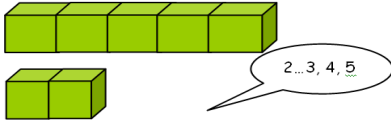
Vocab/Key Questions

More, difference

Can you count on from...?

Comparison: find the difference, how many more - counting up, moving onto how many less

Max has 5 cubes. Milly has 2 cubes. How many more cubes does Max have?



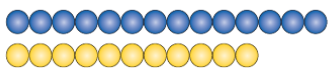
*How many less/fewer cubes does Milly have?
What is the difference between?*

A teddy costs 50p and doll costs 20p. How much more does the teddy cost?



How much cheaper is the doll?

If my friend is 14 and his sister is 11, how much older is my friend?



The difference between 11 and 14 is 3.
 $14 - 11 = 3$
 $11 + \square = 14$



How much younger is his sister?

**Subtraction
(Counting up)
Stage 1b**

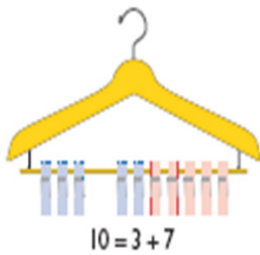
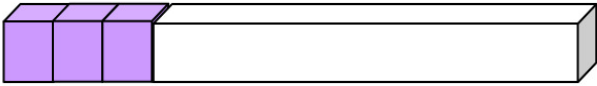
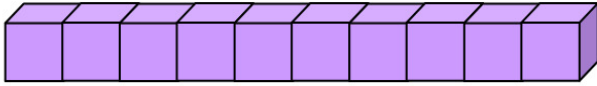
Understand subtraction as 'finding the difference between' and 'how many more to make'.

Vocab/Key Questions

See Stage 1a

Inverse: subtraction reverses addition

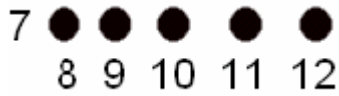
I have 3 cubes. I want 10 cubes. How many more do I need?



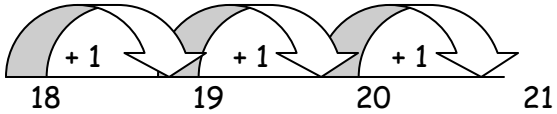
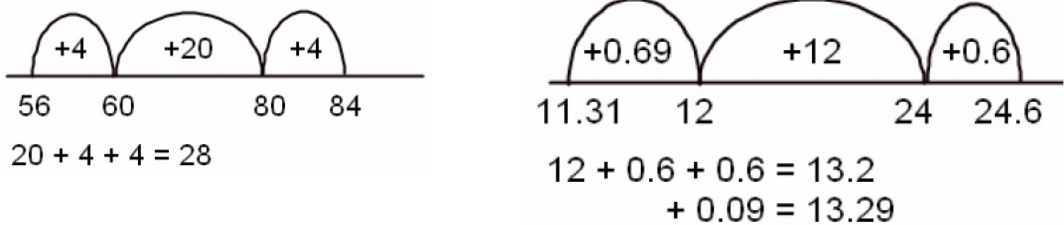
		$10 = 7 + 3$	$3 + 7 = 10$
		$10 - 3 = 7$	$10 - 7 = 3$



I want 12 certificates but I only have 7. How many more do I need?



You could use dots or tally marks to represent objects (quicker than drawing a picture)

Subtraction (Counting up) Stage 2	Count on from the smaller number in 1s without partitioning.	Vocab/Key Questions
<p><i>There are 18 sweets in a jar that holds 21. How many more do I need to fill it up?</i></p>  <p>The diagram shows a number line starting at 18 and ending at 21. There are three curved arrows above the line, each labeled '+1'. The first arrow starts at 18 and ends at 19. The second arrow starts at 19 and ends at 20. The third arrow starts at 20 and ends at 21.</p>		<p>More, difference</p> <p><i>Can you count on from...? How many more?</i></p>
Subtraction (Counting up) Stage 3	Count on from the smaller number using a number line.	Vocab/Key Questions
<p><i>Steve has 84 house points so far while Ed has 56. How many does Ed need to earn to have the same amount as Steve?</i></p> <p><i>My garden path is 11.31m long and my best friend's is 24.6m. How much longer is theirs?</i></p>  <p>The first number line starts at 56 and ends at 84. It has three jumps: +4 (56 to 60), +20 (60 to 80), and +4 (80 to 84). Below it is the equation: $20 + 4 + 4 = 28$.</p> <p>The second number line starts at 11.31 and ends at 24.6. It has three jumps: +0.69 (11.31 to 12), +12 (12 to 24), and +0.6 (24 to 24.6). Below it are the equations: $12 + 0.6 + 0.6 = 13.2$ and $+ 0.09 = 13.29$.</p>		<p>Number bonds, crossing boundaries, round numbers, multiple of... adjustment, estimate</p> <p><i>What is the next friendly number/round number?</i></p> <p><i>How many do we need to get to...?</i></p>

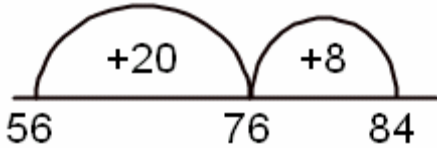
**Subtraction
(Counting up)
Stage 4**

**More efficient mental calculations
with a number line.**

**Vocab/Key
Questions**

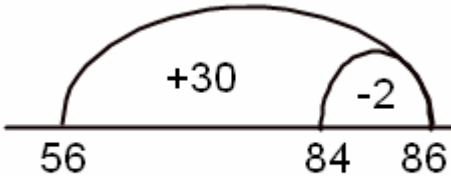
$$84 - 56 =$$

Count across boundaries with reduced need to partition:



$$= 28$$

Compensation on a number line (add too much and take away extra).



$$30 - 2 = 28$$

Efficient, count on in tens, 100's, adjust

*Which strategy do you prefer?
Why?*

When might you add too much and compensate?

Subtraction (Counting up) Stage 5	Count on from the smaller number set out in columns.	Vocab/Key Questions
<p>Using column method to calculate total (complementary addition):</p> <p><i>Difference between 56 and 284</i></p> $ \begin{array}{r} 56 + 4 \text{ (}\rightarrow\text{ 60)} \\ + 40 \text{ (}\rightarrow\text{ 100)} \\ +100 \text{ (}\rightarrow\text{ 200)} \\ + \underline{84} \text{ (}\rightarrow\text{ 284)} \\ \hline 228 \\ \uparrow \end{array} $ <p>Using column method to support efficient mental calculation:</p> <p><i>Difference between 56 and 284</i></p> $ \begin{array}{r} 56 + 200 \text{ (}\rightarrow\text{ 256)} \\ + 20 \text{ (}\rightarrow\text{ 276)} \\ + \underline{8} \text{ (}\rightarrow\text{ 284)} \\ \hline 228 \end{array} $ <p>leads to</p> $ \begin{array}{r} 56 + 200 \text{ (}\rightarrow\text{ 256)} \\ + \underline{28} \text{ (}\rightarrow\text{ 284)} \\ \hline 228 \end{array} $		<p>Partition, subtotal</p> <p><i>How is this similar to using a 'find the difference' number line?</i></p> <p><i>Why is this layout more efficient?</i></p>