

Add and Subtract Tens and Two-digit Numbers Bridging 100 ↖

Table of Contents

Teaching Plan Overview and Summary..... [page 2](#)

Add tens and two-digit numbers bridging 100..... [page 3](#)

Subtract tens and two-digit numbers bridging 100 [page 7](#)

Let's Implement Seamless

ASSESSMENT

DIFFERENTIATION

INVESTIGATION

PROBLEM SOLVING

INTERVENTION

INTEGRATION
in Mathematics

SEAMLESS ASSESSMENT, DIFFERENTIATION, INVESTIGATION, PROBLEM SOLVING, INTERVENTION, INTEGRATION

Not every student will be ready to investigate or solve problems at this Level and so we will need to assess and differentiate to ensure every student is learning at their leading edge.

Some students may not yet be ready to investigate this concept at any Level, and so we will need to provide some intervention.

Every mathematical concept is integrally related to other mathematical concepts. Teaching and learning related concepts simultaneously develops deep relational understanding.

ADD AND SUBTRACT TENS AND TWO-DIGIT NUMBERS BRIDGING 100.

EXPLICIT TEACHING PLAN OVERVIEW PAGE

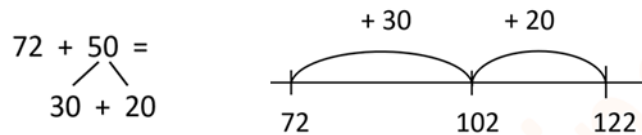
THIS PAGE IS A SUMMARY OF THE EXPLICIT TEACHING PLAN, INCLUDING STRATEGIC QUESTIONS, AND DESCRIBING THE SEQUENCE WHICH WILL OCCUR OVER MULTIPLE LESSONS.

RESOURCES: PLAYING CARDS TO CREATE NUMBERS TO INVESTIGATE, PENCIL AND PAPER FOR RECORDING

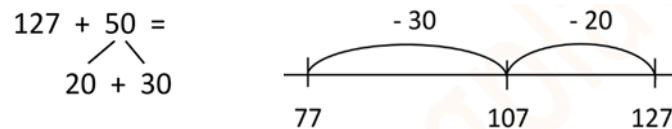
WHAT COULD WE DO?

Children:

- add a tens numbers and a number with tens and ones, that add to more than 100, partitioning using friends of 100 and place value, recording on a number line, for example,



- subtract a tens number from a number with tens and ones in the 100s, that subtracts to less than 100, partitioning using place value and friends of 100, recording on a number line, for example,



WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

Children:

- ask one another questions about adding and subtracting tens numbers, counting forwards and backwards by 10s, on the decade, for example,
 - How could we add these tens numbers?
 - How could we add to 100 using friends of 100?
 - Will we have 100 or will we have some ones?
 - How did we partition?
 - How could we add the remaining part using place value?
- How could we subtract this tens numbers?
- How could we subtract to 100 using place value?
- Will we have 100 or will we have some ones?
- How did we partition?
- How could we subtract the remaining part using friends of 100?

ADD AND SUBTRACT TENS AND TWO-DIGIT NUMBERS BRIDGING 100.

EXPLICIT TEACHING PLAN

FULL EXPLICIT TEACHING PLAN, EMBEDDING DEEP RELATIONAL UNDERSTANDING, METALANGUAGE, AND QUESTIONS THAT MAY BE USED OVER MULTIPLE LESSONS.

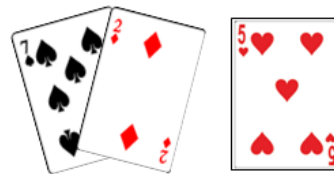
WHAT COULD WE DO?

Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.

Allowing children to use cards to generate numbers that they are ready to investigate:

- *provides student-led differentiation*
- *develops number sense*
- *develops capacity to reason as children have to select numbers that add to more than 100 rather than the teacher providing them*

Select cards to make a two-digit number and a tens number, that add to more than 100, for example,



Record, for example, $72 + 50 =$

WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

- ▶ Today brings an investigation about adding tens numbers and two-digit numbers.
- ▶ What do you know about adding tens numbers and two-digit numbers?
- ▶ Talk about adding tens numbers and two-digit numbers with a friend.
- ▶ Is anyone ready to share what they are thinking about adding tens numbers and two-digit numbers?

- ▶ We've investigated adding tens numbers and two-digit numbers counting by 10s off the decade.
- ▶
- ▶ **Today we're going to investigate adding tens numbers and two-digit using place value so we don't have to count by 10s!**
- ▶ Let's select cards to make a two-digit number and a tens number, that add to more than 100.
- ▶ Did we make 72?
- ▶ And did we make 5 tens?
- ▶ Is 5 tens, 50?
- ▶ How could we record a number sentence?
- ▶ Could we record, 72 plus 50 equals?

Visualising the size of numbers further develops number sense. Children could use their understanding of place value to identify that 72 and 50 will add to more than 100 because 102 is 72 and 30, and 50 is higher than 30.

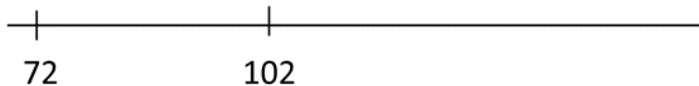
Record a mark on the left end of the number line, for example,



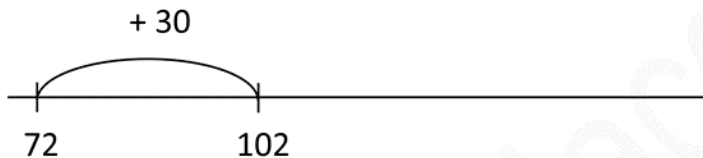
Record 72 on the number line, for example,



Record 102 on the number line, for example,



Record a jump from 72, record + 30 above the jump, a mark and 102 at the end of the jump on the number line, for example,

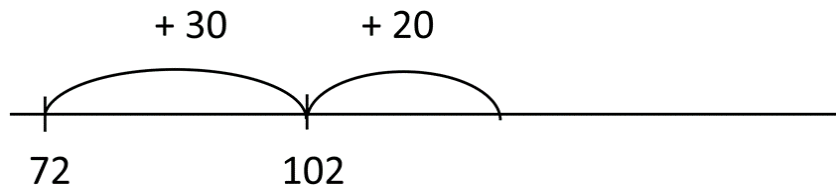


- ▶ Do our numbers add to more than 100?
- ▶ Let's visualise the numbers.
- ▶ Let's visualise 72.
- ▶ Now let's visualise 50.
- ▶ If we add 72 and 50, will we have more than 100? Don't count, just visualise.
- ▶ Because these numbers add to more than 100, we can use partitioning, friends of ten and a hundred, and place value to add.
- ▶ Let's record an open empty number line.
- ▶ Because numbers get bigger as we move towards the right will 72 go on the left end of the number line so that we can jump towards the right as we get bigger?
- ▶ Because we're adding using place value, we want to jump to the next place value.
- ▶ We're adding tens, so we want to jump to the next hundreds number.
- ▶ We've investigated adding tens and we found that the ones digit doesn't change because we are adding zero ones.
- ▶ So will we have 100, or will we have 2 ones as well?
- ▶ Will we have 102?
- ▶ Let's record 102 on our number line.
- ▶ How many did we add to 72 to make 102?
- ▶ We have 7 tens and 2 ones, and we want to have 10 tens and 2 ones.
- ▶ Will we add 3 tens?
- ▶ If we have 7 tens and 2 ones, and we add 3 tens, will we have 10 tens and 2 ones?
- ▶ If we have 72, and we add 30, will we have 102?

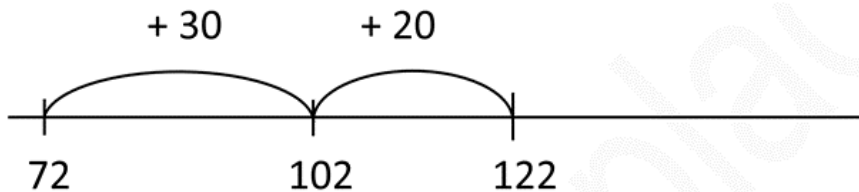
Record the 30 and 20 partition of 50, for example,

$$\begin{array}{r} 72 + 50 = \\ \quad \quad \quad \swarrow \quad \searrow \\ \quad \quad \quad 30 + 20 \end{array}$$

Record a jump from the 102 and record + 20 above it, for example,



Record a mark where the jump ended and 122 under it, for example,



- ▶ Did we add all of our 50?
- ▶ Or did we add part of our 50?
- ▶ What part did we add?
- ▶ Did we add 30?
- ▶ Did we partition 50?
- ▶ Is one of our parts, 30?
- ▶ How many in the other part?
- ▶ Are there 20 in the other part?
- ▶ Did we partition 50 into 30 and 20?

- ▶ We've already added the 30.
- ▶ How many more do we have to add?
- ▶ Do we have to add 20 more?

- ▶ How can we use place value to add 20 to 102?
- ▶ We have 1 hundred and 2 ones, we want to add 2 tens.
- ▶ Will we have 1 hundred and 2 tens and 2 ones?
- ▶ Will we have 122?

Record, for example, $72 + 50 = 122$

- ▶ How many did we add altogether?
- ▶ Did we add 30 and then 20?
- ▶ Does 30 and 20 equal 50?
- ▶ Did we add 50 altogether?
- ▶ What does 72 plus 50 equal?
- ▶ Does 72 plus 50 equal 122?
- ▶ We've investigated adding.
- ▶ And we found that the numbers can swap places when we add.
- ▶ Do you think 72 plus 50 would equal the same amount as 50 plus 72?
- ▶ What word means swap places?
- ▶ Can the numbers commute?

Children alternate between addition and subtraction to ensure they develop deep understanding of both, and their reciprocal natures.

Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.

Select an Ace and 2 other cards to make a number with tens and ones in the 1 hundreds, for example,



Select a card to make a tens number, for example,



Allowing children to use cards to generate numbers that they are ready to investigate:

- *provides student-led differentiation*
- *develops number sense*
- *develops capacity to reason as children have to select numbers that subtract to less than 100 rather than the teacher providing them*

Record, for example, $127 - 50 =$

- ▶ **Today brings an investigation about subtracting tens numbers from numbers with tens and ones in the 100s.**
- ▶ What do you know about subtracting tens numbers from numbers with tens and ones in the 100s?
- ▶ Talk about subtracting tens numbers from numbers with tens and ones in the 100s with a friend.
- ▶ Is anyone ready to share what they are thinking about subtracting tens numbers from numbers with tens and ones in the 100s?

- ▶ We've investigated subtracting tens numbers from a number with tens and ones in the 100s by counting backwards by 10s off the decade.
- ▶ Today we're going to investigate how we could use place value, partitioning and friends of 10 to subtract a tens number.
- ▶ Let's make a number with tens and ones in the 1 hundreds using an Ace and 2 other cards.
- ▶ Let's select a card to make a tens number to subtract.
- ▶ What numbers do we have?
- ▶ Do we have 12 tens and 7 ones and 5 tens?
- ▶ And what number is 12 tens and 7 ones?
- ▶ Is 12 tens and 7 ones, 127?
- ▶ What number is 5 tens?
- ▶ Is 5 tens, 50?
- ▶ We're going to subtract this tens number.
- ▶ How could we record a number sentence?
- ▶ Could we record, 127 minus 50 equals?
- ▶ Let's look at the numbers we selected, 127 and 50.

Visualising the size of numbers further develops number sense. Children could use their understanding of place value to identify that 127 and 50 will subtract to less than 100 because 127 is 100 and 20 and 7, and 50 is higher than 20.

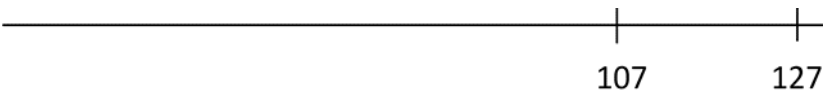
Record an open empty number line, for example,



Record a mark and 127 under it on the number line, for example,



Record a mark on the number line and record 107 under it, for example,



- ▶ Close your eyes and think about 127. Think about how big 127 is.
- ▶ Now visualise 50. Think about how big 50 is.
- ▶ If we subtract 50 from 127, will we have less than 100? How do you know?
- ▶ Because 50 and 127 will subtract to less than 100, we can use place value, partitioning and friends of 100 to subtract without having to count by 10s.

- ▶ Let's record an open empty number line.
- ▶ Because when we have 127, and we subtract 50, we will get smaller, will 127 go on the right end of the number line so that we can jump towards the left as we get smaller?
- ▶ Let's make a mark on the right end of the number line where 127 will go.

- ▶ Because we're subtracting using place value, we want to jump back to the next place value.
- ▶ We're subtracting tens, so we want to jump back to the hundreds number.
- ▶ We've investigated subtracting tens and we found that the ones digit doesn't change because we are subtracting zero ones.
- ▶ So will we have 100, or will we have 7 ones as well?
- ▶ Will we have 107?
- ▶ Let's record 107 on our number line.
- ▶ How many did we subtract from 127 to make 107?
- ▶ We have 12 tens and 7 ones, and we want to have 10 tens and 7 ones.
- ▶ Will we subtract 2 tens?
- ▶ If we have 12 tens and 7 ones, and we subtract 2 tens, will we have 10 tens and 7 ones?

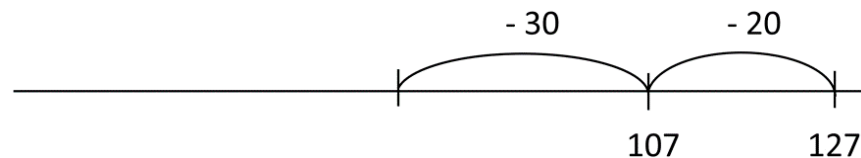
Record a jump from 127 and a - 20 above it, for example,



Record the 20 and 30 partition of 50, for example,

$$\begin{array}{r} 127 + 50 = \\ \quad \quad \quad \swarrow \quad \searrow \\ \quad \quad \quad 20 + 30 \end{array}$$

Record a jump from the 107 and record - 30 above it, for example,

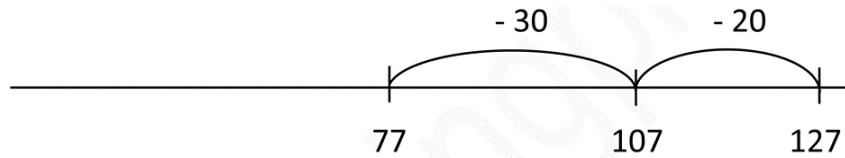


- ▶ If we have 127, and we subtract 20, will we have 107?

- ▶ Did we subtract all of our 50?
- ▶ Or did we subtract part of our 50?
- ▶ What part did we subtract?
- ▶ Did we subtract 20?
- ▶ How did we partition 50?
- ▶ Is one of our parts, 20?
- ▶ How many in the other part?
- ▶ Are there 30 in the other part?
- ▶ Did we partition 50 into 20 and 30?
- ▶ How many more do we have to subtract?
- ▶ Do we have to subtract 30 more?

- ▶ How could we use friends of 100 to subtract the 30?
- ▶ We have 10 tens and 7 ones, and we want to subtract 3 tens.
- ▶ How many tens will we have left?
- ▶ Will we have 7 tens left?
- ▶ Will we have 7 tens and 7 ones?
- ▶ If we subtract 30 from 107, will we have 77 left?

Record 77 under the mark where the jump from 107 ends, for example,



Record, for example, $127 - 50 = 77$

- ▶ How many did we subtract altogether?
- ▶ Did we subtract 20 and then 30?
- ▶ Did we subtract 50 altogether?
- ▶ What does 127 minus 50 equal?
- ▶ Does 127 minus 50 equal 77?

Children alternate between addition and subtraction to ensure they develop deep understanding of both, and their reciprocal natures.