Lesson 9: Extending patterns in hundreds charts

Lesson type: Extending and Generalising Time Allocated: 1-1.5 hours

Overview:

Aim: To use patterns of tens and ones in hundreds charts to calculate simple addition and subtraction, including multi-step questions.

Note: The important questioning from this lesson is demonstrated in the grade two lesson from the DVD series, Teaching Back to Front with Tierney. Consider watching it first to see what happens and where students get stuck.

Concepts targeted:

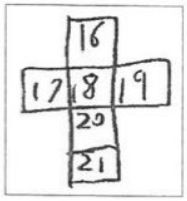
- Our number system is "base ten", meaning that we work in multiples of ten. Ten *tens* make one *hundred*. Ten *hundreds* make one *thousand*.
- The position of the digits in a written numeral determines what number is written. 324 is different from 432.

Main tasks:

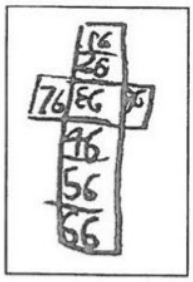
- Work out missing numbers from a hundreds chart by adding or subtracting tens and ones.
- Apply patterns for adding tens that were established in the previous two lessons.

Resources:
You will need a hundreds chart that can be shown to students when needed, copies of the worksheet and MAB blocks or bundling sticks with rubber bands for students who are still struggling.

Format:
Ask students to try filling in the missing numbers from the hundreds chart in the picture by themselves. Watch out for the following Misconceptions:



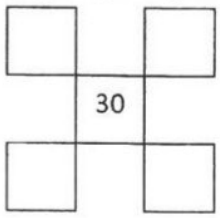
- Rote counting in ones
- Rote counting in tens
- Difficulty going left (backwards by one) or up (backwards by 10)
- Difficulty with "corner" squares, where a two-step solution is required (particularly with squares down and to the left – see the problem below with 30 in the middle)
- Students who need to fill in all the gaps as well, rather than just the squares. These students are probably still having significant difficulties with the concept of 10.



For students who Rote count: Circle the number underneath the 36 and get them to go and look at the hundreds chart to see what it should be. Then ask them to look at their other answers and see if any of them need to change. If this doesn't work, use the questioning line from Lessons 7 and 8 to see how 36 is "kind of the same as" 46.

For students who have trouble with gaps: Draw in some extra lines to form the gaps into squares. Ask the student what number goes in that square. Redirect them to look at their own answer for the square next to the one that you drew. Ask if that makes sense.

For students who have trouble with corners: Draw in an extra square either beside the existing line, joining the corner squares to form an L shape instead of a corner. Redirect them to look at their own answer for the square nest to the one that you drew. Ask if that makes sense.

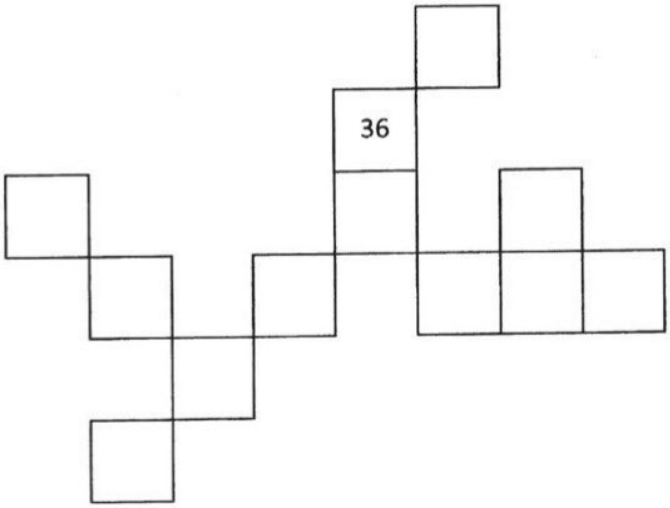


Differentiation:
Extension Task: Try the question to the right of this page, with 30 in the middle. Add on extra corner squares as needed. Go past 100 if appropriate.

Extending patterns in hundreds charts

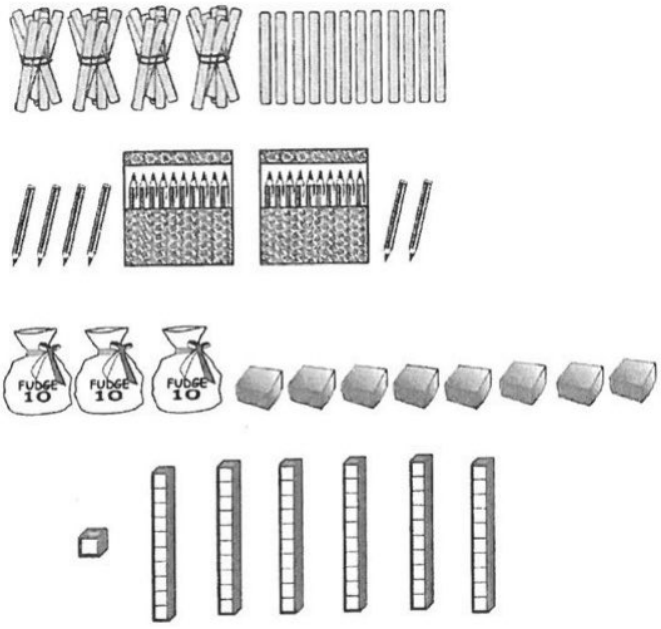
This is part of a hundred chart that has been cut out and some numbers have been lost.

Write the numbers that are missing from the piece of 100 chart.



Look at the 36 and the number underneath it. What do you add to 36 to turn it into the number beneath?

What are these numbers and where would the squares for these numbers go? Write the number beside the picture. Draw the square onto the chart above and write in the number.



Annie is sorting her coloured pencils. She has 63 pencils altogether. She groups them in lots of 10 and has 3 left over. Draw them here:

What does the 6 mean in 63? Explain your answer:

Circle the part of the picture above that means the "6" in 63.

Extend your thinking:
Choose 2 of these numerals to make the smallest 2-digit number and the largest 2-digit number you can. Write them on the number line in the places indicated.

8	1	5

Write the smallest number here.

Write the largest number here.

What other 2-digit numbers could you make that would go between the smallest and largest numbers? Make as many as you can and write two of them on the number line above where they go.