

# Exemplar Lesson Plan: Column Addition

**Introduction:** This exemplar lesson plan demonstrates how easy it is to use the CPA approach when teaching new ideas.

**Objective:** Learning the formal column layout of addition

**Resources:** Dice, Place Value (PV) Cards, Base Ten/Dienes blocks

**Steps:**

1. Children need to be familiar with the equipment used. Check that they can interpret the 100, 10 and 1 pieces from the Dienes blocks. Combine to show 2 or 3-digit numbers, depending on the children's experience.
2. Check that children also understand how the place value cards work by showing them individually and then together in a sequence, e.g. '7' '27' '327' and '307'. These first two steps are 'pre-teaching'.
3. Help children to [dual-code](#) by holding up 12 using Dienes, and then 12 using PV cards and check that they understand these to be equivalent.
4. Repeat step 3 with various 1,2 and 3-digit numbers as appropriate.
5. Roll a 1-6 dice and ask a child to find the corresponding amount of Dienes. Explain that this number will represent our 'ones'. Ask another child to find the correct place value card, and show this together with the dice and the Dienes. Write the number down on the board or a piece of paper under a visualiser.
6. Repeat step five to select a number that will represent the number of 'tens'. Combine the PV cards to show a 2-digit number and write this number down also.
7. If appropriate, repeat step 6 to select a number of 'hundreds'.

8. You now have a 3-digit number. Talk with the children about how the number is made up.
9. Create a second number by repeating steps 5-7 (or 5-8 if you are doing 3-digit numbers). Note that if you roll any numbers that would involve 'carrying' it is wise to re-roll in these initial stages to avoid introducing too many new ideas. Display this number below the first as shown in the image below:



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10. Ask the children a) which 2/3-digit number is larger, b) how they decided and c) how much there would be altogether if they put the two numbers together.
11. Discuss how they should best do this; agree that the Dienes are the best tool for this job. Write an addition sign, draw an underline, and starting with the ones, write the totals under the line. You will end up with something like this:
12. By counting the Dienes blocks, and writing the totals the children will begin to appreciate the layout.
13. As appropriate, repeat with the children, doing more of the steps until you think they are ready to work independently. Give pairs of children their own dice, Dienes and PV cards and encourage them to create some similar additions.



Further thoughts:

Some children may be ready to 'carry'. This involves the somewhat laborious process of exchanging ten 'ones' for one 'ten' but if they are not ready, ask them to roll again if they get a total of 10 or more in any column.

Straws are a very good alternative to Dienes blocks, and a popular item to use in Singapore schools.

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