Addition

Lesson plan and teacher's notes · Grade 2 Mathematics · 2 periods of 40 minutes

School	(write school name)	**Teacher**	(write name)
Date	(date)	**Class**	Grade 2
Subject	Mathematics	**Enrolment**	Boys ___ Girls ___ Total ___
Time	80 minutes	**Topic**	Addition

Learners with visual impairment add two-digit and three-digit numbers with and without carrying using tactile place value cards and Braille sentence cards, learn the order rule and the zero rule, and explore number trees, number wheels and magic squares. Two periods of 40 minutes.

Specific outcomes

By the end of the lesson, learners should be able to:

1. Add two-digit numbers with and without carrying
2. Add numbers up to 999 using hundreds, tens and ones
3. State the order rule and the zero rule of addition
4. Use number trees, number wheels and magic squares to add

Prior knowledge

- Learners can count and read numbers up to 999
- Learners know place value of ones, tens and hundreds
- Learners can add small numbers orally

Teaching and learning materials

- Tactile place value cards for hundreds, tens and ones
- Counters, bottle tops or stones
- Braille sentence cards with addition questions
- Tactile number trees, number wheels and 3 by 3 magic squares
- Braille slate or Perkins brailler
- Chalk and board

References

Ministry of Education (CDC) Grade 2 Mathematics syllabus and module; 25Schools learners' note: Addition.

Lesson development

Stage and time	Teacher activities	Learner activities
Review and carrying 15 min	Ask learners to add small numbers orally, such as 3 and 2, 5 and 4. Show 27 and 15 on tactile place value cards, ones under ones and tens under tens. Add the ones, 7 and 5 make 12, then guide learners to feel 12 as 1 ten and 2 ones and carry the ten. Add the tens to get 42. Repeat with 23 and 14 where nothing is carried.	Handle the cards, add orally and say when a ten is carried.
Hundreds, tens and ones 25 min	Give each pair counters and place value cards. Show 214 and 135. Learners add ones, then tens, then hundreds. Give more questions on Braille sentence cards and move around helping. Include one question where the ones carry a ten.	Work in pairs, add the numbers and give answers orally or in Braille.
Order rule and zero rule 20 min	Give a real-life scenario: you have 3 mangoes and a friend gives you 2 more, then you swap who holds them. Ask how many altogether. Then say you have 5 sweets and no one adds any. Let learners solve 9 and 0, 0 and 5, 3 and 2, 2 and 3 on Braille cards. Summarise both rules.	Solve the cards and repeat the rules aloud.
Number trees, wheels and magic squares 15 min	Review prior knowledge. Let learners touch and explore the tactile materials. Show a number tree with 7 on top and branches 3 and 4. Show a number wheel with 6 in the centre and pairs 2 and 4, 1 and 5. Show a magic square and solve one row with counters. Give pairs a tree to complete, pairs to find on the wheel and a missing number in a square.	Feel the tree, rotate the wheel, check square totals by counting.
Produce and close 5 min	Give questions on Braille sentence cards: solve one number tree, give two pairs from a wheel, complete a simple magic square. Observe participation and accuracy. Summarise the rules and ask learners to repeat the key ideas.	Answer independently and repeat key ideas aloud.

Teacher's content notes

Read these before the lesson. They are what you need to know, not what to copy onto the board.

Carrying

When the ones make 10 or more, one ten is moved to the tens place. For 27 and 15, the ones make 12, so write 2 and carry 1 ten. The tens then make 4, giving 42.

Two rules

Order rule: changing the order of numbers does not change the total. Zero rule: adding zero does not change the number. Use real objects to show both.

Fun strategies

A number tree shows a total with two branches. A number wheel shows pairs that make the centre number. A magic square has rows and columns with the same total. Let learners explore each by touch before solving.

Questions to ask during the lesson

Question	Expected answer
Mulenga has 27 sweets and gets 15 more. The teacher asks the class to add them on the place value cards. (a) Which place is added first. (b) How many ones are there. (c) What do we do with the ten ones.	(a) The ones. (b) 12. (c) Carry 1 ten to the tens place.
Chanda adds 3 mangoes and 2 mangoes and then swaps the order to add 2 and 3. Her friend watches the totals. (a) What is the first total. (b) What is the second total. (c) Which rule does this show.	(a) 5. (b) 5. (c) Changing the order does not change the total.
The teacher gives a group a number wheel with 6 in the centre and asks them to find pairs. A learner finds 2 and 4. (a) Is that a correct pair. (b) Give another pair. (c) What do the pairs make.	(a) Yes. (b) 1 and 5 or 3 and 3. (c) 6.

Worked examples for the board

Adding 27 and 15

Step 1: Put ones under ones. Step 2: Add 7 and 5 to get 12. Step 3: Write 2 and carry 1 ten. Step 4: Add 2 and 1 and 1 to get 4. Step 5: The total is 42.

Adding 214 and 135

Step 1: Add ones, 4 and 5 make 9. Step 2: Add tens, 1 and 3 make 4. Step 3: Add hundreds, 2 and 1 make 3. Step 4: The total is 349.

Board plan

Write the title Addition. Write 27 plus 15 with ones under ones. Write the steps: add ones, carry a ten, add tens. Write the two rules. Draw a number tree with 7, 3 and 4.

Sum	Working	Total
23 plus 14	3 plus 4 is 7, 2 plus 1 is 3	37
27 plus 15	7 plus 5 is 12, carry 1 ten	42
214 plus 135	9 ones, 4 tens, 3 hundreds	349

The finished board

Mistakes to expect

Learners often think	Put it right
We add the tens before the ones.	Let learners handle the cards and show that ten ones must first become a ten. Always start with the ones.
When ones make 12 we write 12 in the ones place.	Show 12 counters. Group ten of them into one ten. Write the 2 ones left and carry the ten.
Adding zero makes the number bigger or smaller.	Give 5 sweets and add none. Ask how many learners have. The number stays 5.
3 and 2 is different from 2 and 3.	Use counters to show both orders and let learners count the total each time.

Differentiation

Learners who struggle

Use only two-digit numbers without carrying at first. Let learners push counters into tens and ones on a tactile mat and count the total.

Learners who finish early

Ask learners to make their own number tree for 10 and find three different pairs of branches. Give a three-digit sum with carrying.

Hearing or visual impairment

For learners with low vision, use large print and bold contrast. For totally blind learners, use Braille cards, raised lines and counters in a tray with edges. Allow extra time and let learners say answers aloud.

No projector, no printing

Use stones, bottle tops or seeds for counters. Make number trees and wheels from cardboard with string for lines and glued seeds for numbers. Draw squares in sand or on the floor.

If time is short

Keep carrying, the three-digit sum and the two rules. Move the magic squares to the next lesson.

Evaluation

Question or task	A correct answer shows
Chanda has 27 mangoes and picks 15 more from a tree. Her teacher asks her to add the two numbers using place value cards. (a) Which place do we add first. (b) Do we carry a ten. (c) What is the total.	(a) The ones. (b) Yes. (c) 42.

The teacher gives Mulenga a number tree with 7 at the top and one branch showing 3. A friend asks him to complete it. (a) What is the missing branch. (b) Which two numbers join to make 7. (c) What is 9 and 0.	(a) 4. (b) 3 and 4. (c) 9.

Homework

Bupe has 214 beans in one bag and 135 beans in another bag. Her mother asks her to find how many beans there are altogether. (a) What do we add first. (b) What is the total. (c) What is the answer if we swap the order and add 135 and 214.

Extra practice with answers

Question	Answer
1. Mwamba has 23 stones and finds 14 more at the river. His teacher asks him to add them. (a) What do the ones make. (b) What do the tens make. (c) What is the total.	(a) 7. (b) 3. (c) 37.
2. Njavwa has 5 sweets and no one gives her any more. Her friend asks how many she has. (a) What is 5 and 0. (b) Which rule is this. (c) What is 0 and 9.	(a) 5. (b) Adding zero does not change the number. (c) 9.
3. The teacher shows a number tree with 7 at the top and one branch showing 3. A learner feels the tree. (a) What is the other branch. (b) What do the branches make. (c) Give another pair that makes 7.	(a) 4. (b) 7. (c) 2 and 5 or 1 and 6.
4. In a magic square the first row has 2, 7 and a missing number. Each row totals 15. A group counts with counters to find it. (a) What do 2 and 7 make. (b) What is the missing number. (c) What is the total of the row.	(a) 9. (b) 6. (c) 15.

Answers to the learners' check-yourself questions

1. Add 23 and 14.
   37.
2. What is 5 and 0 together.
   5.
3. What do we do when the ones make 12.
   Write 2 in the ones place and carry 1 ten.
4. On a number tree with 7 at the top, one branch is 3. What is the other branch.
   4.
5. Mulenga has 27 sweets and his sister gives him 15 more. His teacher asks the class to find how many he has. (a) Which place do we add first. (b) Do we carry a ten. (c) What is the total.
   (a) The ones place. (b) Yes, 7 and 5 make 12. (c) 42.
6. Chanda adds 214 and 135 using place value cards. Her friend asks how she did it. (a) What does she add first. (b) What is the total of the hundreds. (c) What is the final total.
   (a) The ones: 4 and 5. (b) 2 and 1 make 3. (c) 349.

Teacher's reflection

What went well:

What I will change next time:

Learners who need follow-up: