NELSON MATHS

VICTORIAN CURRICULUM

DIGITAL RESOURCES INSIDE

Teacher's Resource Book

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Unit 4

Numbers up to 1000

Victorian Curriculum: **Number and Algebra**

Number and place value Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting (VCMNA105)

ML digit, hundreds, MAB, number cards, ones, spike abacus

LESSON PLAN 1

TUNING IN

READING NUMBERS

You will need: NTO 2.7 'Numbers'

Present NTO 2.7 'Numbers', set to show three cards with numbers from 0 to 9. Place the cards close together and have students read the 3-digit number. Rearrange the cards and have students read the new number formed. Continue using NTO 2.7 'Numbers' to have students practise reading other 3-digit numbers.

WHOLE-CLASS INTRODUCTION

USING NUMBER CARDS

You will need: NTO 2.14 'Number Cards'

Present NTO 2.14 'Number Cards', selecting 'random number' and have students read the number. Then ask students to say the number aloud slowly. Ask, 'How many hundreds did you say?' Invite a student to select the number card for that many hundreds. Have students say the number again and invite a student to select the tens card. Have them say the number again and ask a student to select the ones card. Continue generating numbers, having students say the number and show it using number cards.

INDEPENDENT TASKS

Note: Choose from Tasks 1, 2 or 3.

You will need: BLM 7 'Arrow Cards 1', BLM 8 'Arrow Cards 2', BLM 9 'Number Cards 2', NTO 2.14 'Number Cards', Student Book p. 16 'Arrow Cards'

TASK 1: MATCH THE NUMBER

Have students work with a partner and give them a set of arrow cards made from BLM 7 'Arrow Cards 1' and BLM 8 'Arrow Cards 2' and a set of cards made from BLM 9 'Number Cards 2'. Student A selects a number card and reads the number aloud while Student B forms that number using arrow cards. Student B checks by looking at the number card; if they are correct they keep the number card. Students then reverse roles and they continue to play. The winner is the student with the most cards.

TASK 2: INTERACTIVE TASK

Have students explore NTO 2.14 'Number Cards', randomly generating a number and using the number cards to show the number.

TASK 3: STUDENT BOOK p. 16 ***'Arrow Cards'***

TEACHING GROUP

You will need: BLM 7 'Arrow Cards 1', BLM 8 'Arrow Cards 2', NTO 2.14 'Number Cards'

100 MORE

- For students who require support, begin by having them make 2-digit numbers. Have pairs of students work with cards made from BLM 7 'Arrow Cards 1' and BLM 8 'Arrow Cards 2'. Students sort their cards into columns of ones, tens and hundreds. Show students a 2-digit number and have them say it aloud. Students repeat the number and find the two cards to show the number. Continue having students make 2-digit numbers. When they are ready, have them show 28 and then ask them to place the 100 card underneath and read the number. Continue having students make 2-digit numbers and then placing the 100 card underneath and reading the number aloud.

USING THE THOUSANDS CARDS

- For students who require a challenge, have them work with higher numbers. Present NTO 2.14 'Number Cards' and select the thousands cards. Point to different cards and have students read them out. Select a thousands card, a hundreds card, a tens cards and a ones card and have students read the number. Double-click on the hundreds card to remove it and have students read the number. Double-click on the tens card and have students read the number. Repeat a few more times. Ask students to randomly generate a number and have them make it.

REFLECTION

Select from the following to suit your class and their learning outcomes:

- Ask, 'When you make a number, what are you thinking?'
- Tell students that you want them to show the number 942 and have them explain how they would do it. Ask, 'How do you know you are correct?'
- Present NTO 2.14 'Number Cards' and randomly generate a number, but ask students to show a number that is 100 more or less.

LESSON PLAN 2

TUNING IN

DOES ANYONE HAVE ...?

You will need: BLM 9 'Number Cards 2'

Make number cards from an enlarged copy of BLM 9 'Number Cards 2'. Give a number card to each student and ask, 'Does anyone have a number with 6 tens?' Have those students stand and show their cards. Ask, 'Does anyone have a card with more than 5 hundreds?' Continue asking questions about place-value components and note any students who may need support in the teaching group.

WHOLE-CLASS INTRODUCTION

SPIKE ABACUS

You will need: NTO 2.15 'Spike Abacus', small whiteboards and markers, BLM 9 'Number Cards 2'

Present NTO 2.15 'Spike Abacus' and explain to students that they can use a spike abacus to model numbers. Place one bead on the hundreds spike, two beads on the tens spike and three beads on the ones spike. Ask, 'What number has 1 hundred, 2 tens and 3 ones?' Invite a student to write the number on the board. Continue making 3-digit numbers and ask students to write down the number on small whiteboards. Next, select a mac... ed copy of BLM 9 'Number Cards 2' and ask, 'Can anyone show this number on the spike abacus?' Invite a student to show the number; check the number of beads for each place-value component and check it against the number card. Continue, inviting students to select a number card and show the number on the spike abacus.

INDEPENDENT TASKS

Note: Choose from Tasks 1, 2 or 3.

You will need: 3 spike abacuses and beads, BLM 7 'Arrow Cards 1', BLM 8 'Arrow Cards 2', BLM 9 'Number Cards 2', NTO 2.15 'Spike Abacus', Student Book p. 17 'Spike Abacus'

TASK 1: SPIKE ABACUS AND ARROW CARDS

Have students work with a partner. Student A shows a number on the spike abacus and Student B shows that number using arrow cards made from BLM 7 'Arrow Cards 1' and BLM 8 'Arrow Cards 2'. Students then swap roles and continue.

TASK 2: INTERACTIVE TASK

Give students a set of number cards made from BLM 9 'Number Cards 2'. Have them use NTO 2.15 'Spike Abacus' to model the number and then check that they are correct by selecting the 'show number' button.

TASK 3: STUDENT BOOK p. 17 ***'Spike Abacus'***

TEACHING GROUP

You will need: small whiteboards and markers, Blu Tack or playdough, wooden skewers, beads (which can be made from playdough), NTO 2.15 'Spike Abacus'

MAKING A SPIKE ABACUS

- For students who require support, have them construct their own two-spike abacus. Give each student a small whiteboard and enough Blu Tack (or playdough) to anchor the skewers upright on the board. Have students stand the skewers in the Blu Tack and label the one on the right 'ones' and the one on the left 'tens'. Say a 2-digit number, such as 32, and ask, 'How many tens?' Have students place that many beads on the tens spike. Then ask, 'How many ones?' Have students place that many beads on the ones spike. Continue having students model 2-digit numbers.

FOUR SPIKES

- For students who require a challenge, have them use a spike abacus to make 4-digit numbers. Present NTO 2.15 'Spike Abacus' and select the 'show thousands' button to reveal the fourth spike. Place some beads on the spikes and have students write the number shown on small whiteboards. Invite a student to read out their number and ask, 'How did you work that out?' Repeat a few more times. Next, invite a student to write a 4-digit number on their whiteboard and show that number on the NTO. Have the student reveal the number on the whiteboard and the group determine if it matches the number shown on the spike abacus.

REFLECTION

Select from the following to suit your class and their learning outcomes:

- Present NTO 2.15 'Spike Abacus' showing 438 and ask, 'What number is shown? How did you work that out?'
- Present the following problem: 'I placed five beads on a three-spike abacus. What number could I have shown?' Discuss possible answers and have students explain how they worked it out.

LESSON PLAN 3

TUNING IN

WHAT NUMBERS CAN YOU MAKE?

You will need: NTO 2.8 'Place-Value Mat'

Present NTO 2.8 'Place-Value Mat', set to show three numbers. Invite a student to make a 3-digit number. Ask, 'What other numbers can we make using the three numbers displayed?' Have students come to the board and rearrange the numbers to make other 3-digit numbers. 'What is the largest number we can make? What is the smallest number we can make?'

WHOLE-CLASS INTRODUCTION

WHAT'S MY NUMBER?

You will need: NTO 2.14 'Number Cards', paper

Write a 3-digit number on a sheet of paper and keep it hidden. Present NTO 2.14 'Number Cards' and ask, 'What do you think my number is?' Instead of having students answer, invite one of them to show what they think the number could be. If any of the components are correct, leave those cards displayed, but if they are not part of the number, double-click to remove the incorrect cards. Continue to invite students to show their guesses, leaving correct components and removing incorrect ones until the mystery number has been worked out.

INDEPENDENT TASKS

Note: Choose from Tasks 1, 2 or 3.

You will need: three dice, BLM 10 'Number Stairs', NTO 2.16 'Playing Cards', Student Book p. 18 'Climbing the Ladder'

TASK 1: NUMBER STAIRS

Have pairs of students take turns to roll three dice and form a 3-digit number on BLM 10 'Number Stairs'. Students can place the number in any space they choose, provided the numbers decrease as they go down the stairs. If students cannot make a number that will fit, they forfeit their turn. The winner is the first student to complete their stairs with the numbers in order from highest to lowest.

TASK 2: INTERACTIVE TASK

Have students work with a partner to use NTO 2.16 'Playing Cards' to deal three cards and rearrange the them to make the largest number they can. Their partner then draws three cards to see if they can make a larger number.

TASK 3: STUDENT BOOK p. 18 *'Climbing the Ladder'*

TEACHING GROUP

You will need: decks of playing cards with the 10s and picture cards removed, dice

BEAT IT

- For students who require support, work with 2-digit numbers until they are able to extend their place-value understanding to hundreds. Have students play with a partner where the first player draws two playing cards from the deck and forms the largest number they can. Their partner then draws two cards to make a number that will 'beat it'. The student who has formed the highest number keeps all four cards. Students continue until all the cards have been used. The winner is the student with the most cards.

CLOSEST TO 999

- For students who require a challenge, have them draw up a table or grid with three columns headed 'Hundreds', 'Tens' and 'Ones'. The object of the game is to get a score as close to 999 without going past it. A dice is rolled six times and each time, the student decides if the number rolled will be a hundred, a ten or a one. After six rolls of the dice, the student adds up their score and the score that is closest to 999 wins but if the total is more than 999, then they lose.

REFLECTION

Select from the following to suit your class and their learning outcomes:

- Ask, 'When you rolled the dice or drew the cards, how did you decide what was the best number to make?'
- Ask, 'What strategies did you use to win the game?'

Assessment

- Have students complete **Student Assessment p. 19**.
- Review with students **Assessment Task Card 2.4**.

During the three lessons:

- Observe students in Lesson 2, Independent Tasks, Task 1, and note on a class list who was able to represent 3-digit numbers with arrow cards and on a spike abacus.
- Make note of students who completed the scaffolding tasks or the more challenging activities of the Teaching Groups.
- Review Student Book pages and make note of areas of difficulty.

Recommendations for Future Learning

Specific to Student Assessment p. 19; if the student is experiencing difficulty:

Q 1 Have the student work with a range of materials (such as craft sticks, interlocking cubes and MAB) to model 2-digit and then 3-digit numbers, and to use arrow cards or Montessori cards to label models.

Q 2–3 Have the student model 2-digit numbers on a spike abacus before moving to 3-digit numbers.

Q 4 Provide opportunities for the student to explore making 2-digit numbers by drawing playing cards or rolling dice.

If the student has not achieved the recommended skills for this unit:

1. See **Assessment Task Card 2.4** for specific recommendations.
2. Have the student work with 2-digit numbers in any of the listed activities prior to moving to 3-digit numbers.
3. Review *Nelson Maths: Victorian Curriculum Year 1* Unit 15.

If the student has achieved the recommended skills and these skills are firmly established, consider:

1. Having the student complete *Nelson Maths Building Mental Strategies Skill Book Year 3*, pp. 14–15, to reinforce mental strategies involved in ordering numbers.
2. Moving forward to *Nelson Maths: Victorian Curriculum Year 3* Unit 2.
3. Extending the student in any of the listed activities by using 4-digit numbers.