
# Subtraction

**Key Vocabulary:**

Subtract, subtraction, minus, less, take away, decrease, fewer, difference, exchange.

**Teachers need to model the language of**

**minuend - subtrahend = difference.**

**Progression in calculations**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| **Addition** | Combining two parts to make a whole: part whole model.<br><br>Starting at the bigger number and counting on.<br><br>Regrouping to make 10. | Adding three single digits.<br><br>Column method (tens and ones) - no exchanging. | Column method with exchange (up to 3 digits) | Column method with exchange (up to 4 digits) | Column method with exchange (with more than 4 digits)<br><br>Column method with decimals - with the same amount of decimal places. | Column method with exchange (with more than 4 digits)<br><br>Column method with decimals - with a different amount of decimal places. |
| **Subtraction** | Taking away ones<br><br>Counting back<br><br>Find the difference<br><br>Part whole model<br><br>Make 10 | Counting back<br><br>Find the difference<br><br>Part whole model<br>Make 10<br><br>Column method - no exchanging | Column method with exchange (up to 3 digits) | Column method with exchange (up to 4 digits) | Column method with exchange (with more than 4 digits)<br><br>Column method with decimals - with the same amount of decimal places. | Column method with exchange (with more than 4 digits)<br><br>Column method with decimals - with a different amount of decimal places. |
| **Multiplication** | Doubling<br><br>Counting in multiples<br><br>Arrays | Doubling<br><br>Counting in multiples<br><br>Arrays- showing commutative multiplication<br><br>Repeated addition | Counting in multiples<br><br>Arrays- showing commutative multiplication<br><br>Repeated addition<br><br>Visual grid method | Column multiplication (2 and 3 digit multiplied by 1 digit) | Column multiplication (up to 4 digit multiplied by 1 or 2 digit) | Column multiplication (multi-digit numbers up to 4 digits by a 2 digit number) |
| **Division** | Sharing objects into groups<br><br>Division as grouping | Division as grouping<br><br>Division with arrays | Division with arrays<br><br>Division with a remainder<br><br>Short division (2 digit by a 1 digit, pictorial and abstract representation) | Division with arrays<br><br>Division with a remainder<br><br>Short division (3 digit by a 1 digit, pictorial and abstract representation) | Short division<br><br>(up to 4 digits by 1 digit number interpret remainders appropriately for the context) | Short division<br><br>Long division<br><br>(up to a 4 digit number by a 2 digit number - interpret remainders whole numbers, fractions or a round) |

| Minuend | |
|---|---|
| Subtrahend | Difference |

12 - 4 = 8

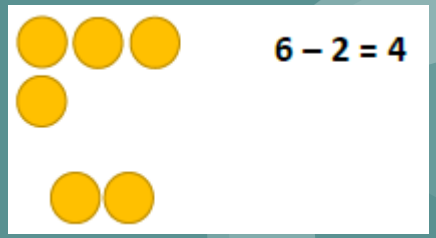
# Counting back

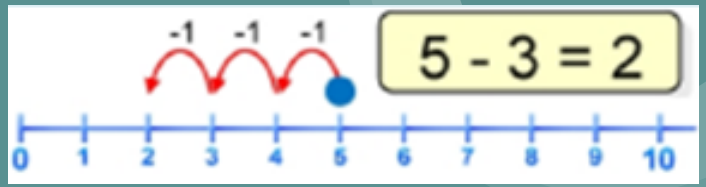
Step 1: The greater number is _____.

Step 2: The smaller number is _____.

Step 3: I start with _____

I count back ____.



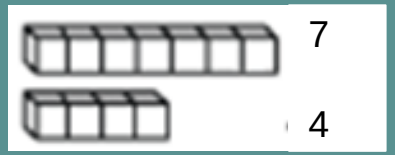

Put 13 in your head, count back 4. What number are you at?

# Find the difference

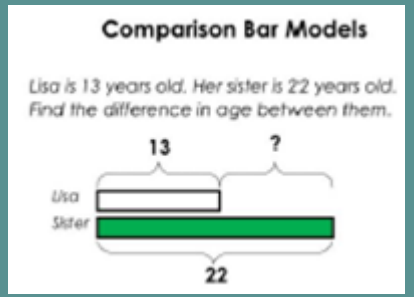
Start with the subtrahend.

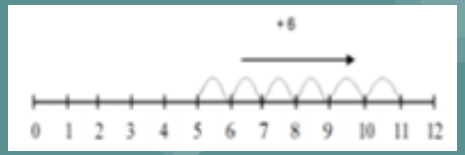
Count on to the minuend.

The difference is _____.




"7 is 3 more than 4."



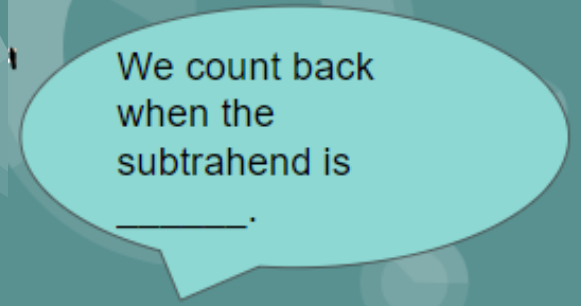
# When would you count back and when would you count on?

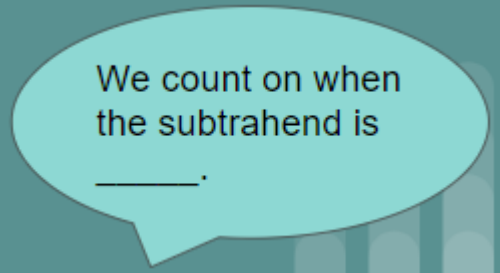
99 – 6 =

38 - 7 =

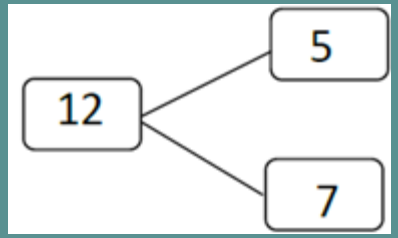
78 - 66=

minuend - subtrahend = difference

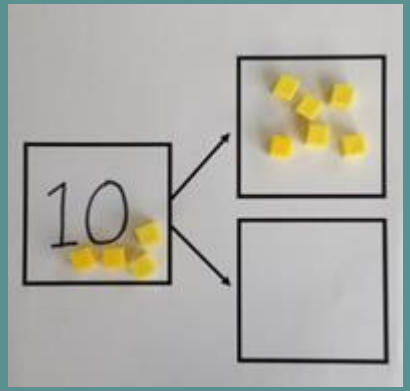


# Use number bonds and related subtraction facts within 20



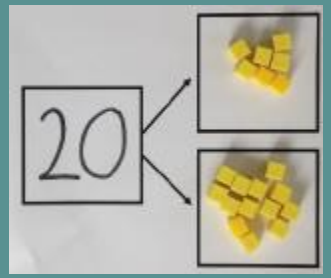

5 + 7 = 12
7 + 5 = 12
12 - 5 = 7
12 - 7 - 5

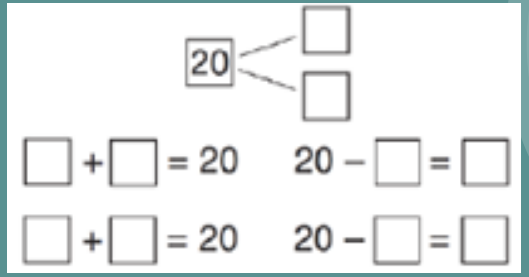



If 10 is the whole and 6 is one of the parts, what is the other part?

10—6 = 4

# Use known facts to find the inverse
# Solve missing number problems




□ + 1 = 16

1 + □ = 16

16 - □ = 1

16 - 1 = □

If I know that part + part = whole

Then I also know that whole – part = part

*

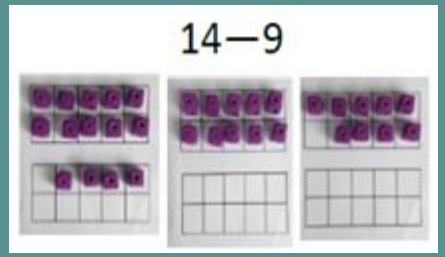
# Bridge 10

13 – 7 = 6

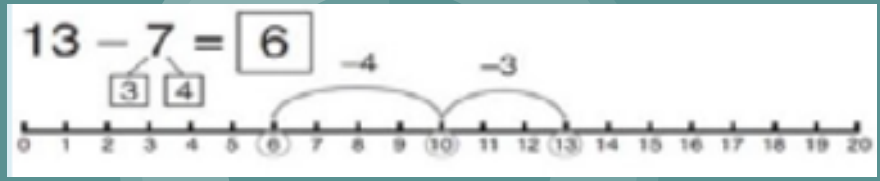
Step 1: 13 - __ = 10

Step 2: 3 + __ = 7

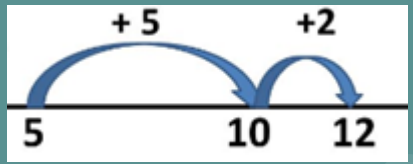
Step 3: 10 - 4 = __




Make 14 on the ten frame. Take 4 away to make ten, then take one more away so that you have subtracted 5.




Subtract 3 first, then another 4.
Use ten as the stopping point.

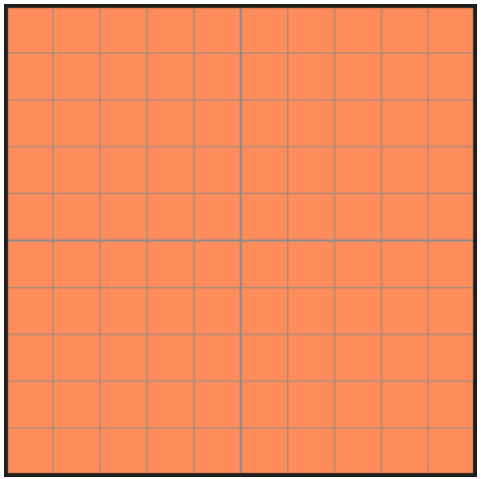


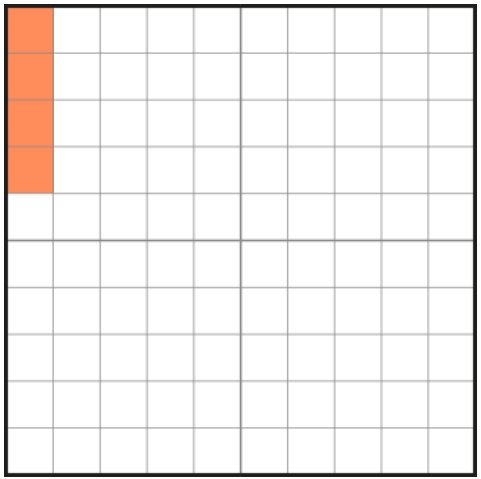

Counting on:

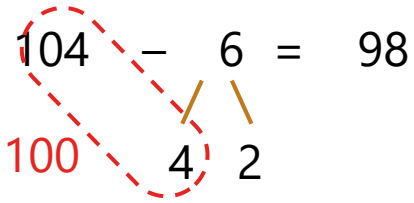
12 – 5 = 7

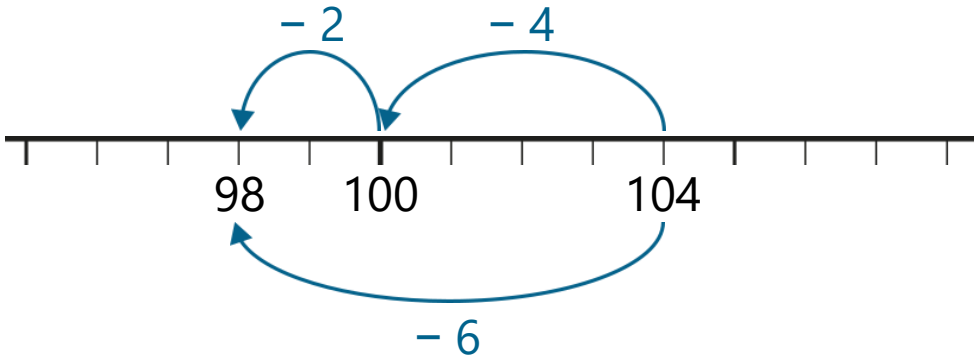
104 – 6 = 98

100 4 2



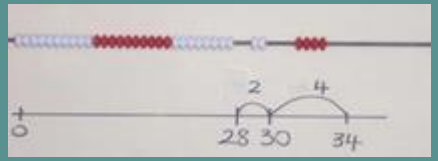




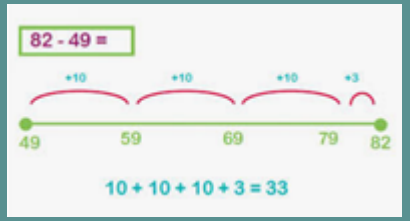



# Make 10 strategy

34—28




Use a number line to count on to next ten and then the rest.

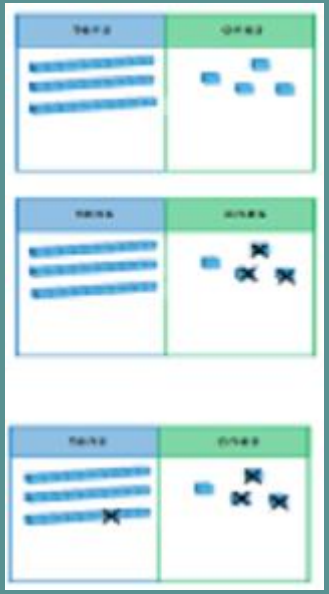



93—76 = 17

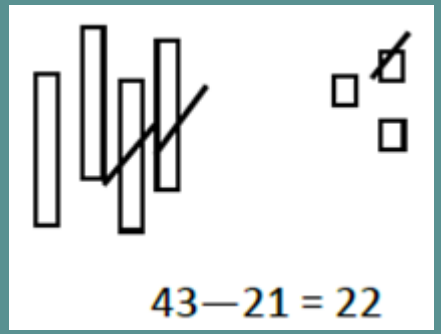
Mentally: begin at 76. Add on 4 to 80, then 10 more to 90, then add 3 to reach 93.

4 + 10 + 3 = 17

# Partitioning to subtract without exchanging



34—13 = 21
Use base 10 to show how to partition the number when subtracting without regrouping.

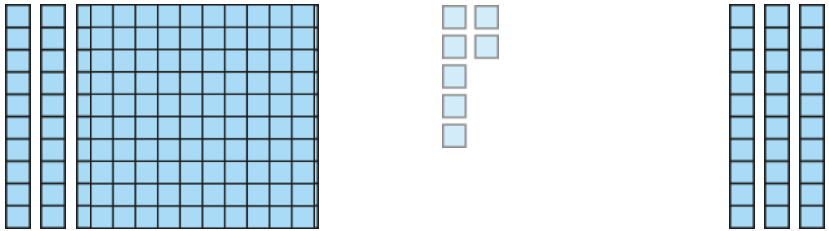



Children draw representations of base 10 and cross off.

43—21 = 22
Mentally subtract the tens and subtract the ones.

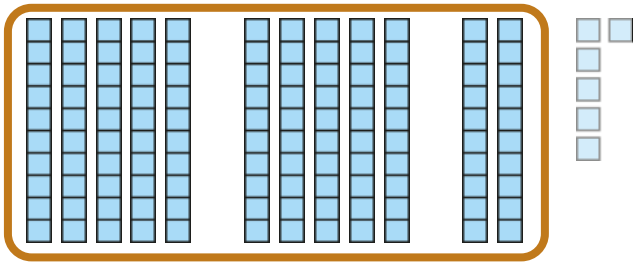
87 + 30 = 117

7 80 110



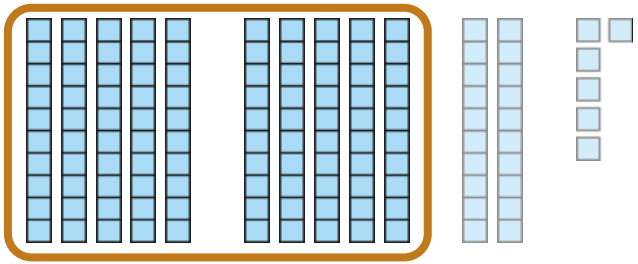
126 – 70 = 56

6 120 50



126 – 70 = 56

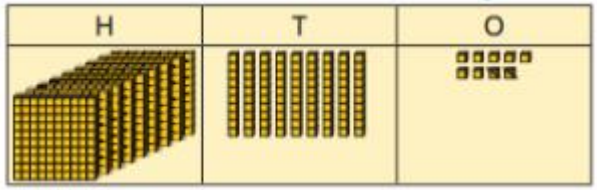
26 100 30



# Column subtraction without regrouping numbers up to 3 digits. (Year 3 )

## Share

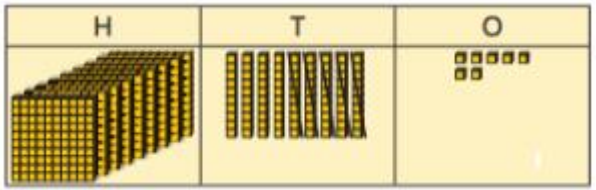
a) This is a subtraction with two 3-digit numbers.




| H | T | O |
|---|---|---|
| 9 | 9 | 9 |
| – 3 | 5 | 2 |
| | | 7 |

Step 1 - subtract the ones

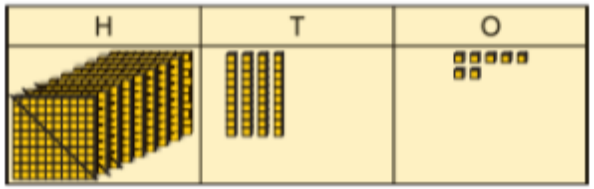
☐ ones - ☐ ones = ☐ ones




| H | T | O |
|---|---|---|
| 9 | 9 | 9 |
| – 3 | 5 | 2 |
| | 4 | 7 |

Step 2 - subtract the tens

☐ tens - ☐ tens = ☐ tens

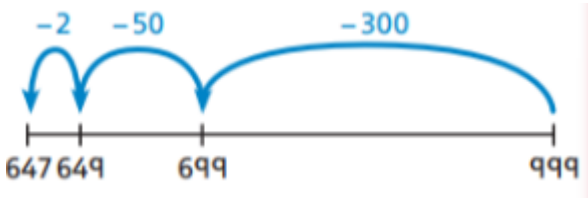



| H | T | O |
|---|---|---|
| 9 | 9 | 9 |
| – 3 | 5 | 2 |
| 6 | 4 | 7 |

Step 3 - subtract the hundreds

☐ hundreds - ☐ hundreds = ☐ hundreds

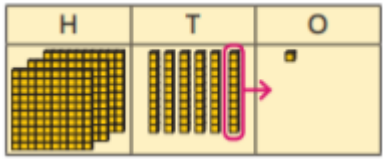
I checked using a number line.



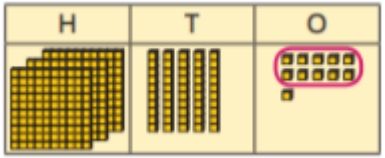
# Column subtraction with exchange numbers up to 3 digits. (Year 3 )

## Share

a) 361 – 147

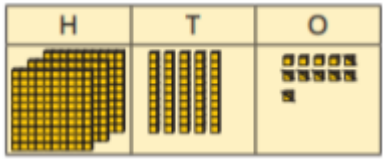



Exchange 1 ten for 10 ones.




There are now 5 tens and 11 ones.

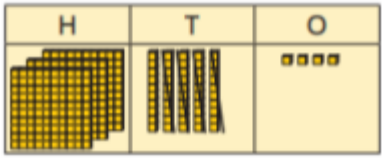
| H | T | O |
|---|---|---|
| 3 | $^{5}\not{6}$ | $^{1}1$ |
| − 1 | 4 | 7 |
| | | |




Subtract the 1s.

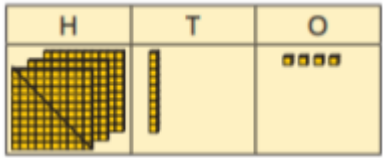
| H | T | O |
|---|---|---|
| 3 | $^{5}\not{6}$ | $^{1}1$ |
| − 1 | 4 | 7 |
| | | 4 |

Step 1 - subtract the ones




| H | T | O |
|---|---|---|
| 3 | $^{5}\not{6}$ | $^{1}1$ |
| − 1 | 4 | 7 |
| | 1 | 4 |

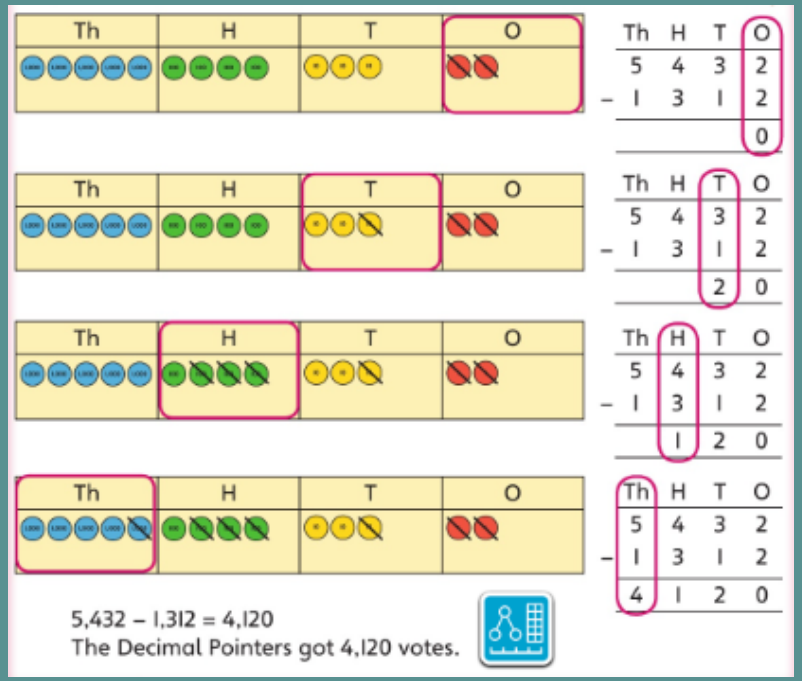
Step 2 - subtract the tens



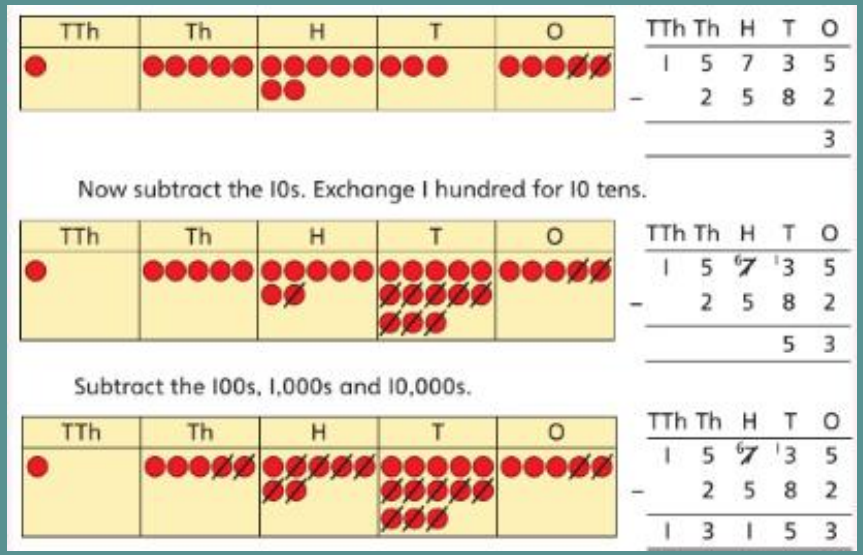

| H | T | O |
|---|---|---|
| 3 | $^{5}\not{6}$ | $^{1}1$ |
| − 1 | 4 | 7 |
| 2 | 1 | 4 |

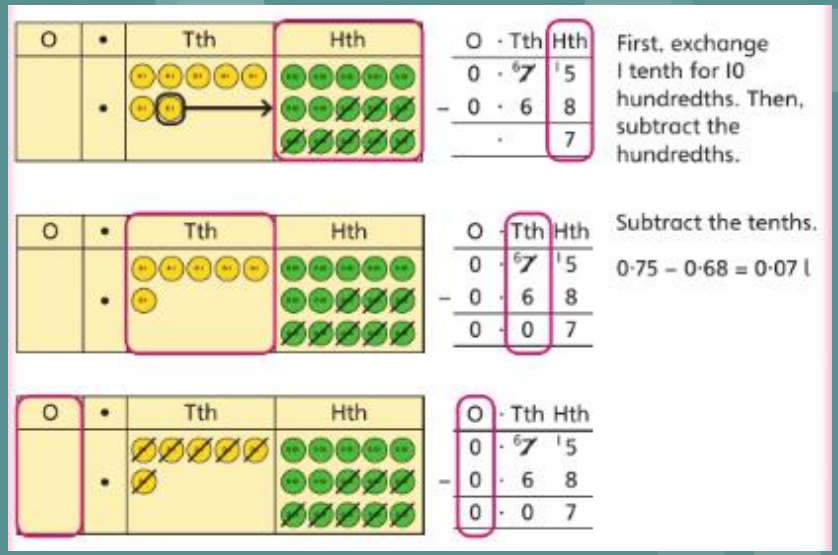
Step 3 - subtract the hundreds

# Year 4 (up to 4 digits)



# Year 5 (subtract with at least 4 digits, including money and measures)



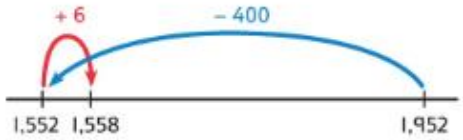
# Year 6

# Subtract with increasingly large and more complex numbers and decimal values.

**b)** Queen Elizabeth II's reign began in 1952. How many years were there between the beginning of Elizabeth I's reign and the beginning of Elizabeth II's reign?

**b)** Find the difference between 1,558 and 1,952 to answer this question.

| | Th | H | T | O |
|---|---|---|---|---|
| | 1 | $^{8}\not{9}$ | $^{14}\not{5}$ | $^{1}2$ |
| − | 1 | 5 | 5 | 8 |
| | | 3 | 9 | 4 |



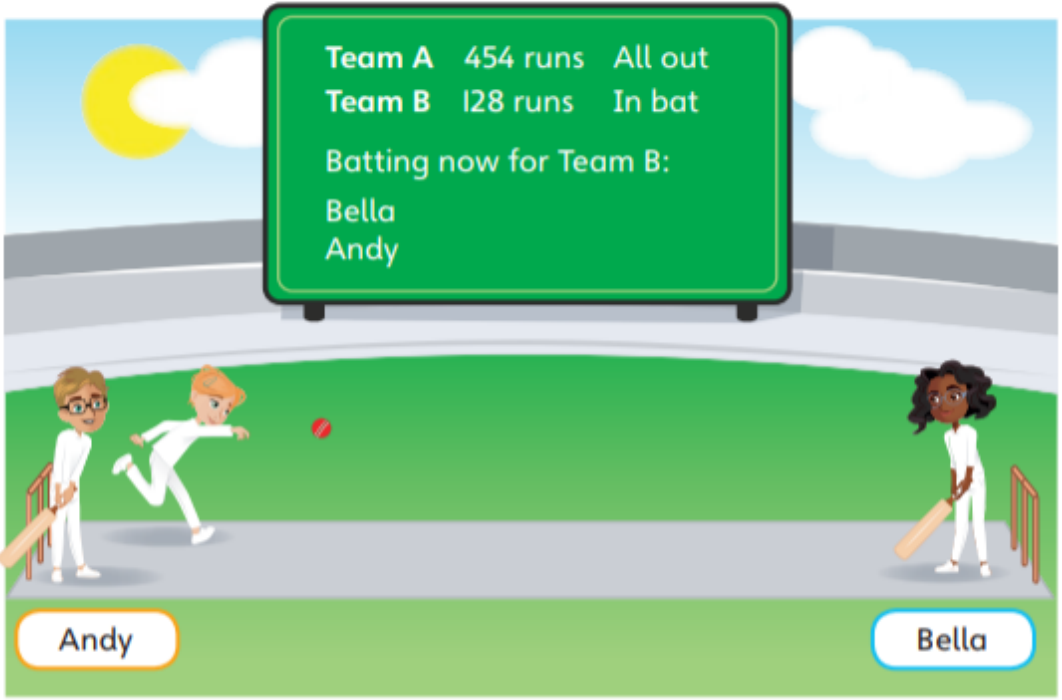

There were 394 years between the beginning of Elizabeth I's reign and the beginning of Elizabeth II's reign.

# Problem solving with subtraction

# Problem solving – addition and subtraction 2

## Discover

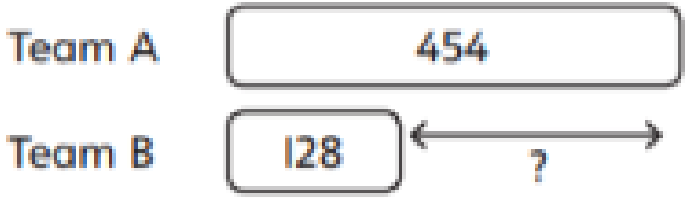
**1** **a)** How many more runs has Team A scored than Team B?



## Share

a) Team A has 454 runs. Team B has 128 runs.

I am comparing two numbers, so I will draw two bars.




I need to find the difference, so I will subtract.

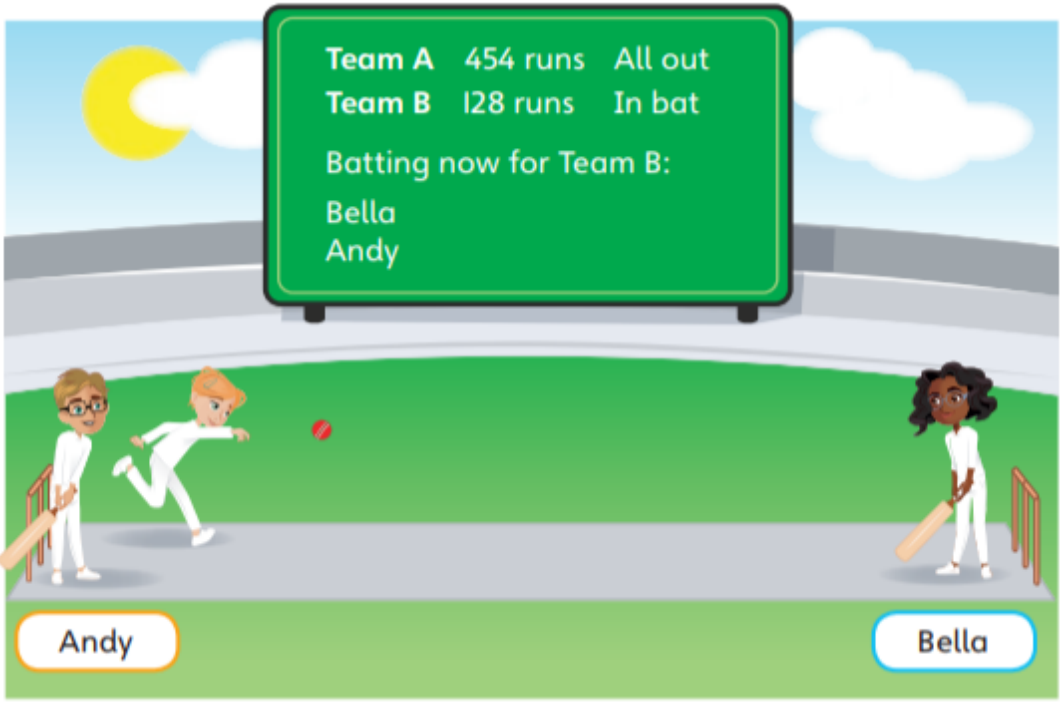
| | H | T | O |
|---|---|---|---|
| | 4 | $^{4}\not{5}$ | $^{1}4$ |
| − | 1 | 2 | 8 |
| | 3 | 2 | 6 |

454 − 128 = 326

Team A has scored 326 more runs than Team B.

# Problem solving – addition and subtraction 2

## Discover




**b)** Bella and Andy start batting for Team B.

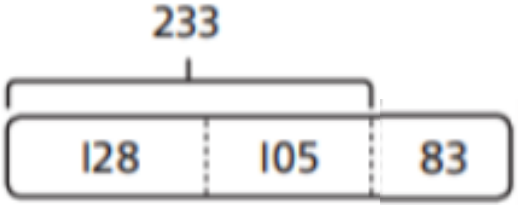
Bella scores 105 and Andy scores 83.

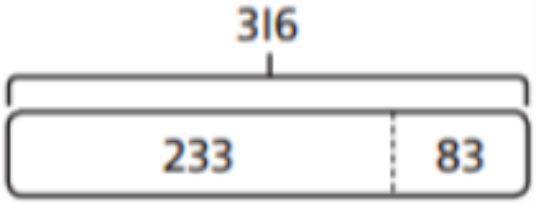
How many runs has Team B scored now?

b)

I will add in two steps. First, I will add Bella's score. Then I will add Andy's score to the total.

$128 + 105 = 233$




Team B has now scored 316 runs in total.

**3** How much more does the family car cost than the combined total cost of the SUV and the electric car?

CHALLENGE


I think I need to do an addition and then a subtraction to work this out.

I will try and represent this as a bar model. I will use one that helps me to show a comparison.

**3** **a)** Write a 4-digit number using four different digits. Then reverse the digits to make a second 4-digit number.

Find the difference between your two numbers.

CHALLENGE

I wrote 2,609. The reverse is 9,062.

So, I need to work out 9,062 – 2,609.

| | Th | H | T | O |
|---|---|---|---|---|
| | 9 | 0 | 6 | 2 |
| – | 2 | 6 | 0 | 9 |
| | | | | |

Did your subtraction require any exchanges?

Try a few different examples. Do you always need to exchange across two columns?

Can you explain this?

**b)** Now do the same with two 7-digit numbers.

Try to find a number where you will only need one exchange.

Then try to find a number where you will need two exchanges.

I am going to try to go all the way up to seven exchanges. I wonder whether it is possible.