Add and Subtract Tens Numbers Counting by 10s

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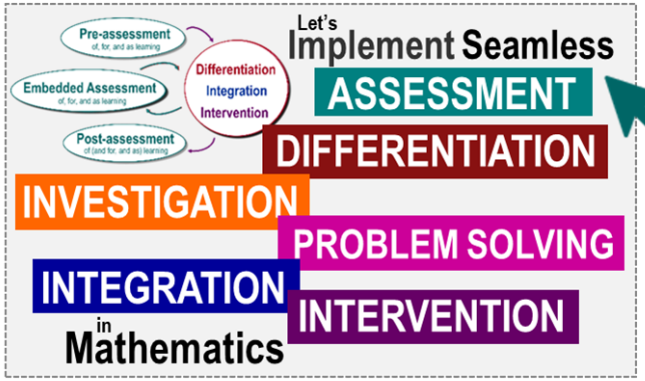


SEAMLESS ASSESSMENT, DIFFERENTIATION, INVESTIGATION, PROBLEM SOLVING, INTERVENTION, INTEGRATION

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 NUMBERS COUNTING BY 10s.

EXPLICIT TEACHING PLAN OVERVIEW PAGE

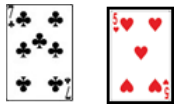
THIS PAGE IS A SUMMARY OF THE EXPLICIT TEACHING PLAN, INCLUDING STRATEGIC QUESTIONS, AND DESCRIBING THE SEQUENCE WHICH WILL OCCUR OVER MULTIPLE LESSONS.

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

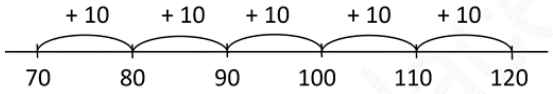
WHAT COULD WE DO?

Children:

- select cards to use as tens numbers to add, for example, 70 + 50 =

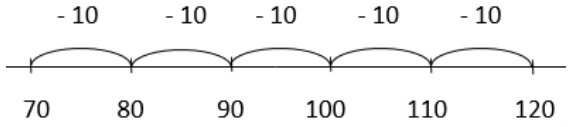


- add the tens numbers, counting forwards by 10s on the decade, recording on a number line, for example,



- select cards to use as tens numbers in the one-hundreds to subtract over 100, for example, 120 - 50 =

- subtract the tens numbers, counting forwards by 10s on the decade, recording on a number line, for example,



WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

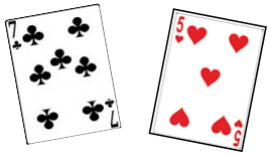
Children:

- 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 10s numbers?
  - How could we count by 10s?
  - When we add by counting by 10s, how many tens are we adding each time?
  - How could we see our hundred as 10 tens?
  - How could we subtract this 10s number?
  - How could we count backwards by 10s?
  - When we subtract by counting by 10s, how many tens are we subtracting each time?
  - How could we see our hundred as 10 tens?

ADD AND SUBTRACT TENS NUMBERS COUNTING BY 10s.

EXPLICIT TEACHING PLAN

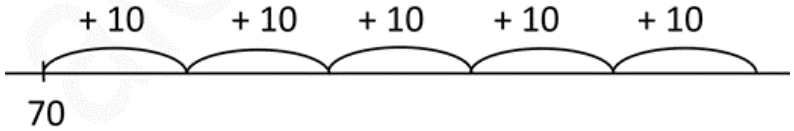
FULL EXPLICIT TEACHING PLAN, EMBEDDING DEEP RELATIONAL UNDERSTANDING, METALANGUAGE, AND QUESTIONS THAT MAY BE USED OVER MULTIPLE LESSONS.

WHAT COULD WE DO?	WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?
Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.	▸ Today brings an investigation about adding tens numbers. ▸ What do you know about adding tens numbers? ▸ Talk about adding tens numbers with a friend. ▸ Is anyone ready to share what they are thinking about adding tens numbers?
	▸ We've investigated counting forwards by 10s and which digit changes and why.
Select 2 cards that add to more than 10, for example, 	▸ **Today we're going to investigate adding tens numbers by counting by 10s.** ▸ Here we have 2 numbers, 5 and 7. ▸ But these numbers are not going to be ones numbers! ▸ They're going to be tens numbers! ▸ So we have 5 tens and 7 tens. ▸ What number is 5 tens? ▸ Is 5 tens, 50? ▸ And what number is 7 tens? ▸ Is 7 tens, 70? ▸ We're going to add these 2 tens numbers together. ▸ How could we record a number sentence? ▸ Could we record, 70 plus 50 equals?
Allowing children to use cards to generate numbers that they are ready to investigate: • *provides student-led differentiation* • *develops number sense*	
Record, for example, 70 + 50 =	

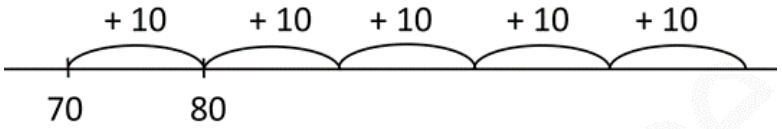
Record an open empty number line, for example,

Record a mark and 70 under it on the number line, for example,

Record 5 jumps from 70 on the number line, and record + 10 above each jump, for example,

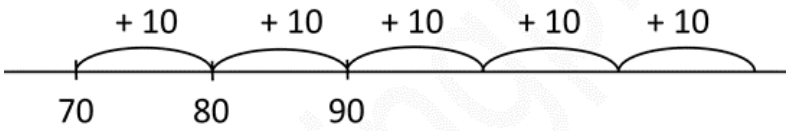


Record a mark on the number line where the jump lands and record 8 tens, for example,



- How could we add 70 and 50?
- Because 70 and 50 are tens numbers, could we count by 10s?
- Could we record our count on a number line?
- When we add 70 and 50, do we get a bigger number? Do we get a higher number?
- So if we get a higher number, do we start at the left end of the number line so we can move to the right as we get higher?
- Let's place a mark on the left end of the number line and record 70 under the mark.
- So we want to add 50.
- How many tens will we add?
- Will we add 5 tens?
- Could we make 5 jumps and record that each jump is adding 10?
- How could we work out what number we will land on last?
- Could we record what number we'll land on at the end of each jump?
- Let's record a mark where the first jump ends.
- If we have 7 tens, and we add 1 ten, how many tens will we have?
- Will we have 8 tens?
- Let's make a mark where the jump ends.
- Let's record 8 tens on the mark.
- If we have 8 tens, and we add 1 ten, how many tens will we have?
- Will we have 9 tens?

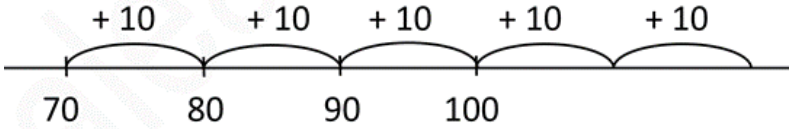
Record a mark on the number line where the jump lands and record 9 tens, for example,



- Let's make a mark where the jump ends.
- Let's record 9 tens on the mark.

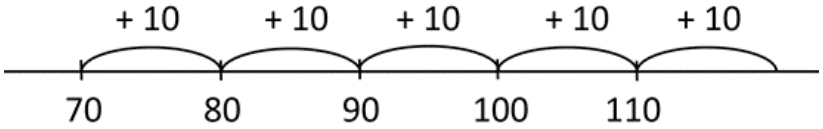
- If we have 9 tens, and we add 1 ten, how many tens will we have?
- Will we have 10 tens?
- Let's make a mark where the jump ends.
- Let's record 10 tens on the mark.

Record a mark on the number line where the jump lands and record 10 tens, for example,



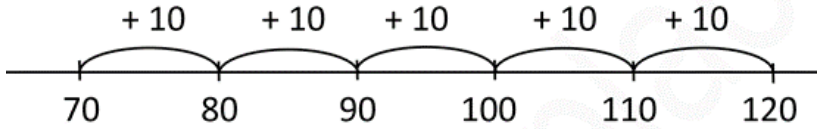
- If we have 10 tens, and we add 1 ten, how many tens will we have?
- Will we have 11 tens?
- Let's make a mark where the jump ends.
- Let's record 11 tens on the mark.

Record a mark on the number line where the jump lands and record 11 tens, for example,



- If we have 11 tens, and we add 1 ten, how many tens will we have?
- Will we have 12 tens?
- Let's make a mark where the jump ends.
- Let's record 12 tens on the mark.

Record a mark on the number line where the jump lands and record 12 tens, for example,



- How did we add 10s?
- Did we add 10 as 1 ten?
- When we add, can the numbers swap places?
- Can the numbers commute?
- This is a very important property of addition!

Record, for example 70 + 50 = 120

Record, for example 50 + 70 = 120

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

- The numbers can swap places.
- The numbers can commute?

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

- **Today brings an investigation about subtracting tens numbers.**
- What do you know about subtracting tens numbers?
- Talk about subtracting tens numbers with a friend.
- Is anyone ready to share what they are thinking about subtracting tens numbers?

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

- provides student-led differentiation
- develops number sense

- We've investigated counting backwards by 10s.
- Today we're going to investigate subtracting tens numbers by counting backwards by 10s.
- Let's make a tens number in the 1 hundreds using an Ace and another card.

Select an Ace and another card to make a tens number in the 1 hundreds, for example,

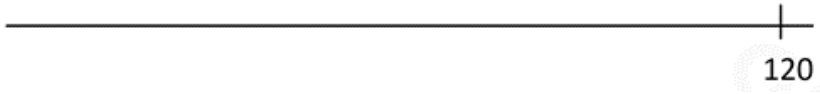
Select a card to make a tens number, for example,

- Let's select a card to make a tens number to subtract.
- What numbers do we have?
- Do we have 12 tens and 5 tens?
- And what number is 12 tens?

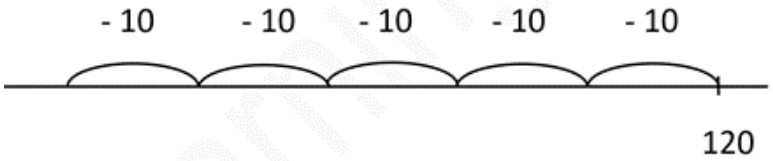
Record, for example, 120 - 50 =

Record an open empty number line, for example,

Record a mark and 120 under it on the number line, for example,

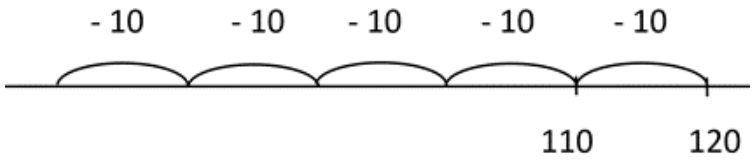


Record 5 jumps from 120 on the number line, and record - 10 above each jump, for example,



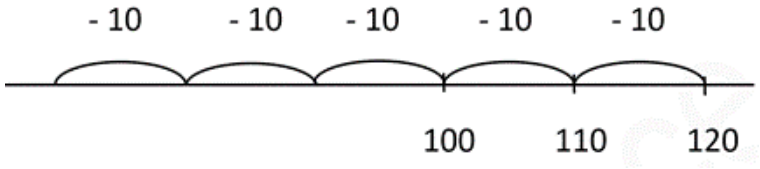
- Is 12 tens, 120?
- What number is 5 tens?
- Is 5 tens, 50?
- We're going to subtract this tens number.
- How could we record a number sentence?
- Could we record, 120 minus 50 equals?
- How could we subtract 50 from 120?
- Could we count backwards by 10s?
- Could we record our count on a number line?
- When we subtract 50 from 120, do we get a smaller number? Do we get a lower number?
- So if we get a lower number, do we start at the right end of the number line so we can move to the left as we get lower?
- Let's place a mark on the right end of the number line and record 120 under the mark.
- So we want to subtract 50.
- How many tens will we subtract?
- Will we subtract 5 tens?
- Could we make 5 jumps backwards and record that each jump is subtracting 10?

Record a mark on the number line where the jump lands and record 11 tens, for example,



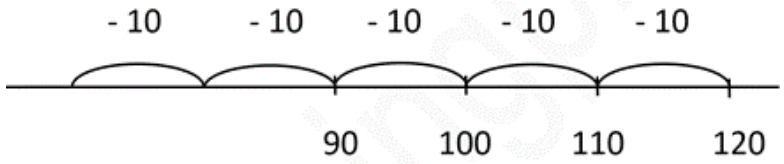
- How could we work out what number we will land on last?
- If we have 12 tens, and we subtract 1 ten, how many tens will we have?
- Will we have 11 tens?
- Let's make a mark where the jump ends.
- Let's record 11 tens on the mark.

Record a mark on the number line where the jump lands and record 10 tens, for example,



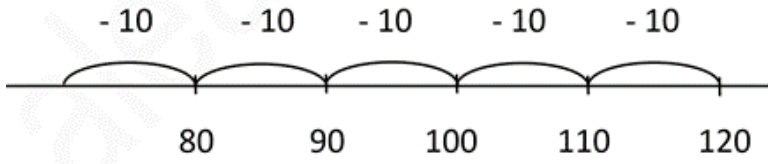
- If we have 11 tens, and we subtract 1 ten, how many tens will we have?
- Will we have 10 tens?
- Let's make a mark where the jump ends.
- Let's record 10 tens on the mark.

Record a mark on the number line where the jump lands and record 9 tens, for example,



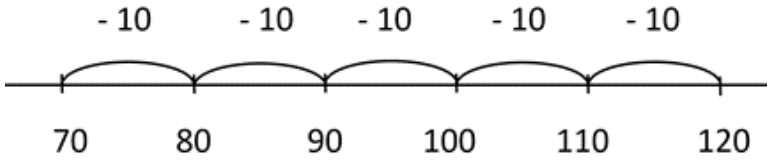
- If we have 10 tens, and we subtract 1 ten, how many tens will we have?
- Will we have 9 tens?
- Let's make a mark where the jump ends.
- Let's record 9 tens on the mark.

Record a mark on the number line where the jump lands and record 8 tens, for example,



- If we have 9 tens, and we subtract 1 ten, how many tens will we have?
- Will we have 8 tens?
- Let's make a mark where the jump ends.
- Let's record 8 tens on the mark.

Record a mark on the number line where the jump lands and record 7 tens, for example,



- If we have 8 tens, and we subtract 1 ten, how many tens will we have?
- Will we have 7 tens?
- Let's make a mark where the jump ends.
- Let's record 7 tens on the mark.

- How did we subtract 10s?
- Did we subtract 10 as 1 ten?

- What was the last number we landed on?
- Does the last number we landed on tell us what 120 minus 50 equals?
- What does 120 minus 50 equal?
- Does 120 minus 50 equal 70?

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